Routledge Research Companions in Business and Economics

ISLAMIC GREEN FINANCE

A RESEARCH COMPANION

Edited by
Mohd Ma'Sum Billah, Rusni Hassan, Razali Haron,
Romzie Rosman and Hjh Akhtarun Naba' Billah

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Islamic Green Finance

This book argues that focusing on the green economy and green finance is essential to counteract the catastrophic, socio-economic effects of the Covid-19 pandemic. Further, while numerous research initiatives in the context of the green economy and/or finance have been conducted in different parts of the world, to date, no comprehensive work has been published on the topic of green finance in relation to the discipline of Shari'ah. This timely book provides a comprehensive guide and offers practical solutions to the core issues of green finance within the principles of the Maqasid al-Shari'ah.

It contends that Islamic green finance serves to promote global financial stability and mitigate the financial risks associated with climate change and environmental degradation: by integrating Islamic finance principles with sustainable and environmentally friendly practices; by encouraging ethical investments and prioritizing long-term social and environmental benefits; and by redirecting capital towards sustainable projects and fostering a more sustainable and inclusive financial system. Islamic green finance's emphasis on transparency, governance, risk-sharing and responsible investing helps lessen systemic risks and supports the transition towards a more stable and sustainable global financial landscape. The book's holistic approach to green finance in the Maqasid al-Shari'ah aims to ensure that financial actions align with Islamic principles and help create a more sustainable and responsible economic system.

The book is a detailed reference, which sheds light on the pressing issues of our time. It encompasses various aspects of Islamic economics and serves as a guide to implementing green financing in accordance with Islamic principles and ethics, and as such, it will appeal to academics, researchers, students and policymakers alike.

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This book is dedicated to the remembrance of my most beloved parents, Allamah Mufti Nur Mohammad (r) and Ustazah Akhtarun Nisa' (r), who nourished me with their love and wisdom. May Allah (swt) shower them with His Love and Mercy and grant them Jannat al-Ferdaus. I would also like to dedicate this book to my lovely wife, Dr. Hjh Khamsiah Binti Nawawi (Head, OSHE-Hospital, Universiti Kebangsaan Malaysia), and our heart-touching children, Dr. Ahmad Mu'izz Billah (Head of Surgical Department and Medical officer at the Mukah District Hospital, Malaysia), Dr. Erra Aqeela Binti Ismail (Head, Dentistry Department at the Mukah District Hospital, Malaysia), Ahmad Mu'azz Billah (OP-Cadet-RMC, BSc Hons, formerly with the JPM, Putrajaya, and currently serving at Accenture, Malaysia), Ahmad Muniff Billah (OP-Cadet-RMC, winner of the Gold Medal Award 2023 for his outstanding Innovative Research Project and currently pursuing his BSc (Hons) in Aviation Management and Piloting, MSU). Along with this, Ahmad Muniff Billah is now undergoing professional training in piloting at the Subang Airport, Malaysia, and Hjh Akhtarun Naba' Billah (pursuing LLB Hons, IIUM, and a continuous honoree on the dean's list), for their continuous support and sacrifice.

May all be blessed with *Muwaddau Wa Rahmah, Qurratu A'yun* and *Mardhaati Allah* (swt) in this life and the next.

This book is also dedicated to the *Ummah* and the whole of humanity.

Mohd Ma'Sum Billah, PhD

A special dedication to my parents, my extended family, my teachers and *Murabbi*, who inspired, guided, and shaped me to be the person I am today. A special thanks also to the Institute of Islamic Banking and Finance (IIUM) team members for their unwavering support in bringing the Institute to a higher level. May Allah provide us with the fortitude and dedication to contribute to the well-being of our institution and to the *Ummah*.

Rusni Hasan, PhD

Infinite gratitude to my loving parents, family, and teachers for their care and wisdom. May Allah (swt) grant them the best reward in this life and the day after. Also, for the endless support and trust placed in me by the Institute of Islamic Banking and Finance (IIUM) for their mission to be the Centre of Excellence.

Razali Haron, DBA

This book is a testament to the pursuit of knowledge and invaluable contributions. With profound respect and gratitude to my mentors, I have grown as a scholar and thinker dedicated to the quest for knowledge under your guidance. To the readers, this book is a product of the collective research that characterizes our field, and I hope it contributes meaningfully to our ongoing dialogue and contribution to society. Finally, I dedicate this to my family, for their unwavering support for me in seeking knowledge.

Romzie Rosman, PhD

This book is dedicated to the *Ummah* for the cause of Islam and humanity. I am deeply indebted to my beloved parents, my lovely brothers, respected teachers and friends, whose direct and indirect support and continuous encouragement inspire me with a wiser vision towards knowledge, wisdom and humanitarian concern. May all be blessed with success and happiness in this life and the hereafter.

Hjh Akhtarun Naba' Billah

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Foreword

With great pleasure and a sense of profound responsibility, this book, *Islamic Green Finance: A Research Companion*, is a research work that emphasizes Islamic finance principles and an urgent global call for sustainability. As Deputy Rector (Responsible Research and Innovation) at the International Islamic University Malaysia, I have observed the transformative potential of integrating the Maqasid al-Shari'ah with contemporary environmental, social and governance (ESG) challenges, encompassing social and environmental sustainability and the UN Sustainable Development Goals.

This book, set to be published by Routledge, Taylor & Francis Group, is a timely and critical addition to the literature on green finance, particularly within the Islamic financial framework. It is designed to serve a broad audience, including students embarking on their educational journey, industry practitioners seeking to align their daily operations with ethical and sustainable principles, policymakers tasked with guiding our societies toward greener futures, and members of the public who are concerned with the social dimensions of Islamic green finance. Moreover, the urgency of combating climate change cannot be overstated. As temperatures rise and natural disasters become more frequent and severe, the need for financial mechanisms to support effective climate action becomes increasingly critical. Hence, green finance offers a path forward, providing the necessary resources to transition to a more sustainable and resilient global economy. The principle of green finance integrates strongly with the Maqasid al-Shari'ah, which emphasizes preserving the environment, social equity and socio-economic welfare. This alignment underscores the potential for green finance to bridge the gap between traditional Islamic financial principles and contemporary challenges, promoting a holistic approach to sustainability in achieving the Maqasid al-Shari'ah.

The chapters within this companion are meticulously crafted to elucidate complex concepts and provide actionable knowledge. They navigate the theoretical underpinnings of Islamic green finance and present empirical research that collectively offers a comprehensive overview of the field. This book is an invitation to explore the synergies between Islamic finance and sustainable development, urging students, practitioners and policymakers to consider innovative financial solutions that are ethical, sustainable and that harmonize with global goals. At the crossroads

of financial innovation and environmental imperatives, *Islamic Green Finance: A Research Companion* emerges as a guide to a more sustainable and equitable world. I hope this book will inspire its readers to advocate for and implement Islamic green finance initiatives to contribute to a more sustainable and just global financial system. I invite you to join us on this journey of discovery and action. Together, let us explore the vast potential of Islamic green finance to address some of the most pressing challenges of our time, paving the way for a financially inclusive, environmentally sustainable and ethically grounded future in achieving the Maqasid al-Shari'ah.

Prof. Dr. Amir Akramin Shafie
Deputy Rector (Responsible Research and Innovation)
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Preface

In an era marked by increasing environmental challenges, green finance is an important topic. It deals with a broad range of issues that relate to the urgent threat posed by climate change. Additionally, Islamic green finance has become a hope, offering financial innovation solutions geared towards sustainable development. In this new approach to finance, the goal is to address and foster socio-economic development and growth that are inclusive and environmentally sustainable. Researchers have begun to pay attention to the influence of green finance in the sustainability agenda to achieve the Maqasid al-Shari'ah. Islamic green finance includes a variety of financial services and products to support projects and initiatives with a positive environmental impact. By channelling capital towards such projects, Islamic green finance plays an important role in mitigating the effects of climate change and advancing global sustainability. This highlights the nexus between Islamic finance and green finance, emphasizing the fundamental principles of risk sharing and sustainability. Therefore, Islamic green financing is an essential and effective approach to address climate change. This includes investments in renewable energy, energy efficiency, sustainable agriculture and conservation efforts. Based on the importance of Islamic green finance in dealing with existing climate change problems, this book attempts to discuss how Islamic green finance can contribute to sustainable development. This book, *Islamic Green Finance. A Research Companion,* is organized into six Parts with 20 important chapters, with a specific introduction and an index at the end.

Part I focuses on the emergence of Islamic green finance. In this Part, the chapters are divided into four important chapters. Chapter 1 provides discussion relating to green finance from a Maqasid al-Shari'ah perspective. Chapter 2 discusses the financial performance of Islamic banks based on green finance and social responsibility towards sustainability. Chapter 3 evaluates the significant contributions of Islamic green finance to the SDGs. Chapter 4 explains Islamic green financing's contribution to SDGs based on empirical evidence.

Part II deals with the impact analysis of Islamic green finance. Chapter 5 evaluates the impact of Islamic green financing on national GDP: a cross-country analysis. Chapter 6 presents an overview of the contributions of Islamic green finance to eco-sustainability.

Part III discusses the governing principles and policies of Islamic green finance. This part has three chapters. Chapter 7 presents an insight into divine principles governing Islamic green finance. Chapter 8 explains fiqhi and fatwa rulings on green finance. Chapter 9 discusses law reform affecting Islamic green finance.

Part IV highlights investment techniques in Islamic green finance. This part is divided into three chapters. Chapter 10 discusses corporate social responsibility in the Islamic green economy. Chapter 11 deals with ethical investing for a sustainable future: integrating SRI principles into the Islamic green economy. Chapter 12 provides analysis on SRI Sukuk contribution to financing SDG-related projects: analysis of selected cases.

Part V considers the applications of Islamic green finance. This part covers seven chapters. Chapter 13 discusses governments' initiatives towards Islamic green finance. Chapter 14 explains instruments facilitating Islamic green finance and their applicability. Chapter 15 presents Awqaf-led green finance. Chapter 16 provides analysis on empowering green waqf for a climate-resilient Malaysia. Chapter 17 discusses Green Sukuk issues and challenges to its implementation. Chapter 18 is about Green Sukuk challenges and obstacles facing public universities. Chapter 19 explains crowdfunding-led green finance.

Part VI is about risk management for Islamic green finance. This part has one chapter, Chapter 20, which discusses risk factors in Islamic green finance.

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There is no strength and power except in *Allah* (swt), To Him comes the praise, the Savant, the Wise, the Omniscient, the most beautiful names belong to Him. May the blessing of Allah (swt) and peace be upon *Muhammad (saw)* and all the Prophets (*aws*) from the first to the last.

I am humbly privileged to acknowledge King Abdulaziz University (KAU), Kingdom of Saudi Arabia, and its prestigious wing the Islamic Economics Institute (IEI) for supporting us with every facility in research, academic, human capital, and professional development activities outreaching the global *Ummah*. It is also a great honour for me to humbly acknowledge His Excellency Professor Dr. Tarif Bin Youssef Al-Amma (the President of KAU); Professor Dr. Amin Yousef Mohammad Noaman (vice president of KAU); Dr. Albara Abdullah Abulaban (dean of IEI, KAU; Dr. Mohammad Abdullah Naseef (former dean of IEI, KAU); Dr. Abdullah Qurban Turkistani (former dean of IEI, KAU); Dr. Faisal Mahmoud Alatbani (former vice dean, IEI, KAU); Dr. Hasan Mohammad Makhethi (vice dean, IEI, KAU); Dr. Abdullah alUtaiby (head, Department of Insurance, IEI, KAU); Dr. Adnan M. A. Al-Khiary (head, Department of Finance, IEI, KAU); my talented colleague Mr. Mohammed Alabdulraheem (lecturer in fintech and Islamic finance, IEI, KAU); Mr. Shamim Zaman (businessman, UK); Mawlana Nesaruddin Akon (businessman); Mawlana Mizanur Rahman Bissas (lecturer, Technical and Business Management College, Dhaka); Mr. Abdul Latif Khan (social activist); Advocate Shahbur Rahman (Bagerhat District Court); and Mr. ABM Mohid

Hossain (senior programme officer, Justice and Care). I would like to express my full-hearted thanks with appreciation to my talented and reputable editorial team, which includes Prof. Datin Dr. Rusni Hassan, Prof. Dr. Razali Haron, Assoc. Prof. Dr. Romzie Rosman and Hjh Akhtarun Naba' Billah for their scientific and intellectual support in completing this book. I would also like to record my heartiest thanks with humble appreciation to all contributors for their scientific contributions with chapters in this book. Last but not least, I would like to express appreciation for all universities, institutes, academies, industries and professional firms whose direct and indirect support through knowledge, experience and resources contributed to completing this book with utmost satisfaction.

Mohd Ma'Sum Billah, PhD

I would like to acknowledge the International Islamic University Malaysia (IIUM) and the Institute of Islamic Banking and Finance, IIUM, for their support through every facility in research, academic, human capital and professional development activities outreaching the global *Ummah*. It is also a great honour for me to humbly acknowledge Honourable Rector Tan Sri Dzulkifli Razak and the University Management Committee, especially Deputy Rector (Responsible Research and Innovation) Prof. Dr. Amir Akramin Shafie, and Deputy Rector (Academic & Internationalization) Prof. Ahmad Faris Ismail, for their unwavering support for us, especially in research and publication. My special thanks and appreciation go to every single member of the Institute team especially my head of responsible research, Prof. Dr. Razali Haron, and Assoc. Prof. Dr. Romzie Rosman, who are also the co-editors of this book. This book might not have been possible without the support, assistance and facilitation of respected Prof. Dr. Ma'Sum Billah, the lead editor of this book, to whom goes my gratitude and full-hearted thanks. My heartfelt acknowledgment to all individuals, researchers, scholars, institutions, and organizations who are passionate about research and publication, especially in Islamic banking and finance, to serve industry and *Ummah*.

Rusni Hasan, PhD

My acknowledgment goes to the Institute of Islamic Banking and Finance and the International Islamic University Malaysia for their continuous support in producing high-impact research. It is also a great honour for me to humbly acknowledge Honourable Rector Tan Sri Dzulkifli Razak, Deputy Rector (Responsible Research and Innovation) Prof. Dr. Amir Akramin Shafie, and Deputy Rector (Academic & Internationalization) Prof. Ahmad Faris Ismail, for their endless support to the Institute in research and publication. My special thanks to the dean of the Institute, Prof. Dr. Rusni Hassan, for her excellent leadership and guidance as well as the support from Assoc. Prof. Dr. Romzie Rosman and Hjh Akhtarun Naba' Billah. This book would not be feasible without the guidance and facilitation from the respected Prof. Dr. Ma'Sum Billah, to whom the Institute is very grateful. Lastly, my appreciation to all authors for their full cooperation in ensuring the success of the publication.

Razali Haron, DBA

I would like to acknowledge the great support received from the International Islamic University Malaysia, with a special dedication to the Institute of Islamic Banking and Finance and their research teams. Thank you to my respected Prof. Dr. Mohd. Ma'Sum Billah, Prof. Dr. Rusni Hassan (dean of the Institute), and Prof. Dr. Razali Haron for giving me the opportunity to be part of the team for this book.

Romzie Rosman, PhD

All praises to be for Almighty *Allah* (swt). My sincere thanks go to the honorable editorial members (Prof. Dr. Mohd Ma'Sum Billah, Prof. Datin Dr. Rusni Hassan, Prof. Dr. Razali Haron and Assoc. Prof. Dr. Romzie Rosman) for giving me the opportunity to be part of the team, and a special dedication to my beloved parents (Prof Dr. Mohd Ma'Sum Billah & Dr. Hjh Khamsiah Binti Nawawi), lovely brothers, respected teachers and friends for their continuous guidance and motivation for me in my knowledge seeking. I am also indebted to Ahmad Ibrahim Kulliyyah of Laws (AIKOL) and the International Islamic University Malaysia for the great support and contributions offered to us to build us up with holistic knowledge and wisdom.

Hjh Akhtarun Naba' Billah

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Rusni Hassan, who is listed among the Top 10 Most Influential Women in Islamic Business and Finance globally, serves as Dean of the Institute of Islamic Banking and Finance (IBF), International Islamic University Malaysia. She is an active researcher and expert trainer in the IBF. With nearly 30 years of experience in academia, she has taught, published, and supervised academic works particularly in the areas of Shari'ah, governance, and legal aspects of Islamic banking and finance. Her publications include books on Islamic banking and finance, chapters in edited collections and articles in local and international journals. She is listed as a Top 10 contributor for research in Islamic finance in the Scopus database. Industry-wise, she is actively involved as she is chair and member of the Shari'ah Committee and boards of directors of Islamic financial institutions locally and internationally. Her works and contribution to Islamic finance were internationally recognized by the government of Maldives when she was awarded the National Recognition for Outstanding Contribution of Females to Develop and Sustain Islamic Finance Industry in Maldives in 2018. She has been listed among the Top Women in Islamic Finance since 2013, and was listed as the Top 50 Most Influential Women in Islamic Finance 2018; the Top 10 Most Influential Women in Islamic Business and Finance in 2019, 2020, 2021 consecutively; and as Women Influencer 2022 by Cambridge IFA.

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Recovery after a Global Health Crisis (2021, IGI Global), and *Financial Crises: Challenges and Solutions* (2023, Intech Open, UK). His co-authored paper (with Anwar Hasan) on Bitcoin currency was awarded The Highly Commended Paper in the 2020 Emerald Literati Awards. Razali is currently the Advisory Editorial Board Member of *The Capital Market Review* (Malaysia Finance Association), and of the *Journal of Open Innovation: Technology, Market, and Complexity* (Elsevier).

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Hjh Akhtarun Naba' Billah is currently pursuing with her LLB (Hons) at the Ahmad Ibrahim Kulliyyah of Laws (AIKOL), International Islamic University Malaysia (IIUM). She has continuously been honored with the dean's list both at the Foundation (Law) as well as at the tertiary level (LLB Hons). She also holds the position of vice president of the English Debating Club, IIUM. Prior to this, she was head of the English Motivational Committee at the MRSM, Kuala Klawang, Malaysia. She had also been the captain of the netball team at the district level of Kuala Klawang, Negri Sembilan. She is a member of the MRSM alumni. She has also been on the dean's list both in Foundation (Law) studies as well as in her tertiary education (LLB Hons). Her research and publication entitled "Bond Market: How Does Shari'ah Ruling Matter?" was published in the *Journal of Islamic Banking and Finance*, Vol. 40, April–June 2023, No. 2. Pp. 11–22. She is also on the editorial team of a forthcoming book with scientific research entitled: *Islamic Green Finance: A Research Companion*, to be published by Routledge, Taylor and Francis Group, UK.

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Introduction

Green finance is an essential topic in an era marked by escalating environmental challenges where the emergence of Islamic green finance has become a hope, offering financial innovation solutions geared towards the UN Sustainable Development Goals. This novel approach to finance seeks to address the urgent threats posed by climate change and foster socio-economic growth and development that is inclusive and environmentally sustainable. In recent years, academic circles have begun to pay attention to the differential influence of green finance on the sustainability agenda. Moreover, to investigate the impact of Islamic green finance in achieving the Maqasid al-Shari'ah, Islamic green finance encompasses various financial services and products to support projects and initiatives with positive environmental impacts. By channeling capital towards such projects, Islamic green finance plays a pivotal role in mitigating the effects of climate change and advancing global sustainability. This highlights the nexus between Islamic finance and green finance, emphasizing the fundamental principles of risk sharing and sustainability. Hence, Islamic green financing is a necessary approach to address climate change. These approaches include investments in renewable energy, energy efficiency, sustainable agriculture and conservation efforts.

From the Islamic perspective, financing activities and ethical investments prohibit activities harmful to society and the environment. This ethical framework ensures financial activities comply with Shari'ah and contribute positively to the environment. Additionally, central to Islamic green finance is its alignment with the Maqasid al-Shari'ah, the objectives of Shari'ah that seek to preserve religion, life, intellect, lineage and wealth. The Maqasid al-Shari'ah, the foundation of Islamic finance, shares the common principles and values on the preservation of both society and the environment. By focusing on environmental preservation and socio-economic welfare, Islamic green finance directly contributes to these objectives, demonstrating how ethical financial practices can embody the holistic vision of Shari'ah for a balanced and harmonious world. Profits may no longer be the sole objective, but more attention should be given to the long-term sustainability impact. Hence, Islamic green finance requires a robust ecosystem, prudent standards and guidelines as critical enablers to grow faster. Continuous collaboration with all

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stakeholders is needed to spur research and innovation and capitalize on global Islamic green finance and global investment growth.

In conclusion, Islamic green finance is a testament to the power of integrating Islamic financial principles with environmental sustainability efforts. It calls upon academics, industry practitioners and policymakers to recognize the vital role of Islamic finance in achieving a sustainable future. As we navigate the challenges of the twenty-first century, Islamic green finance offers a blueprint for a financial system that is not only economically viable but also ethically and environmentally sound, charting a course towards a more sustainable and equitable world. Indeed, this book covers six essential parts of Islamic green finance, further explained by 20 comprehensive chapters that will be a research companion for each reader.

Part I

Emergence of Islamic green finance

1 Green finance and its Maqasid al-Shari'ah

Abdulmajid Hassan Obaid,
Saheed Abdullahi Busari and
Deden Misbahudin Muayyad

Introduction

The resurgence of green finance in the contemporary economic environment involves financial mechanisms that are designed to support environmentally sustainable projects and initiatives. It encompasses various instruments, such as green bonds and loans, directing funds towards activities that promote ecological conservation and climate mitigation. This approach reflects a global shift towards responsible and ethical financial practices, where considerations extend beyond economic returns to encompass positive environmental and social impacts (Liu & Wu, 2023; Khan, 2022).

Green finance, according to the Organization for Economic Cooperation and Development (OECD), is described as financial activities geared towards "achieving economic growth while reducing pollution and greenhouse gas emissions, minimizing waste, and improving the efficiency of the use of natural resources". Over the past ten years, the global market for green finance has experienced rapid expansion. This growth is evident in the creation of financial instruments such as green-rated bonds, Green Sukuk, green loans, green investment funds, and green insurance (OECD, 2023). Notably, the issuance of Green Sukuk has become a recent addition to this landscape. While the inception of green bonds dates back to 2008, the market has undergone substantial evolution. It now plays a crucial role in mobilizing funds for the 17 UN Sustainable Development Goals (SDGs) through the introduction of innovative structures, taxonomies, and governance frameworks (Liu & Lai, 2021). In addition, the consequences of the G-20 meeting in Chengdu, China, in July 2016 marked a transformative moment in global finance. However, a study by Noh (2022) posits that the alignment of economic sustainability with Maqasid al-Shari'ah is deeply rooted in *hifz al-mal*, with the effectiveness of Islamic social finance like Zakat and Waqf, in creating sustainable practices among industrial players.

Against this background, this chapter contributes to discussions on financial sustainability by demonstrating the alignment of green financing with Islamic principles, advocating a holistic approach that integrates ethical financial practices with the preservation of core human values. The quest for a Maqasid al-Shari'ah-based sustainable green finance model stems from the need to align financial

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practices with Islamic values and ethical principles. This pursuit is driven by a desire to integrate Islamic principles into finance, ensuring investments are both ethical and environmentally sustainable. Additionally, the model responds to global demands for financially profitable yet socially responsible solutions, contributing to the development of a financial paradigm rooted in Islamic values and sustainability.

Discussion: Islamic perspectives on sustainable development

Islamic teachings indeed emphasize the importance of achieving a balance among environmental, economic and social dimensions through the philosophy of sustainable development. There are several examples and principles from the Qur'an and Sunnah that support this concept.

Environmental stewardship

- Qur'anic Verse (Surah Ar-Rum 30:41): "*Corruption has appeared throughout the land and sea by [reason of] what the hands of people have earned so He may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]*".
- Hadith: The Prophet (saw) emphasized cleanliness and environmental preservation; teaching that harming the environment is prohibited. For instance, he said, "*Do not cause harm or return harm*" (Ibn Majah).

Economic balance and social welfare

- Qur'anic Verse (Surah Al-Baqarah 2:219): "*They ask you about wine and gambling. Say, 'In them is great sin and [yet, some] benefit for people. But their sin is greater than their benefit"*".
- Hadith: The concept of Zakat (obligatory charity) in Islam, which is one of the five pillars, serves the purpose of economic balance and social welfare. It is meant to ensure wealth distribution among the community and support those in need.

Preserving resources for future generations

- Qur'anic Verse (Surah Al-A'raf 7:31): "*O children of Adam, take your adornment at every mosque, and eat and drink, but be not excessive. Indeed, He likes not those who commit excess*".
- Hadith: The Prophet (PBUH) warned against wastefulness in all forms. He said, "*The son of Adam has no better right than that he would have a house wherein he may live, a piece of clothing whereby he may hide his nakedness, a piece of bread, and some water*" (Tirmidhi).

Achieving economic stability and sustenance

- Qur'anic Verse (Surah Al-Qasas, 28:77): "*But seek, with the (wealth) Which God has bestowed on thee, The Home of the Hereafter, Nor forget thy portion in this World: but do thou good, As God has been good To thee, and seek not (Occasions for) mischief in the land: For God loves not those Who do mischief*". The Qur'an emphasizes prudent investment and righteous deeds, gives encouragement to enjoy worldly pleasures in moderation, and makes exhortations towards kindness, charity, and helping others. From an economic aspect, the lessons learned are encouragement for diligent work without causing harm and wise investment of wealth and productive work, ensuring enjoyment in life and balanced consumption, and promoting generosity and community improvement. Those aspects related to sustainability are attaining profit and economic growth, preserving resources and the environment, and ensuring social sustainability and cohesion.
- Hadith: The Prophet (saw) emphasized encouragement for diligent, purposeful work; wise utilization of resources; and continuous righteous work, ensuring moderation in consumption and lawful enjoyment, promoting kindness, generosity, and community well-being. Apart from that, from the aspect of sustainability, the Prophet (PBUH) also emphasized achieving economic profits and growth, preserving resources and environmental balance, ensuring sustainability, and supporting social cohesion.

These examples from both the Qur'an and Hadith reflect the Islamic emphasis on moderation, conservation and responsibility towards the environment, economy and social welfare, which are foundational to the concept of sustainable development in Islam.

From an Islamic perspective, economic sustainability can be defined in the same way as the conventional meaning. The difference between the conventional and the Islamic perspective of economic sustainability concerns spiritual needs (Ibrahim et al., 2010). Basically, the Islamic principle that can help in achieving sustainable economic development is the Maqasid al-Shari'ah itself. The protection of *ad din*, life, dignity, *aql*, and wealth are the elements in the Maqasid al-Shari'ah that lead to benefit to and the welfare of Muslims (Noh, 2022).

Islamic scholars are of the opinion that most SDGs are in line with the Maqasid al-Shari'ah and are of great importance as their main objectives are to achieve various social and economic rights and improve human life in society (Noh, 2022). Islamic social institutions such as Zakat and Waqf have great potential to promote sustainable economic development that enables many people to live spiritually, morally and physically according to the teachings of Islam.

In the Zakat institution, both the Zakat payer and the Zakat recipient belong to two different income categories. The payer of Zakat is a non-poor person who has excess wealth, while the recipient of Zakat is usually a poor person who does not

have excess wealth. Thus, there is a difference between the payer and the recipient, and it helps to achieve targeted income and wealth transfers to people who are usually poor (Shaikh & Ismail, 2017). At the same time, Waqf plays an important role in the social institution of the Islamic framework. Waqf is an act by which the owner of movable or immovable property, such as money, furniture and cash, donates it for the benefit of society. Beneficiaries enjoy their usufruct and income forever. Waqf can be used to build public institutions such as mosques, hospitals, schools and orphanages (Ainol-Basirah & Siti-Nabiha, 2023).

Evolution of green financing

The idea of green financing has undergone a significant evolution over the years and has become a focal point in global financial policies and international forums. Here is a phased and detailed breakdown of its development.

Emphasis on environmental necessity

During the G-20 meeting of finance ministers and central bank governors in Chengdu, China, on 23–24 July 2016, there was a recognition of the urgency to address environmental challenges. They agreed that sustainable and environmentally friendly financing is a breakthrough in the financial sector.

International commitments and agreements

Following the Chengdu meeting, subsequent international events like the Paris Agreement and the SDGs set by the United Nations further highlighted the importance of green financing. These global agreements aimed to tackle climate change and promote sustainable development, emphasizing the role of financial systems in achieving the following objectives.

Rapid growth and adoption

- Since this international agreement, there has been a rapid increase in the application of environmentally friendly financing principles. More and more countries, financial institutions, and companies are starting to integrate environmental considerations into their financial decisions, offering green bonds, loans, and investments dedicated to environmentally friendly projects (World Bank, 2019).

Standardization and regulations

- To ensure the credibility and transparency of green financing, efforts were made to standardize criteria and create regulations. Initiatives like the Green Bond Principles and other sustainability standards emerged to guide and regulate the issuance and management of green financial instruments (Liu & Wu, 2023).

Evolution of investors' interest

- Investors started recognizing the long-term value of environmentally sustainable projects, leading to increased interest and demand for green investments. This shift in investors' sentiment influenced financial markets, encouraging a broader array of green financial products (Cole et al., 2017).

Ongoing developments and future prospects

- Green financing continues to evolve with ongoing advancements in technology, policy changes, and growing public awareness. Prospects involve further innovation, increased collaboration among nations, and the potential for green financing to play an even more significant role in global financial systems (Zheng et al., 2023).

This phased evolution showcases the journey of green financing from a highlighted topic in international meetings to an integrated and evolving aspect of global finance, fostering sustainability and environmental responsibility.

Shari'ah frameworks for green finance

The Shari'ah framework for green finance aligns profoundly with the core principles and objectives of Shari'ah in fostering sustainable development, renewal, and the acceptance of diverse civilizations. Green finance, designed to support ecologically friendly and socially responsible initiatives, resonates with the higher objectives of Shari'ah, that is, the Maqasid al-Shari'ah. The principles of justice, sustainability, and community well-being are essential in both the Shari'ah framework and green finance practices towards a sustainable financial system (Khan et al., 2022). In the context of green finance, the emphasis on sustainability aligns with the Maqasid al-Shari'ah, particularly in preserving the environment, preventing harm (*hifz al-maslaha*), and ensuring the continuity of resources for future generations (*hifz al-nasl*) (Iskandar, 2019).

Green finance focuses on renewable and innovative initiatives that are in line with Islamic principles of renewal. In Islam, renewal is not only spiritual, but also extends to social, economic, and environmental aspects. This includes stimulating initiatives that rejuvenate resources and support sustainable practices (Aliyu, 2017).

Islamic teachings emphasize the acceptance and respect of diverse civilizations. The principles of green finance, by fostering eco-friendly practices and considering social impacts, resonate with the Islamic value of accepting and collaborating with various cultures and societies (Ta'awun and Takaful). The convergence of green finance and the Shari'ah framework is not only in compliance with Islamic law but also demonstrates a commitment to the broader objectives of Shari'ah, promoting sustainability and renewal and embracing the richness of diverse civilizations. Several experts have discussed this as an interesting model, such as the following example:

Al-Jayyousi's model

Al-Jayyousi's framework (Al-Jayyousi, 2016) integrates justice, excellence, social capital, and the limitation of mischief. This model correlates with the Maqasid al-Shari'ah, particularly:

- Justice (Adl): The concept of justice is a fundamental objective in Shari'ah, ensuring fairness and equity for all. Al-Jayyousi's inclusion of justice in the framework aligns with this Islamic objective. Environmental justice, fair economic practices, and social equity are crucial components of sustainable development.
- Excellence (Ihsan): This refers to the pursuit of excellence in all aspects of life. Al-Jayyousi's emphasis on excellence in sustainable development resonates with the Islamic principle of perfecting one's actions and endeavours for the betterment of society and the environment.
- Social Capital (Arham): In Islamic teachings, fostering strong social connections and community cohesion is essential. Al-Jayyousi's inclusion of social capital aligns with the Maqasid al-Shari'ah by emphasizing the importance of social relationships and community cooperation for sustainable development.
- Limitation of Mischief (Fasad): Shari'ah aims to prevent corruption and harm. Al-Jayyousi's consideration of the limitation of mischief aligns with the Islamic principle of preventing harm to society and the environment, contributing to sustainable and balanced development.

Dariah, Salleh, and Hakimi Shafiai's approach

Dariah, Salleh, and Hakimi Shafiai's approach (Dariah et al., 2016) emphasizes aligning SDGs with Islamic principles through spiritual development to create an ideal human being tied to the Maqasid al-Shari'ah:

- Spiritual Development: This relates to the preservation of faith, self-purification, and spiritual growth. The emphasis on spiritual development aligns with the Maqasid al-Shari'ah's preservation of faith (Hifz al-Iman), aiming to nurture a righteous, ethical, and morally sound individual.
- Shaping Cultural Attitudes and Behaviours: The Maqasid al-Shari'ah includes the preservation of lineage and intellect (Hifz al-Nasl and Hifz al-Aql). Shaping cultural attitudes and behaviours influences intellect and lineage by promoting an ethically conscious society, contributing positively to sustainable development.

Both Al-Jayyousi's model and the approach suggested by Dariah, Salleh, and Hakimi Shafiai resonate with the Maqasid al-Shari'ah by encompassing justice, excellence, social capital, spiritual development and the prevention of harm, aligning with the broader objectives of Islamic law towards achieving sustainable development. To

realize the Maqasid, Islam emphasizes the significance of bettering one's living conditions, which includes education, improved healthcare for the masses, and environmental preservation. The goal of ensuring the Maqasid is to ensure that all stakeholders profit while no one is harmed (Noh, 2022).

Renewable energy and environment in the teaching of Islam

The Qur'an, the holy book of Islam, offers insights that hint at renewable energy and environmental stewardship, reflecting a deep-seated environmental philosophy within the Islamic context.

The Qur'an contains references that allude to renewable energy sources. For instance, the sun and the wind are mentioned as forces directed by the divine will in various verses. These natural phenomena are perpetual sources of energy and can be seen as indicative of renewable energy concepts (Taqi, 2020).

- Solar Energy: Qur'anic verses mention the sun and its path, signifying its role as a powerful, consistent and renewable energy source. For instance, in Surah Ya-Sin (36:38), it is described that "*the sun runs [on course] toward its stopping point*". This recognition of the sun's movement may be interpreted in terms of its consistent energy output.
- Wind Energy: The Qur'an also refers to the wind in Surah Ar-Rum (30:48): "*And it is He who sends the winds as good tidings before His mercy until, when they have carried heavy rain clouds, We drive them to a dead land and make rain fall therein and bring forth thereby [some] of all the fruits*".

Renowned scholars like Seyyed Hossein Nasr have emphasized that the Qur'an's message is not confined solely to human beings but extends to the cosmic realm. This approach indicates that the Qur'an incorporates a holistic environmental philosophy within the Islamic worldview (Nasr, 2023).

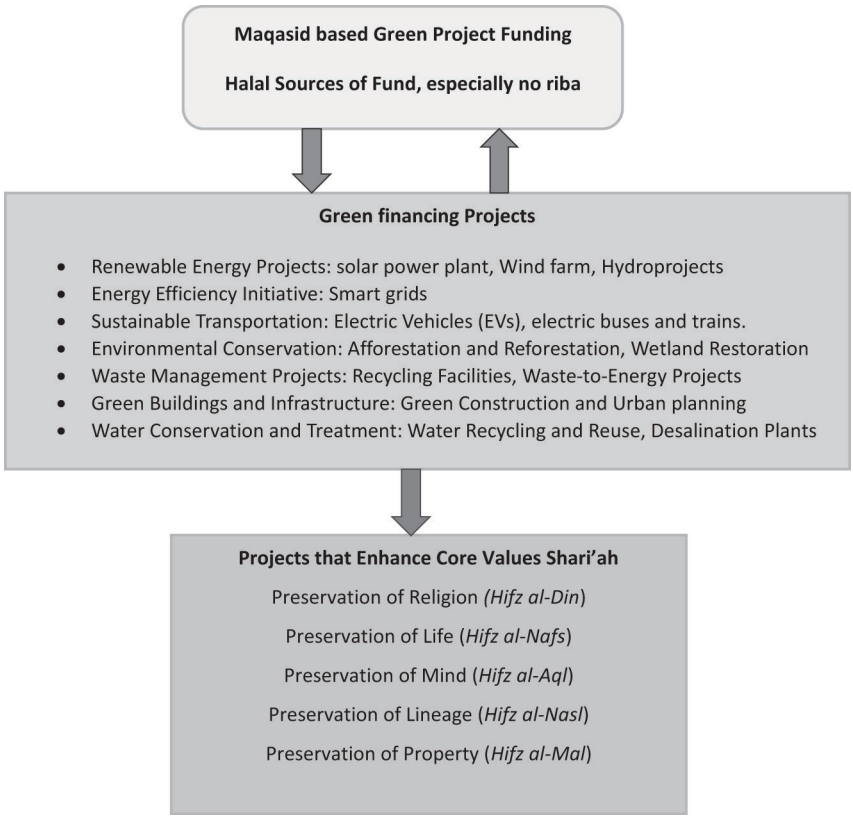
The holistic nature of the Qur'an's message, which acknowledges the interconnectedness of the universe, reflects an environmental philosophy that extends beyond human affairs. The Qur'an's subtle allusions to natural elements and their sustained functioning over time hint at the importance of sustainability and the responsible utilization of resources, aligning with contemporary concepts of renewable and sustainable energy.

The recognition of these elements within the Qur'an underscores the deeply embedded environmental consciousness and stewardship principles within Islamic teachings, providing guidance and insight that resonate with modern environmental concerns, including renewable energy practices.

Research findings

A Maqasid al-Shari'ah-based sustainable green finance model would integrate Islamic ethical principles with the objectives of Shari'ah (Maqasid al-Shari'ah) to

guide financial practices. Integrating these components into a Maqasid Shari'ah-based sustainable green finance model would align financial practices with Islamic values, promoting both ethical and environmentally responsible investments. Here are the key components for such a model:



Source: Authors compilation

Illustration of the model

Foundation principles: Maqasid al-Shari'ah

- Preservation of Religion (Hifz al-Din): Ensure financial practices align with Islamic values and ethical standards.
- Preservation of Life (Hifz al-Nafs): Support projects that contribute to environmental sustainability, health, and well-being.
- Preservation of Mind (Hifz al-Aql): Encourage investments in education, research, and technologies that foster sustainable development.

- Preservation of Lineage (Hifz al-Nasl): Promote projects that contribute positively to future generations and address demographic concerns.
- Preservation of Property (Hifz al-Mal): Invest in ventures that are economically viable and ethically sound.

Ethical investment instruments

- Islamic Green Bonds: Channel funds into environmentally sustainable projects, ensuring compliance with Shari'ah principles.
- Sustainable Islamic Investment Funds: Pool resources from Shari'ah-compliant investors for diversified and ethical green investments.

Shari'ah-compliant governance framework

- Shari'ah Supervisory Board: Establish a board of Islamic scholars to ensure financial products and investments comply with Shari'ah principles.
- Transparent Governance Structures: Maintain transparency and accountability in all financial transactions.

Social responsibility and Zakat distribution

- Zakat Allocation: Integrate the distribution of Zakat (charitable donations) to support sustainable and socially responsible projects.
- Community Development Initiatives: Invest in projects that directly benefit marginalized communities and promote social welfare.

Environmental impact assessment

- Shari'ah-Compliant ESG Criteria: Develop environmental, social, and governance (ESG) criteria consistent with Shari'ah principles for evaluating the environmental impact of projects.
- Halal and Tayyib Certification: Ensure products and practices comply with Halal (permissible) and Tayyib (pure) standards.

Educational initiatives

- Islamic Finance Education: Promote awareness and understanding of Islamic finance principles among stakeholders.
- Environmental Ethics Education: Educate stakeholders on the Islamic perspective on environmental ethics.

Continuous Shari'ah compliance audits

- Regular Audits: Conduct periodic audits by Shari'ah scholars to ensure ongoing compliance with Islamic principles.

- Adaptability: Remain flexible and adaptable to changes in financial markets and ethical standards.

Philanthropy and social impact

- Waqf for Sustainability: Establish Waqf (endowment) funds dedicated to sustainable projects and initiatives.
- Sadaqah (Charitable Giving): Encourage charitable giving to support environmental and social causes.

Conclusion

This chapter explores environmentally friendly financing from an Islamic perspective, emphasizing alignment with the primary goal of providing benefits to humanity. This research uses a library research approach, which utilizes the Maqasid al-Shari'ah as an analytical tool to understand the relationship between Islamic principles and sustainable financial practices. The conclusion suggests that environmentally friendly financing, when viewed through the lens of the Maqasid al-Shari'ah, inherently seeks to preserve and uphold five basic principles, namely religion, reason, soul, lineage, and property.

Future research endeavours could delve into the practical application and outcomes of green financing within the framework of the Maqasid al-Shari'ah. Such studies could investigate the extent to which green financing contributes to safeguarding religion, soul, reason, lineage, and property, especially in Muslim countries, while also exploring challenges and opportunities associated with advancing sustainable and ethical financial practices.

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2 Islamic banking towards sustainable green finance and corporate social responsibility

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Introduction

Islamic green finance is an emerging field within the broader domain of Islamic finance that focuses on promoting sustainable and environmentally friendly economic activities in accordance with Islamic principles. It combines the principles of Islamic finance, which are rooted in ethical and socially responsible practices, with the goals of environmental sustainability and conservation. This innovative approach to finance seeks to address the pressing global challenges of climate change, resource depletion, and environmental deprivation.

Meanwhile, Islamic banking has gained significant attention in recent years due to its unique principles and ethical approach to finance sectors. The general belief is that Islamic banks operate in compliance with Shari'ah principles, which prohibit the charging or paying of interest, and promote risk-sharing and sustainable, socially responsible investments. Instead of interest, Islamic banks offer profit-sharing arrangements and provide financing for economic activities that comply with Shari'ah principles (Ahmed, 2019; Abasimel, 2022). In line with the global push towards sustainability, Islamic banks have recognized the importance of integrating green finance and social responsibility into their operations (Platonova et al., 2018; Urban & Wójcik, 2019).

In recent years, Islamic banks have embraced the concept of sustainable finance, recognizing the importance of incorporating environmental, social, and governance (ESG) factors into their operations. This shift towards sustainable finance is driven by the growing global concern for environmental protection, social responsibility, and the need for long-term economic stability (Urban & Wójcik, 2019; Dikau & Volz, 2021; Umar et al., 2023). Islamic banks are uniquely positioned to contribute to sustainability due to their ethical framework and focus on fostering economic development while maintaining social and environmental harmony. Furthermore, the global financial sector has witnessed an imperative shift towards sustainable practices. At the heart of this transition lies the concept of "green finance". Green finance encapsulates financial products, services, and investments

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dedicated to strengthening environmental sustainability and operating economies towards a lower carbon footprint (Sharmeen et al., 2019). While this paradigm shift is evident across various financial institutions, it takes on a distinctive dimension within the realm of Islamic banking. Within this framework, green finance is not only a testament to environmental commitment but also an alignment with the core Shari'ah principles. Islamic financial institutions, thus, become catalysts for financing ventures like renewable energy, energy-efficient infrastructure, and sustainable agriculture. These endeavours not only resonate with the tenets of Islamic finance but also mark a stride towards a globally sustainable and greener future (Robins et al., 2019). Therefore, based on the discussion above, this chapter explores the value and financial performances of Islamic banks in the context of green finance and social responsibility towards sustainability. By examining the principles, practices, and impact of sustainable green finance in Islamic banking, this chapter aims to shed light on the role of Islamic banks in promoting sustainable green development and their potential for long-term financial success.

To further understand the depth and trajectory of discourse on green finance within the Islamic banking sector, a systematic approach is requisite. Employing bibliometric analysis offers a robust method to read the patterns, trends, and key influencers shaping this topic. By mapping out the academic landscape, a bibliometric study can identify research gaps, pinpoint collaborative networks, and underscore the most impactful publications in the field. Such an analytical approach not only offers a comprehensive view of the current state of research but also illuminates pathways for future inquiries. Through this study, utilizing bibliometric tools, the aim is to provide a holistic overview of green finance's evolution in Islamic banking, setting a foundation for subsequent research and practical implications. Therefore, this chapter aims to meet the following objectives:

To evaluate the evolution of green finance research within the Islamic banking discipline.

> This objective aims to utilize bibliometric tools to identify key trends, chronologically categorize significant publications, and determine influential themes and subthemes. It seeks to provide a temporal overview of how discourse on green finance within Islamic banking has grown and changed over time.

To identify and analyse the core networks and contributors in the field.

These objectives are directed towards understanding the collaborative dynamics within the research community. Using bibliometric analysis, it seeks to pinpoint the most influential authors, institutions, and journals driving the discourse on green finance in Islamic banking. Furthermore, it intends to elucidate the nature of collaborations and the cross-pollination of ideas across different research entities. These objectives provide a foundation to explore the bibliometric landscape of green finance within the domain of Islamic banking, giving both a historical and a network-centric perspective.

Literature review

Islamic green and sustainable finance

The global focus on sustainable development and combating climate change has led to the emergence of green and sustainable finance as a crucial aspect of the financial industry. Within this evolving landscape, Islamic banking and finance present a unique perspective, aligning with the principles of environmental and social stewardship. Green and sustainable finance is all about using money to support projects and businesses that are good for the environment and society (Musari, 2022). Instead of investing in companies that harm the planet, green and sustainable finance encourages us to choose investments that help make the world a greener place. This means supporting initiatives like renewable energy and projects that have a positive impact on our communities, as has been addressed by many researchers, such as (Rabbani et al., 2021; Azad et al., 2022; Akomea-Frimpong et al., 2022). In addition, green and sustainable finance is important for a few reasons as it has been practised in three areas. First, it helps fight climate change by supporting projects that are good for the environment. Second, it promotes social responsibility by making sure our investments have a positive impact on our communities. Lastly, it encourages investors to invest in sustainable investments that are profitable in the long run while also helping to make the planet healthier (Epstein, 2018; Yeow & Ng, 2021; Vargas, 2023).

Islamic banking and finance follow the rules of Shari'ah. These rules focus on fairness, transparency, and ethical behaviour. In Islamic finance, charging interest, making speculative investments, or investing in activities that are not allowed, like gambling or alcohol, are prohibited. Instead, Islamic finance encourages us to be responsible and ethical with our money. Additionally, Islamic finance promotes profit-sharing agreements, leasing arrangements, and asset-based financing. These alternatives ensure that money is made through real economic activities, not just by taking risks. In other words, it is all about using money in a responsible and productive way (Khan & Mohomed, 2017; Visser, 2019).

In this regard, a number of other studies about green finance in the banking sector were looked at. The various literature aims at examining what kinds of products influenced green finance (such as Akomea-Frimpong et al., 2022). They adopted a content analysis approach to study 46 articles that discussed green finance. Banks have many different ways they can help with green finance. They can offer products like green investments, green insurance, and even green credit. They can also create special bonds called green infrastructural bonds (Filipiak, 2022). These are the various initiatives that banks can use to support projects which are good for the environment. The study also found some important aspects on how banks make decisions about green finance, and these include environmental and climate change policies, interest rates, and even religion can play a role (Ayub, 2021). In addition, banks also incorporate risk, social inclusion, and social justice into their green finance policies. Budiharjo et al. (2023) and Hamidah and Dewantara (2023)

reported that Islamic banks focused on balancing three important areas in their operations, and these include, the economy, society, and the environment.

Methodology of the study

This study adopts a systematic approach to extract, analyse, and interpret bibliometric data on the financial performances of Islamic banks, with particular emphasis on green finance and social responsibility. The methodological framework consists of comprehensive data collection, preprocessing, analysis, and visualization procedures. The secondary data sources include the academic database Scopus, to obtain scholarly articles and conference papers. Keyword-based search queries combining terms such as "Islamic Banks", "Green Finance", "Social Responsibility", "Sustainability", and "Financial Performance" are utilized. Furthermore, articles focusing on the financial performance of Islamic banks related to green finance and social responsibility are included. Non-English publications are excluded from this study.

Relevant data including title, authors, publication year, journal, keywords, citations, and abstracts is extracted from the selected sources. The data set is cleaned by removing duplicates, correcting inaccuracies, and filling in missing values. Furthermore, the descriptive analysis calculates frequencies, percentages, and other summary statistics for the extracted bibliometric data, such as the distribution of publications over time and the most cited papers. Keyword Analysis extracts and analyses the most frequently occurring keywords to identify the prevailing themes and trends in the literature. Additionally, the Trend Graphs are used to generate graphs representing the trends over time in the number of publications, citations, and prevalent themes. To ensure the validity and reliability of the bibliometric analysis, the study adheres to rigorous data extraction and analysis processes, confirms the accuracy of the extracted data, and validates the findings through cross-verification from multiple sources. In addition, the study strictly adheres to ethical guidelines, giving proper credit to original sources, ensuring data privacy and transparency, and avoiding any form of plagiarism or data manipulation. Lastly, this study may face limitations regarding the availability and accessibility of the publications. The language restriction to English may also overlook relevant studies published in other languages.

Data analysis

Relevant sources

The analysis of the "Most Relevant Sources" reveals the journals or publications that are most frequently cited or referenced in the context of the research topic. Following is a summary of the findings based on the provided data. The list of "Most Relevant Sources" is composed of various journals and publications along with their respective citation frequencies:

- "Sustainability (Switzerland)" is the most relevant source with 16 citations, indicating that it is a central publication in the field of sustainability research.
- "Environmental Science and Pollution Research" is also highly cited with seven mentions, suggesting its significance in the environmental science domain.
- "Environment, Development and Sustainability" is another prominent source with five citations, highlighting its relevance to research related to environment and sustainability.
- Several other sources, such as "Business Strategy and Development", "Business Strategy and the Environment", "Corporate Social Responsibility and Environmental Management", and "Environmental Risk Modelling in Banking", each have two citations, indicating their importance in the research area.
- Some other sources have one citation each, demonstrating their role in contributing to the overall understanding of the topic.

Source of production over time

The analysis of the "Source of Production over Time" provides insight into the evolution of research output across different journals or sources in the specified years. In 2019, the journal "Sustainability (Switzerland)" had one publication, while the other journals had no recorded publications. However, in 2020, "Sustainability (Switzerland)" increased its publications to two, but the other journals still had no publications. Furthermore, in 2021, there was a notable increase in research output across several journals. "Sustainability (Switzerland)" had four publications, "Environmental Science and Pollution Research" had one, "Environment, Development and Sustainability" had one, "Business Strategy and the Environment" had one, and "Corporate Social Responsibility and Environmental Management" had one. Similarly, the year 2022 saw a further increase in research output across these journals. "Sustainability (Switzerland)" had seven publications, "Environmental Science and Pollution Research" had two, "Environment, Development and Sustainability" had one, "Business Strategy and Development" had one, "Business Strategy and the Environment" had two, and "Economic Research-Ekonomska Istrazivanja" had one, among others. The data for 2023 indicate a significant surge in research output across all journals, with "Sustainability (Switzerland)" leading with 16 publications. "Environmental Science and Pollution Research" had seven publications, "Environment, Development and Sustainability" had five, and other journals also contributed substantially to the research landscape.

Overall, the analysis demonstrates considerable growth in research production over the years, with "Sustainability (Switzerland)" and other journals increasingly contributing to the body of literature. This suggests a growing interest and emphasis on the research topic, with a substantial increase in research activity in recent years.

Word cloud of the topic

The "word cloud" analysis visually illustrates the most frequently occurring terms and keywords in research literature related to a specified topic. The words

"Sustainability" and "Sustainable Development" are the most prevalent terms, each mentioned 14 times, highlighting their central role in the literature. However, "Banking" is a significant term with 11 mentions, indicating a strong link between sustainability and the banking sector, reflecting the function of Islamic banks as intermediaries and sustainability-related financing. In addition, "Corporate Social Responsibility" is another essential concept, with eight mentions, emphasizing its relevance within the context of sustainability. In this regard, "Green Economy" and "Sustainable Development Goal" are each mentioned seven times, showcasing the emphasis on environmentally friendly economic growth and global development objectives. In conclusion, this word cloud analysis offers a visual representation of the key themes, concepts, and areas of focus within the extensive field of sustainability research, underscoring its multidisciplinary and comprehensive nature.

Trend topics

The analysis of "Trend Topics" provides insight into the evolution of specific keywords or terms within the research literature over time. The trend of "Sustainability" and "Sustainable Development" are consistently prominent keywords throughout the analysed period, each with 14 mentions. These terms have maintained their importance and relevance, indicating their enduring significance in the research landscape. Furthermore, "Banking" is another keyword with substantial relevance, featuring 11 mentions. Its presence is consistent, with a peak in 2021, signifying a continuous interest in the relationship between sustainability and the banking sector. On the other hand, "Corporate Social Responsibility" is an essential concept in the research, with eight mentions. It remains consistent in terms of frequency across the years, emphasizing the ongoing focus on corporate social responsibility within the context of sustainability. "Economic Development" also appears five times, indicating its relevance, particularly in the year 2022, signifying a period of heightened research interest in the relationship between economic development and sustainability. The data suggest that while certain keywords have maintained their significance throughout the analysed period, others have seen fluctuations in frequency, reflecting the evolving research interests and priorities in the field of sustainability. Overall, this analysis helps identify the prominent trends and focus areas within the research literature related to sustainability.

Conclusion

The analyses conducted on the topic of "Financial Performances of Islamic Banks based on Green Finance and Social Responsibility towards Sustainability" reveal several key findings. Research in this area has shown significant growth in recent years, indicating a rising interest in the subject. Prominent sources, as well as central themes and keywords, have been identified through bibliometric and word cloud analyses. Additionally, specific trends, such as the increasing relevance of "Economic Development", has emerged. In summary, these findings reflect a dynamic and expanding research landscape, with a growing emphasis on

sustainability-related topics. Highly cited sources underscore the significance and breadth of this field, making it a vital area of study in contemporary academia.

Therefore, based on the analyses conducted and the current state of research on the topic of "Financial Performances of Islamic Banks Based on Green Finance and Social Responsibility towards Sustainability," some recommendations are put forward for future studies. In-Depth Case Studies: In-depth case studies of specific Islamic banks should be conducted order to explore their unique approaches to green finance and social responsibility. The financial performances and sustainability practices of these banks should be analysed to gain insight into best practices and challenges. Longitudinal Studies: Long-term studies that track the financial performances of Islamic banks over an extended period can provide a more comprehensive understanding of how sustainability initiatives impact their economic stability.

Cross-Country Comparative Analysis: The financial performances and sustainability practices of Islamic banks in different countries or regions should be compared. The impact of regulatory frameworks and cultural factors on their approaches to green finance and social responsibility should be investigated. Customer Perception and Behaviour: The attitudes and behaviour of customers and investors regarding Islamic banks that prioritize sustainability should be explored. How these perceptions influence the banks' financial performances should be explored. These recommendations aim to guide future research efforts in further understanding the intricate relationship between Islamic banking, green finance, social responsibility, and sustainability. Addressing these areas can contribute to the advancement of knowledge and the development of strategies for a more sustainable financial sector.

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3 Contributions of Islamic green finance to SDGs

Normarianie Razali and Rusni Hassan

Introduction

Despite coming from distinct societal and legal settings, the UN Sustainable Development Goals (SDGs) and the Maqasid al-Shari'ah share similar concepts and goals that can be considered as complementing one another. These similar concepts and goals are the integration of ethical values, the promotion of sustainability, and social justice. The principles of Islamic finance, such as the prohibition of usury (Riba), the emphasis on ethical and responsible investment, risk-sharing, the requirement for social justice, and the preservation of the environment, are closely aligned with the values and objectives of the SDGs. As companies work to balance profit and ethical considerations, ethical principles come into play as a critical part in investment decision-making. The Maqasid al-Shari'ah, Islamic green finance, and the SDGs share a similar objective by aligning one's ethical consideration with investment decisions. Islamic green financing can support the achievement of SDGs in many ways, such as by issuances of green or sustainable sukuk that finances infrastructure projects which will have a positive impact on the environment and community, by providing education and health services, and by creating job opportunities for society.

Islamic green finance instruments

There are various Islamic green financial instruments that observe Islamic principles, foster sustainability, and make significant contributions to the SDGs. These instruments enable investments in environmentally and socially responsible projects. Green sukuk integrates Islamic principles with a focus on sustainable development, on addressing climate change, and on developing a green economy. The Islamic Finance Council UK (UKIFC) estimated USD 30 billion to USD 50 billion Green Sukuk will be raised to support the SDGs (ZAWYA, 2022). Sukuk is categorised as Green Sukuk when the utilisation of proceeds is channelled to environment-related and sustainable projects (The World Bank, 2018). The Climate Bonds Initiative defined eligible green projects as entities, activities, and assets that are aligned with the Paris Agreement goal of limiting the rise of global temperature to 1.5 Celsius or less over pre-industrial levels. This sector could relate to the

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energy sector funding solar projects, wind energy, biogas plant, green building, waste management, and green transportation (Climate Bonds Initiative, 2023). The amount of green and sustainability Sukuk global issuance grew from USD 6.1 billion in 2021 to USD 4.4 billion in H1 2022, and is expected to increase in the coming years (Refinitive, 2022). In Malaysia, RM 10.58 (USD 2.26 billion) Green and sustainability Sukuk were issued in 2022, with a cumulative issuance of RM 18.92 billion (USD 4.03 billion) since 2014 (Securities Commission Malaysia, 2022a).

In recent years, sustainable funds have increased in popularity, with investors increasingly opting for funds that prioritize sustainability (Pástor & Vorsatz, 2020). Assets under management (AUM) for sustainable funds reached almost USD 2.8 trillion by the end of 2022, continuing to increase as a percentage of total AUM with a gradual increase from 4% to 7% in the last five years (Morgan Stanley, 2022). Sustainable funds are referred to as funds that evaluate investment or social impact using the environmental, social, and governance (ESG) standards, and the focus is on sustainable themes that seek to have a considerable impact (Morningstar, 2023). The objective of sustainable funds is to offer investors financial rewards while having a positive impact on society and the environment. Green funds and climate funds are among the few funds that are available to sustainable-focused investors.

Takaful is a type of insurance that is a widely available instrument in Islamic finance. According to the Islamic Financial Services Board (IFSB, 2022), the direct contributions from the entire Takaful sector reached 4.8% year-over-year to USD 24.2 billion in 2020 following a considerable fall (−14.8%) in 2019. Takaful is a contribution made by participants by way of mutual cooperation and solidarity. It comes in three different forms: investment, family, and general, and commonly the coverage includes accidents, illness, and death. In the modern world, Takaful coverage has gone beyond the traditional coverage. It is now extended to cover Islamic capital market products, such as Takaful for sovereign sukuk issuance (Alshammari et al., 2023). Additionally, Takaful are also used to provide protection for green products. The market for green Takaful is still relatively new, but it is expanding quickly as more Takaful operators offer green Takaful products to their clients. Green Takaful offers great services that can assist companies and businesses in lowering their environmental impact, risk management, and in achieving their sustainable goals. Green Takaful may include sustainable-related projects such as renewable energy, energy efficiencies, and pollution.

Significant issuances to promote SDGs

The SDGs were unveiled on 25 September 2015 by the United Nations to promote 17 Goals, 169 Targets, and 230 Indicators into action up to 2030 (United Nations, 2023a). The United Nations reported only 15% of SDG progress at the midpoint, while 48% are moderately or severely off track and 37% are stagnant or have regressed (United Nations, 2023b).

The SDG Index (2023) reported that Malaysia had achieved 36.6% of the SDG targets, and this achievement is partly due to the active issuance of green

and social products by the issuers and the active role played by the Malaysian government in supporting the SDGs. The United Nations Environment Programe (2021) estimated around USD 330 billion in funds would be needed to address environmental issues by 2023 and this cost would increase to USD 555 billion by 2050. According to the United Nation Environment Programe (2021), in term of cost, the largest investment cost is needed to address the environmental issue to achieve the SDGs as compared to social, economy, and partnership. To address the environmental need to achieve the SDGs, Malaysia had been an active leader in Green Sukuk issuances integrating Islamic finance principles with SDGs (Keshminder et al., 2022). Green Sukuk plays a big role in addressing climate change. Green Sukuk issuances in Malaysia have been financing various green projects such as solar photovoltaic plant projects, green buildings, and hydropower plants. Notable green/sustainable Sukuk issuances in Malaysia are highlighted in Table 3.1.

Malaysia has witnessed an increased number of social sukuk issuances since the introduction of the Sustainable and Responsible Investment (SRI) Framework in 2014. Like Green Sukuk, social Sukuk focuses on the financing of projects that

Table 3.1 Notable green/sustainable Sukuk in Malaysia

Issuer	*Year*	*Issue size (RM)*	*Utilisation of Proceed*	*Notable issuance*
Tadau Energy Sdn Bhd	2017	250 million	50MWac solar project	First green sukuk in Malaysia
PNB Merdeka Ventures Sdn Berhad	2017	2 billion	Green building	First green sukuk for green building in Malaysia
Pengurusan Air Selangor Sdn Bhd	2021 (first issuance)	2.13 billion (up to April 2023)	Sustainable water supply and water management projects	First sukuk issuance in Malaysia addressing clean and water sanitation
Amanat Lebuhraya Sdn Bhd	2022	5.5 billion	i. renewable energy ii. climate change adaptation (tree plants project) iii. pollution prevention and e-waste control — management iv. climate change adaptation (flood mitigation)	Largest sustainability sukuk issuance in Malaysia

Source: Author's compilation

have a positive green SDGs impact or outcome. In 2019, the Securities Commission Malaysia (SC) issued the SRI Sukuk Framework: An Overview (Securities Commission Malaysia, 2019), whereby the SC aligned the eligible SRI project under the SRI Framework with SDGs, as shown in Table 3.2.

Moreover, SRI Sukuk also covers social aspects such as education, affordable housing, healthcare, and food security. Table 3.3 highlights notable Sukuk issuances in Malaysia.

Table 3.2 Aligning the SRI framework with SDGs

Eligible SRI Projects	*SDGs*
Renewable energy	SDG 3, 7, 8, 9, 11, 12, 13
Energy efficiency	SDG 3, 7, 8, 9, 11, 12, 13
Pollution prevention and control	SDG 3, 11, 12
Environmentally sustainable management of living natural resources and land use	SDG 2, 6, 11, 12, 14, 15
Terrestrial and aquatic biodiversity conservation	SDG 2, 6, 11, 12, 14, 15
Clean transportation	SDG 11
Sustainable water and wastewater management	SDG 6, 11, 12
Climate change adaptation	SDG 1, 2, 13
Eco-efficient and/or circular economy adapted products, production technologies and processes	SDG 8, 11, 12
Green buildings which meet regional, national or internationally recognized standards or certifications	SDG 11

Source: Securities Commission Malaysia (2019)

Table 3.3 Notable social Sukuk in Malaysia

Issuer	*Year*	*Issue size*	*Utilisation of Proceed*	*Notable issuance*
Ihsan Sukuk Berhad	2015	100 million (RM)	Improve accessibility of quality education	World's first ringgit-denominated SRI Sukuk
Cagamas	2020	100 million (RM)	Affordable housing	Malaysia's first ASEAN sustainability SRI Sukuk for affordable housing
Government of Malaysia	2021	800 million (USD)	Eligible social and green projects aligned with SDGs	World's first sovereign US dollar sustainability Sukuk
Agroto Business (M) Sdn Bhd	2021	200 million	Sustainable and modern integrated farm	World's first sustainable agricultural sukuk

Source: Author's compilation

Table 3.4 Notable DFI Sukuk issuances in Malaysia

Issuer	*Year*	*Issue size (RM)*	*Utilisation of Proceed*	*Notable issuance*
Small Medium Enterprise Development Bank Malaysia Berhad	2021	500 million (first issuance)	Funding its working capital requirement and to provide general financing that promote eligible SDGs projects	First DFI sustainable sukuk issuance in Malaysia
Bank Pembangunan Malaysia Berhad	2021	450 million	Funding its working capital	Issuance of sukuk together with Impact Assessment Framework – Measuring Impact on National Development (MIND) that will create 5,185 jobs during and in the post-construction period of green projects.

Source: Author's compilation

In addition to the Sukuk issuances mentioned above that significantly contribute to the promotion of SDGs, development financial institutions (DFIs) in Malaysia also issue Sukuk to support economic development. Table 3.4 highlights novel Sukuk issuances by DFIs in Malaysia.

All the above-mentioned Sukuk issuances are tagged with specific green, social, or economic projects for their Sukuk proceeds. An alternative for an issuer who does not have a project such as those mentione earlier, may be to opt for the issuance of sustainability-linked Sukuk. A sustainability-linked bond/Sukuk does not indicate the purpose of utilisation; instead, it concentrates on the issuer's accomplishments as related to the chosen sustainable key performance indicator (Giráldez & Fontana, 2021). Hence, according to (Razali et al., 2023), sustainability-linked Sukuk provides more flexibility to issuers by allowing them to use the Sukuk proceeds for general purposes and encourage businesses, in high-emitting industries, to set ESG goals and move towards net-zero economies. A survey among investment managers in 2020 found that sustainability-linked bonds/Sukuk are seen as the most acceptable investment option that focuses on climate change (Naxitis Investment Management, 2021). To date, there are two sustainability-linked Sukuk issued in Malaysia, that is, Yinson Holdings Bhd (The Edge Markets, 2021), and Cenviro Sdn Bhd (The Edge Markets, 2022).

An alternative way to support or promote the SDGs is by the issuance of ESG funds. According to a (PWC, 2022) Report, ESG-related funds are expected to grow significantly to an AUM USD 33.9 trillion by 2026, from 14.4% in 2021. Hence, ESG fund issuances to support SDGs are growing in popularity. In Malaysia, the issuance of SRI funds has also shown an increased number of issuances, from 60 issuances in September 2022 (Securities Commission Malaysia, 2022b) to 67 in September 2023 (Securities Commission Malaysia, 2023) with RM7.05 billion NAV by the end of 2022 (Securities Commission Malaysia, 2022a). Like Green Sukuk issuances, ESG or SRI funds invest in companies, projects, or sectors that have a positive ESG impact. An example is the BIMB ESG Sukuk Fund (Class A) by BIMB Investment that allocated up to 6.95% asset allocation to renewable projects (BIMB Investment, 2023), and the OPUS SRI Sukuk Fund (Class A) by OPUS Asset Management that invested up to 48.68% in the power sector (OPUS Asset Management, 2023).

Malaysia has also witnessed a boom in growth and a profound shift of Islamic banks towards sustainability and green financing. This is clearly reflected in the impressive growth of net-zero and green financing by Islamic banks. Banks received a total of more than RM 16.51 billion worth of green financing, and Figure 3.1 provides the breakdown of net-zero and green financing by Islamic banks in 2022. (Association of Islamic Banking and Financial Institutions Malaysia; AIBIM, 2023).

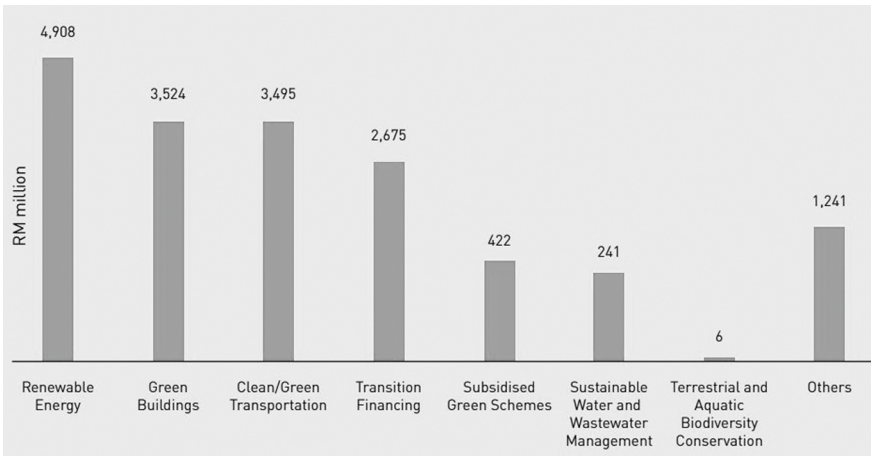

Figure 3.1 Net-zero and green financing by Islamic banks in 2022.

Source: Value-Based Intermediation Report: Emerging to Engaging (2023).

Regulatory framework and incentives promoting the issuance of Islamic green finance

Support provided by the government and regulatory bodies in promoting the SDGs is undeniably important. This includes facilitative regulatory frameworks on Islamic green finance and SDG-related products, tax incentives, and cost deductions. From the banking side in Malaysia, Bank Negara Malaysia plays a crucial role in promoting the SDGs through various initiatives, such as value-based intermediation (VBI) (Razali et al., 2022) and the iTEKAD initiative that focuses on the social finance.

Multiple national policies and initiatives, namely the National Energy Policy (NEP) 2022–2040, Low Carbon Nation Aspiration (LCNA) 2040, National Energy Transition Roadmap (NETR), and New Investment Policy (NIP), have been put into place by the Malaysian government as part of its endeavour to assure that the benefits of economic growth are dispersed fairly throughout the nation. VBI is aligned with the earlier mentioned policies as the contributions of the VBI sector are channelled to climate-friendly initiatives, to advocating for green transitions, and to encouraging financial inclusion among the impoverished and underprivileged (Association of Islamic Banking and Financial Institutions Malaysia; AIBIM, 2023).

The Securities Commission Malaysia, on the capital market side, has been actively issuing frameworks and guidelines to foster the issuance of green products in Malaysia, such as the issuance of the SRI Framework in 2014 that led to the world's first SRI Sukuk in 2015. In addition, a tax deduction for expenditure incurred on the issuance or the offering of SRI Sukuk was first granted for assessment year 2016 until 2023, and in the most recent 2024 Budget, it was announced that such a tax deduction is extended to another four years from year of assessment 2024 to year of assessment 2027 (Ministry of Finance Malaysia, 2023).

Conclusion

The expansion of Islamic green finance is being driven by the rising demand for sustainable investments parti,cularly in Malaysia. Investors are increasingly seeking opportunities to fund businesses and initiatives that benefit society and the environment. Investors can achieve their financial objectives and follow Shari'ah principles by using Islamic green finance. Islamic green finance has a promising future. It is a sector that is expanding quickly and has great potential to aid in achieving the SDGs. Islamic green finance will be a significant force for change as the world moves towards a more sustainable future that can foster financial inclusion and lower the poverty rate by creating job opportunities to help people achieve higher economic status. A well-developed financial system will not only maximize profit but can also promote a more just, sustainable, and ecologically conscious society by embedding the ethical standards of Islamic green finance that are coherent with the Maqasid al-Shari'ah, with the objectives of SDGs.

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4 SDGs and how does Islamic green finance matter?

An experience

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Introduction

Green finance (GF) seeks primarily to foster circular business models and decouple economic growth from resource use (Nicholls, 2021). It aims to balance the interplay between environmental sustainability (i.e. the protection of the ecological environment, the control of environmental pollution, the conservation of biodiversity) and economic prosperity, and therefore, achieve the UN Sustainable Development Goals (SDGs). In other words, GF is financing that seeks to steer financial resources to investments and projects that better manage environmental and climate shifts, to show greater stewardship commitment towards their environmental impact, to optimise corporate resource allocation for more environmental accountability, to account for or rather anticipate and solve organisations' negative environmental externalities, and ultimately to maintain the stability and resilience of earth's system (Meo & Abd Karim, 2022; Migliorelli, 2021; Richardson et al., 2023). Failure to observe potential issues exposes societies to existential risks (Richardson et al., 2023), and increases the vulnerability of financial and economic systems to climate and environmental shocks (Fabris, 2020). The effort towards the achievement of the SDGs requires an investment of USD 5 to 7 trillion annually (OECD, 2020). Current estimates, which report that the sustainable development finance gap will reach USD 3.9 trillion after the Covid-19 pandemic (GSDR, 2023), together with the recent update about the planetary boundaries' framework (Richardson et al., 2023), raise the question of whether the SDGs are beyond reach. Policy and regulatory uncertainties, unconducive macroprudential regulations, inconsistent monetary policies, lack of suitable financial instruments, substantial technological risks, significant initial capital investments, and adverse market perceptions of financial yields from green investments are key barriers to closing the present sustainable development financing gap (D'orazio & Popoyan, 2019; Monasterolo, 2019; Hafner et al., 2020).

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In line with the world economy's gradual shift towards green and more sustainable development systems, the Islamic finance industry keeps coming up with initiatives and is constantly contributing to the establishment of a more resilient, green and sustainable economic order. Bearing in mind the double-digit growth rate over the last decade, Islamic finance could unlock the tremendous potential for market growth in this future-prevalent sector, and thereby cope with the global surge in green and sustainable projects.

The Islamic finance industry can leverage particularly the ever-expanding sukuk market to respond and actively contribute to the resolution of global environmental and climate change risks. The global Sukuk issuance at the end of 2021 exceeded USD 185 billion, whereas the total Sukuk outstanding reached a new historical high of USD 775 billion (IFSB SR, 2022). This upward pattern of Sukuk issuance, specifically from 2018 onward, was strongly driven by Malaysia's and Indonesia's commitment to support the green and sustainable finance market (IFSB SR, 2019; UKIFC, 2021; Refinitiv, 2022). To illustrate, green and sustainability Sukuk issuance went up sharply from USD 485 million in 2017 to USD 6.1 billion in 2021. This trend is expected to persist (Refinitiv, 2022). The Islamic Finance Council (UKIFC, 2021) projected that the green and sustainability Sukuk market could rise and steer an additional USD 30 to 50 billion towards the SDGs by 2025. This is because Green Sukuk are likely to capitalise on a constant policy alignment with sustainability demands across jurisdictions (Setyowati, 2023); there is greater willingness on the part of conventional investors to diversify their portfolio and tap into Shari'ah-compliant asset classes, which have proven resilient during financial crises (UKIFC, 2021); institutional investors' have shifted towards the integration of environmental, social, and governance (ESG) criteria into their investment strategies (Refinitiv, 2022); and there is consistent demand from asset managers to establish effective regulatory and policy frameworks conducive to retail investors' preferences for sustainable and climate-resilient investments (IFSB SR, 2019).

The development of the Green or sustainable and responsible investment (SRI) Sukuk market started first with several initiatives and government policy incentives to provide the necessary institutional support for this financial instrument to become a mainstream tool in green financing. In 2012, the Climate Bonds Initiative (CBI), in cooperation with the Clean Energy Business Council (CEBC) of the Middle East and North Africa region and Gulf Bond & Sukuk Association, established the Green Sukuk Working Group Party (GSWP) to promote the Green Sukuk market and positively respond to environmental sustainability demands.

In 2014, the Securities Commission Malaysia revised its Sukuk guidelines and incorporated new requirements for the issuance of SRI Sukuk pursuant to the prime minister's announcement of the country's aspirations to become a home for SRI investment. The new Sukuk guidelines underline that the proceeds of SRI Sukuk can be used to preserve the environment and natural resources; conserve the use of energy; promote the use of renewable energy; and reduce greenhouse gas emission, and hence, reinforce environmental sustainability impacts (Securities Commission Malaysia, 2019).

In addition to its very first initiative to issue Green Sukuk at the United Nations Global Warming Conference, held in Paris in 2015, following this event, the

Islamic Development Bank (IsDB) came with its largest issuance ever of USD 2.5 billion of sustainability Sukuk in 2021. This was also the largest sustainability and ESG Sukuk ever issued globally (Refinitiv, 2022). The proceeds were directed to finance or to refinance green projects commensurate with the bank's Sustainable Finance Framework established in 2019.

Despite the upward pattern of publications on Islamic green financing (IGF) (Rahman et al., 2020), previous research studies are mostly exploratory in nature. Therefore, they fail to provide empirical evidence on the potential impact of IGF on SDGs. Consequently, this chapter seeks to investigate whether Green Sukuk (proxy for IGF) may contribute positively to the achievement of SDGs.

This chapter therefore consists of four sections in addition to the introductory one. Section 2 provides a brief review of the literature. Section 3 describes the methodological process. Section 4 reports and discusses the results. Finally, Section 5 concludes the paper and provides recommendations for future research.

Literature review

Studies in green financing (GF) seek to examine whether the recent global commitment of the financial sector to steer financial resources to sustainability transition demands and climate-resilient investments may contribute to achieving the SDGs, particularly SDG 13, by 2030. Specifically, they focus on the relationship between GF and renewable energy, clean energy, energy efficiency and the reduction of greenhouse gas emission. In this regard, Wang et al. (2022) and Madaleno et al. (2022) investigate whether there is a dynamic Granger causality relationship between GF, clean energy and green technology. Their results report a bidirectional causal relationship between the GF index and the clean energy index. This documents the positive impact of GF on clean energy investments on the one hand, and shows that the development and expansion of the GF market is associated with the need for more clean energy on the other. Moreover, they argue that green technology innovation is a critical factor in their relationship.

Chaudhry and Hussain (2023), in contrast, use the Natural Resource-Based View theory to examine the potential impact of GF on the realisation of five major SDGs namely, SDGs 1, 2, 3, 12 and 13, in a specific institutional context, that is, Pakistan. The results indicate that GF promotes SDGs 3, 12 and 13, whereas it has little influence on SDGs 1 and 2. In addition to their analysis of the green financing-sustainable development association in Indonesia, Ronaldo and Suryanto (2022) posit that green technology innovations and green micro-enterprises may positively mediate the relationship between GF and SDGs. Their results reveal a significantly positive impact of GF on SDGs. Moreover, they establish that green technology innovations and green micro-enterprises are significant mediators of the GF–SDG relationship. Accordingly, GF can promote SDGs through effective resource allocation that seeks to boost green technology innovations and support green micro-businesses, as they both help reduce greenhouse gas emissions. On the same note, Meo and Abd Karim (2022) conclude that GF has a negative impact on CO_2 emissions. Hence, the study underlines that GF is the most appropriate financial strategy for better integration of environmental sustainability criteria

and ultimately reduces CO_2 emissions (in line with Al Mamun et al., 2022; Chin et al., 2022).

Data and methodology

Data collection

Unbalanced data from two leading countries in the issuance of sukuk namely, Malaysia and Indonesia, are used in this study over the period 2017–2022. Green Sukuk development data are collected from the Refinitiv Eikon database, whilst SDG data are gathered from the *Sustainable Development Report*. The data on the other control variables, inflation rate, population size and economic growth, are collected from TheGlobalEconomy.com. Table 4.1 shows the list of variables, their definitions and sources.

Table 4.1 List of variables, their definitions, and the data source

Variable	*Definition*	*Reference*	*Data source*
Dependent variables:			
1- SDGs development	The country's annual sustainable development goals (SDGs) index.	Yap et al. (2023) Musari & Hidayat (2023) Feridun & Talay (2023)	Sustainable Development Report (www.sdgindex.org)
Independent variable:			
2- Green sukuk development	The country's annual size of green sukuk issuance (US dollars) to measure the development of Islamic green financing.	Razali et al. (2019) Echchabi et al. (2018) Roslen et al. (2022)	Refinitiv Eikon database
Control variables:			
3- Inflation rate	The natural logarithm of a country's annual inflation rate.	Yap et al. (2023)	TheGlobalEconomy.com
4- Population size	The natural logarithm of a country's annual population size, in millions.		
5- Economic growth	The natural logarithm of a country's annual percentage growth rate of GDP.	Feridun & Talay (2023)	

Methodology

The dependent variable in this study, SDGs, is measured using the country's annual Sustainable Development Goals (SDGs) index, while the independent variable, Green Sukuk development, is measured by the country's annual size of Green Sukuk issuance (in US dollars). Finally, the control variables, inflation rate, population size and economic growth, are measured by the natural logarithm of a country's annual inflation rate, the natural logarithm of a country's annual population size, and the natural logarithm of a country's annual percentage growth rate of GDP, respectively (see Table 4.1).

Regarding the estimation method, the study employs the panel-pooled ordinary least squares (OLS) regression with the heteroskedasticity robust standard errors to investigate the impact of Green Sukuk development on SDGs. For that, the following equation is prepared:

$$SDGs = \alpha_c + \beta_1 \, Green\, SD_{c,t} + \beta_2 X_{c,t} + \varepsilon_{c,t}, \tag{1–2}$$

where the *c* and *t* subscripts present country and year, respectively; α_c is a constant term; *SDGs* denotes a country's annual sustainable development goals (SDGs) index; and *GreenSD* refers to Green Sukuk Development. Further, $X_{c,t}$ presents the control country-level variables (inflation rate, population size and economic growth). The study also uses two additional regression tests for robustness checks, which are the Generalized Linear Model (GLM) and the regression with Driscoll-Kraay standard errors, as presented by models 3 and 4, following the study of (Adamolekun et al., 2023).

Results and discussion

Descriptive statistics

The results of descriptive statistics are shown in Table 4.2. According to Table 4.2, the mean of the dependent variable (SDGs) is 68.196, and it ranges between 62.80

Table 4.2 Descriptive statistics

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*	*Skewness*	*Kurtosis*
SDGs	8	68.1964	3.0072	62.8000	71.7600	−0.6299	1.9439
Green SD	8	892.2300	966.3101	100.2500	3359.3900	1.7676	5.3968
Inflation	8	2.2000	1.5919	−1.1000	4.2000	−0.6649	2.6466
Population	8	152.1710	125.8590	31.9800	275.5000	0.0009	1.0013
Economic growth	8	3.4945	3.9503	−5.5300	8.6900	−1.2544	3.7843

Note: GDP at billions of 2010 US dollars; Green SD (Green sukuk) in millions of US dollars.

and 71.76, while the mean value of Green SD is 892.23, with a range between 100.25 and 3359.3900 USD million. Table 4.2 also shows that the means of the control variables, inflation rate, population size and economic growth, are 2.200, 152.171 and 3.494, respectively.

Correlation

Pearson correlations results are presented in Table 4.3. As Table 4.3 shows, the highest correlation between the variables is between population and SDGs ($r = -0.822$). Since this value is less than the suggested cut-off value of 0.95, there is no collinearity issue (see Gujarati & Porter, 2009).

Diagnostic test

Table 4.4 provides the results of variance inflation factor (VIF) of variables, which is used in detecting the multicollinearity issue. According to Table 4.4, all the VIF values are less than 10, meaning there is no multicollinearity issue in the data, as suggested by Gujarati and Porter (2009).

Table 4.3 Pearson correlations

Variable	*SDGs*	*GreenSD*	*Inflation*	*Population*	*Economic growth*
SDGs	1.000				
GreenSD	−0.2829	1.000			
Inflation	−0.1639	0.5137	1.000		
Population	−0.8228***	0.6946**	0.4215	1.000	
Economic growth	0.0488	0.3126	0.3898	0.1713	1.000

Note: ***,**,* represent correlations are significant at 1%, 5%, and 10% levels.

Table 4.4 Results of variance inflation factors (VIF)

Variable	*VIF*	*1/VIF*
GreenSD	2.18	0.4597
Inflation	1.47	0.6782
Population	1.96	0.5093
Economic growth	1.16	0.8591
Mean VIF	1.69	

Table 4.5 Islamic green financing (Green Sukuk) and SDGs development

Dependent variable	*SDGs*	
Model	*(1) OLS*	*(2) OLS (robust)*
GreenSD	0.0022*	0.0022**
	(0.0007)	(0.0004)
LnInflation	−0.1029	−0.1029
	(0.9101)	(0.7233)
LnPopulation	−3.3376**	−3.3376**
	(0.6272)	(0.6377)
LnEconomic growth	−3.9686	−3.9686
	(2.6122)	(1.8474)
Constant	86.9775***	86.9775***
	(4.6717)	(3.7733)
Number of Obs.	8	8
Number of countries	2	2
R-Squared	0.915	0.915

Notes: ***,**,* represent statistical significance at 1%, 5%, and 10% levels, respectively; Standard errors and robust standard errors are presented in brackets. Model (1) is the panel pooled OLS regression; Model (2) is the panel pooled OLS regression with the heteroskedasticity robust standard errors.

Regression results

Table 4.5 presents the regression findings examining the impact of the Green Sukuk development on the SDGs of two Asian countries, Malaysia and Indonesia. Table 4.5 shows that the impact of Green Sukuk development on the SDGs based on the panel-pooled OLS regression (Model 1) is positive and statistically significant at 10% level of significance. However, when the panel-pooled OLS regression model is estimated with the heteroskedasticity robust standard errors (Model 2), the impact is also positive and statistically significant, but at 5% level of significance.

To confirm the above findings, additional robustness tests are conducted (Models 3 and 4), as Table 4.6 shows. Both models (3 and 4) suggest a positive and statistically significant (at 1% level of significance) impact of Green Sukuk issuance on the SDGs of the two countries. The study results are in line with Ronaldo and Suryanto (2022), who found that green finance has a positive and significant impact on SDGs.

Accordingly, these findings indicate a positive and statistically significant impact of Green Sukuk issuance on the SDG indexes of the two countries. The findings are consistent after performing several robustness tests.

Table 4.6 Robustness checks

Dependent variable	*SDGs*	
Model	*(3) GLM*	*(4) DK*
Green SD	0.0022***	0.0022***
	(0.0003)	(0.0002)
Ln Inflation	−0.1029	−0.1029
	(0.4735)	(0.4300)
Ln Population	−3.3376***	−3.3376***
	(0.4175)	(0.6501)
Ln Economic growth	−3.9686***	−3.9686***
	(1.2094)	(0.5378)
Constant	86.9775***	86.9775***
	(2.4702)	(2.3392)
Number of Obs.	8	8
Number of Countries	2	2
R-Squared		0.915

Notes: ***,**,* represent statistical significance at 1%, 5% and 10% levels, respectively; Model (3) is the generalised linear model; Model (4) is the regression with Driscoll-Kraay standard errors; Robust standard errors and D/K standard errors are presented in brackets.

Conclusion

There is a growing level of interest in the role that green financing (GF) plays in achieving the Sustainable Development Goals (SDGs) of countries. GF is financing that seeks to steer financial resources to investments and projects that better manage environmental and climate shifts, show greater stewardship commitment towards their environmental impact, optimise corporates' resource allocation for more environmental accountability, account for, or rather anticipate and solve organisations' negative environmental externalities, and ultimately maintain the stability and resilience of earth's system. However, there is a lack of empirical studies that examine the impact of Islamic green financing (IGF) on the SDGs of countries. Given that, this study contributes to the existing literature by providing empirical evidence on the impact of IGF, as represented by Green Sukuk development, on the SDGs index. To achieve this objective, the study uses annual data from Malaysia and Indonesia, over the period 2017–2022.

The study findings suggest a positive and statistically significant impact of Green Sukuk issuance on the SDGs index. The findings are consistent after performing several robustness tests. The practical implications of these findings for the two countries' policymakers are due to the importance to IGF as an important tool for achieving the SDGs. In the long run, IGF can steer financial resources to investments and projects that better manage environmental and climate shifts, show greater stewardship commitment towards their environmental impact,

optimise corporate resource allocation for more environmental accountability, solve organisations' negative environmental externalities, and ultimately maintain the stability and resilience of earth's system.

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Part II

Impact analysis of Islamic green finance

5 Impact of Islamic green finance on GDP

A cross-country analysis

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Introduction

Several recent studies underline that climate and environmental risks (shocks) can generate material impact on economic output, financial stability, public finances, and sovereign debt (Beirne, 2021; Chang et al., 2023; Fabris, 2020; Zenios, 2022; Battiston et al., 2021). To illustrate, they are expected to constantly reduce capital stocks and labour productivity, and therefore, they are more likely to adversely influence gross domestic product (GDP) growth over the long run (Chang et al., 2023). In addition, such risks can disrupt the labour market, trigger wild fluctuations in agricultural yield, destroy healthcare infrastructures, and increase the exposure of fiscal stability to vulnerabilities (Fabris, 2020). On top of that, Liu et al. (2023) claims that climate risks are systemic and non-linear in nature. Accordingly, they may negatively affect financial stability and the sustainability of public finances (Beirne, 2021). Climate physical risks for instance can destroy firms' capital stocks and reduce their total factor productivity (Beirne, 2021). This may in turn impair banks' fundamentals (i.e. capital adequacy, asset quality, managerial efficiency, profitability, and liquidity) (Klomp, 2014), increase the burden on takaful industry, and therefore cause the public costs to increase (Lamperti et al., 2019). Beirne (2021) argues that countries with higher vulnerability to climate risks are more likely to have their fiscal stability threatened. On the same note, Koetsier (2017) establishes that government debt increases significantly after most deleterious and deadliest disasters. In a specific context, Zenios (2022) documents that sovereigns' exposure to climate risks can adversely influence their credit ratings and debt servicing costs.

Bearing that in mind, the World Economic Forum (WEF, 2013) underlines that the necessary condition to mitigate or monitor climate and environmental risks and maintain sustainable economic growth, is to basically decouple economic growth from resource use and depletion (i.e. enhance the productivity of natural resources). Therefore, they call for an immediate shift towards a more sustainable economic growth model which balances the interplay of economic prosperity, environmental sustainability, and social justice.

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This shift in the economic business model requires the reassessment of financial intermediaries' role in the economic system and better synchronisation of financial and non-financial institutions' purposes (Ziolo et al., 2019). This alignment will help steer the necessary financial resources to climate-resilient investments, and therefore reduce the risks to financial and fiscal stability and economic growth. In other words, the integration of climate and environmental considerations into financial institutions' business strategies together with non-financial institutions' shift towards more circular and sustainable business models may help minimise the anthropogenic negative impacts on financial stability, and hence, positively influence countries' economic growth. Green finance can, therefore, play a crucial role in this transition.

It can draw on the commitment of international agencies and transnational institutions to establish a cleaner and more resilient economic system. Furthermore, the development of several principles, guidelines, and GF enhancement measures and investors' positive response to the issuance announcements of GF instruments (Flammer, 2021), will strengthen its market prospects on the one hand, and reinforce its contribution to stable and sustainable economic growth on the other.

Similarly, policymakers in the main jurisdictions of the Islamic finance industry seek to align their financial regulations with international sustainable finance guidelines and standards, and contribute effectively to the decarbonisation of financial and economic systems. Their efforts to close the regulatory gaps and establish an institutional environment conducive to IGF, along with Islamic financial institutions' commitment to integrate sustainability criteria into their business strategies has had a positive impact on the GF market. Green and sustainability sukuk, the mainstream financial instrument in this context so far, has grown exponentially over the 2017–2021 period. The issuance on a global scale in this juncture moves up from USD 485 million to USD 6.1 billion (Refinitiv, 2022). Future projections underline that the green and sustainability sukuk market is more likely to expand and it can mobilise an additional USD 30 to 50 billion by 2025 (UKIFC, 2021). This market prospect may create a type of "multiplier effect". In addition to its contribution to closing the present GF gap, it will improve corporates' environmental share price post-issuance (Flammer, 2021). That is, corporates become more eco-friendly. This is because the issuance of Green Sukuk provides signals to investors and other stakeholders on their engagement in the transition to a low-carbon economy (Flammer, 2021). Accordingly, they will subject themselves to additional regulatory and societal pressures to show greater stewardship commitment towards the environment. This will help mitigate climate and environmental risks and promote sustainable economic growth. On the research side, it is noteworthy to highlight that the number of publications on this topic follows an exponential trajectory (Rahman et al., 2020).

Moreover, the key themes that were subject to investigation in past literature include: the nature of IGF instruments, their market competitiveness, the determinants of investors' selection of such instruments, and the challenges they

should overcome to better contribute to sustainability transition (Delle Foglie & Keshminder, 2022; Rahman et al., 2020). Therefore, this chapter fills a significant research gap and seeks to go beyond the exploratory nature of previous studies and provide empirical evidence on the relationship between Green Sukuk issuance (IGF) and GDP.

This research consists of five sections. Section 2 briefly summarises the most relevant literature. Section 3 outlines the data and describes the methodology, while section 4 presents the results and discusses their implications. Finally, section 5 concludes the paper and suggests potential areas for future research.

Literature review

Literature on the impact of GF on economic growth is still inconclusive. While Huang et al. (2022) report a statistically insignificant causal relationship between GF and GDP in Organization for Economic Cooperation and Development (OECD) member countries, Zhou et al. (2022) document a significantly positive GF–economic growth association in China. Nonetheless, GF is more likely to create structural adjustment and induce stability into the economic system, and therefore, promote sustainable economic growth (Ouyang et al., 2023). Hence, it is important to investigate the impact of several variables as mediators or moderators to better figure out the dynamics of this relationship.

Chai (2018) establishes that GF impact on economic growth is subject to countries' financial development. The author claims that the direction of financial resources towards climate-resilient investments is dependent upon the development, or rather the maturity level of the GF market. Similarly, Hu and Zheng (2022) argue that GF creates additional dimensions for future financial development. Therefore, it may have a catalytic impact on the transformation of the industrial structure and economic growth. The institutional environment also plays a role in sustainability transition, and it may positively moderate the GF–economic growth association. Wang et al. (2016) underline GF policies as an institutional isomorphic factor that can create a type of "multiplier effect". On the one hand, they reduce investments in environment-unfriendly sectors, while on the other hand, they help divert financial resources from pollution-intensive industries to more sustainable and climate-resilient investments, and thus promote economic growth.

Yang et al. (2021) on their part, demonstrate empirically that fintech positively moderates the relationship between GF and economic growth (EG). Moreover, they report that the ecological environment, economic efficiency, and economic structure can improve the GF–EG association. On the same note, Zhang (2022) documents that GF and investment in renewable energy generate a positive impact on EG. Specifically, he establishes that GF and investments in renewable energy enhance trade openness and increase foreign direct investment, which in turn creates positive economic outputs. Finally, they document that environmental sustainability performance, or rather environmental quality is a positive moderator of the relationship between GF and economic performance.

Data and methodology

Data collection

This study employs unbalanced data from three countries, namely, Indonesia, Malaysia, and Saudi Arabia for the period 2017–2022. Data on GDP, inflation, and unemployment is collected from TheGlobalEconomy.com, while Green Sukuk development data is collected from Refinitiv Eikon database, as shown in Table 5.1.

Methodology

The dependent variable in this study, GDP development, is measured using the natural logarithm of a country's annual GDP at USD billions. In contrast, the main independent variable, Green Sukuk development, is measured by the natural logarithm of a country's annual size of Green Sukuk issuance. The study also employed two control variables, inflation and unemployment, which are measured by using the annual inflation rate and the annual unemployment rate. Table 5.1 also provides a summary on the list of the variables, their measurements, and their related references.

Table 5.1 List of variables, their definitions, and the data source

Variable	*Definition*	*Reference*	*Data source*
Dependent variables:			
1- GDP development	The natural logarithm of a country's annual gross domestic product (GDP) at billions of 2010 U.S. dollars.	Islam (2022) Inglesi-Lotz & Dogan, 2018	The Global Economy.com
Independent variable:			
2- Green *sukuk* development	The natural logarithm of a country's annual size of green *sukuk* issuance (millions of US dollars) to measure the development of Islamic green financing.	Razali et al. (2019) Echchabi et al. (2018) Roslen et al. (2022)	Refinitiv Eikon database
Control variables:			
3- Inflation	The natural logarithm of a country's annual inflation rate.	Yıldırım et al. (2020) Nomran & Haron (2020)	TheGlobalEconomy.com
4- Unemployment	The natural logarithm of a country's annual unemployment rate.	Makaringe & Khobai (2018)	

In terms of the estimation method, the study uses the panel-pooled ordinary least squares (OLS) regression with the heteroskedasticity robust standard errors to investigate the impact of Green Sukuk development on GDP development. Accordingly, the GDP development is given as a function of Green Sukuk development and country-level control variables as follows:

$$Ln\,GDP_{c,t} = \alpha_c + \beta_1 Ln\,Green\,SD_{c,t} + \beta_2 X_{c,t} + \varepsilon_{c,t}, \quad (1–2)$$

where the *c* and *t* subscripts present country and year, respectively; α_c is a constant term; *LnGDP* denotes a country's annual gross domestic product; and *LnGreenSD* refers to LnGreen Sukuk Development. Finally, $X_{c,t}$ denotes the control country-level variables (inflation and unemployment).

For robustness checks, the study also employs two additional regression tests, which are the generalised linear model (GLM) and the regression with Driscoll-Kraay standard errors, as presented by models 3 and 4, following literature such as (Adamolekun et al., 2023).

Results and discussion

Descriptive statistics

Table 5.2 provides the results of descriptive statistics for the study variables. As presented in Table 5.2, the mean of the dependent variable (GDP) is 699.917 USD billion, and it ranges between 333 and 1,122 USD billion (Min and Max), while the mean value of GreenSD is 941.250, with a range between 100 and 3,359 USD million. Further, the means of Inflation and Unemployment are 2 and 4.331, respectively.

Correlation

According to Table 5.3, the highest correlation between the variables is between GreenSD and GDP ($r = 0.726$), which means there is no concern about the collinearity issue. As Gujarati and Porter (2009) mentioned, there is no collinearity issue if the correlation between variables is less than 0.95.

Table 5.2 Descriptive statistics

Variable	*Obs.*	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*	*Skewness*	*Kurtosis*
GDP	10	699.917	336.710	333.100	1122.300	0.032	1.236
GreenSD	10	941.250	882.857	100.250	3359.390	1.715	5.809
Inflation	10	2.000	1.856	-2.100	4.200	-0.952	2.976
Unemployment	10	4.331	1.181	3.260	7.450	1.480	4.461

Note: GDP in billions of 2010 US dollars; GreenSD (Green sukuk development) in millions of US dollars.

Table 5.3 Pearson correlations

Variable	*GDP*	*Green sukuk*	*Inflation*	*Unemployment*
GDP	1.000			
GreenSD	0.7260***	1.000		
Inflation	0.3365	0.4365	1.000	
Unemployment	0.0553	0.1146	-0.1186	1.000

Note: ***,**,* represent correlations are significant at 1%, 5%, and 10% levels.

Table 5.4 Results of variance inflation factors (VIF)

Variable	*VIF*	*1/VIF*
GreenSD	1.57	0.6388
Inflation	1.60	0.6260
Unemployment	1.21	0.8253
Mean VIF	1.46	

Diagnostic test

To detect multicollinearity issue, Table 5.4 provides the results of variance inflation factor (VIF) of variables. As Table 5.4 shows, all the VIF values are less than 10, meaning there is multicollinearity issue in the data (see Gujarati and Porter, 2009).

Regression results

Table 5.5 shows the regression findings investigating the impact of the Green Sukuk development on the GDP based on the OLS regression. According to Table 5.5, both OLS regression models (1 and 2) suggest a positive and statistically significant (at 5% and 1% level of significance, respectively) impact of Green Sukuk issuance on the national GDP of the countries (Indonesia, Malaysia, and Saudi Arabia).

The robustness tests also confirm that findings as presented in Table 5.6. Both models (3 and 4) also find a positive and statistically significant (at 1% level of significance) impact of Green Sukuk issuance on the national GDP of the three countries. In general, the study findings are in support of Zhou et al. (2022), who document a significantly positive GF–economic growth association in China.

In short, these findings indicate that an increase in Green Sukuk issuance increases the national GDP of the three countries. A possible justification for this positive impact is related to the argument that ISG significantly impacts the national GDP by promoting sustainable economic growth.

Table 5.5 Islamic green financing (Green Sukuk) and GDP development

Dependent variable	*LnGDP*	
Model	*(1) OLS*	*(2) OLS (robust)*
LnGreenSD	0.5044**	0.5044***
	(0.1495)	(0.1314)
LnInflation	-0.1091	-0.1091
	(0.2454)	(0.3288)
LnUnemployment	-0.0895	-0.0895
	(0.5425)	(0.4243)
Constant	3.3893**	3.3893**
	(1.0198)	(0.9136)
Number of Obs.	10	10
Number of Countries	3	3
R-Squared	0.713	0.713

Notes: ***,**,* represent statistical significance at 1%, 5%, and 10% levels, respectively; Standard errors and robust standard errors are presented in brackets. Model (1) is the panel-pooled OLS regression; Model (2) is the panel-pooled OLS regression with the heteroskedasticity robust standard errors.

Table 5.6 Robustness checks

Dependent variable	*LnGDP*	
Model	*(3) GLM*	*(4) DK*
LnGreenSD	0.5044***	0.5044***
	(0.1073)	(0.0800)
LnInflation	-0.1091	-0.1091
	(0.2685)	(0.2938)
LnUnemployment	-0.0895	-0.0895
	(0.3464)	(0.3774)
Constant	3.3893***	3.3893***
	(0.7460)	(0.6661)
Number of Obs.	10	10
Number of Countries	3	3
R-Squared		0.713

Notes: ***,**,* represent statistical significance at 1%, 5%, and 10% levels, respectively; Model (3) is the generalised linear model; Model (4) is the regression with Driscoll-Kraay standard errors; Robust standard errors and D/K standard errors are presented in brackets.

Conclusion

Literature on the impact of GF on economic growth is still inconclusive. While some studies find an insignificant causal relationship between GF and GDP in OECD member countries, others document a significantly positive GF–economic growth relationship. In this context, this chapter fills a significant research gap and seeks to go beyond the exploratory nature of previous studies and provide empirical evidence on the relationship between Green Sukuk issuance and national GDP in three countries, Indonesia, Malaysia, and Saudi Arabia for the period 2017–2022.

The study findings report a positive and significant impact of Green Sukuk issuance on the national GDP of the study sample. The results show that an increase in Green Sukuk issuance increases the national GDP of the three countries. A possible justification for this positive impact is that IGF significantly impacts the national GDP by promoting sustainable economic growth.

Based on the study findings, it can be recommended for all countries, and particularly those that experience GDP weaknesses, to take these findings into account when attempting to raise their GDP levels. The main limitation of this study is that it only focuses on a small sample of three countries due to a lack of data; hence, the findings of this study cannot be generalised.

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6 Impact analysis of Islamic green finance on eco-sustainability

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Introduction

While some have argued that organic farming and sustainable agriculture are identical, others regard them as separate concepts that should not be equated (Rigby & Cáceres, 2001). Organic farming is among the pioneering concepts of all other approaches to "environmentally friendly" agriculture (Scofeld, 1986). Even earlier, the organic movement by Howard (1940), Balfour (1943), and Rodale (1945) arose from concern in the interwar years over problems such as soil erosion and health.

The agricultural sector is rapidly expanding in many countries due to consumer interest in food safety, animal welfare, and environmental concerns. Producers are drawn to organic production due to potential health impacts and the economics of organic production compared to conventional agriculture (Singh et al., 2021).

The US Department of Agriculture (USDA) defines organic farming as

> a system that avoids or mostly avoids the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives, etc.) and, as much as possible, relies on crop rotations, crop residues, animal manures, off-farm organic waste, mineral-grade rock additives, and a biological system of nutrient mobilization and plant protection.
>
> (USDA, 2022)

In another definition, the Food and Agriculture Organization (FAO) suggests that

> Organic agriculture is a unique production management system that promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity, and this is accomplished by using on-farm agronomic, biological, and mechanical methods in the absence of all synthetic off-farm inputs.
>
> (FAO, 2022)

In the context of these evolving agricultural paradigms, the emergence of Islamic green finance contributes a unique and vital dimension to the discourse. By integrating principles of sustainability, ethical investment, and environmental

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responsibility, Islamic green finance aligns with the core values of organic farming, offering a holistic approach to address ecological concerns in the agricultural sector (Budiasa, 2020). This intersection highlights the potential synergies between sustainable agricultural practices and financial mechanisms that adhere to Islamic ethical principles, presenting a promising avenue for fostering a more harmonious relationship between agriculture, finance, and the environment. Thus, the aim of this study is to investigate and analyse the contributions of Islamic green finance to eco-sustainability, examining its role in promoting environmentally conscious practices, ethical investment, and sustainable development within the financial and economic landscape.

Research methodology

This chapter employs a qualitative research methodology, delving into an in-depth analysis of policy documents, specifically those related to Islamic green finance and eco-sustainability.

Literature review

Islamic green finance and rural eco-sustainability

The United States, China, India, and Russia are the top producers of the major cereal and vegetable crops, while African and Asian countries such as Nigeria, the Dominican Republic, Ghana, Indonesia, and Thailand are also closely following in the race to produce vegetable products (Vegetable Production by Country 2023, n.d.). Asia accounted for nearly all the global oil palm fruit production, with Indonesia, Malaysia, and Thailand together producing 87% of the total in 2021 (Hanafiah et al., 2022).

In relation to agriculture and sustainability in Malaysia, the Malaysian Sustainable Palm Oil Certification Scheme (MSPO) aims to promote sustainable palm oil production by ensuring that palm oil producers in Malaysia comply with a set of environmental, social, and economic standards. These standards cover various aspects of palm oil production, including land management, worker welfare, and community development (Naidu & Moorthy, 2021).

The MSPO certification requires that palm oil producers implement sustainable land management practices, such as minimum tillage and integrated pest management, to reduce the environmental impact of palm oil production. The certification also requires that palm oil producers protect high conservation value (HCV) areas, such as primary forests and habitats of endangered species (Sustainable Palm Oil – Conserving Nature and protecting wildlife, n.d.). The Malaysian palm oil industry, which has over 90 years of responsible plantation operations on legally permitted agricultural land in accordance with national legislation, has also not been exempted from accusations related to unsustainable agriculture despite numerous attempts to present accurate facts and information. The Malaysian

Palm Oil Council (MPOC) therefore proposed the idea for the establishment of the Malaysian Palm Oil Wildlife Conservation Fund (MPOWCF) in 2006, which happened to be the year that the Malaysian palm oil industry was confronting one of its largest obstacles in the form of these negative campaigns. The MPOWCF was thus launched with an initial funding of RM 20 million, of which RM 10 million is a grant from the Malaysian government and the balance of RM 10 million is provided by the palm oil industry (Malaysian Palm Oil Wildlife Conservation Fund (MPOWCF), n.d.).

In another development, Dompet Dhuafa Republika (DDR) is a pioneer in using Islamic philanthropic funds, such as Zakat, Sadaqa and cash Waqf for alleviating poverty, including among farmers. Approximately IDR 6.3 billion per year over the five-year period (2008–2012), which hovers around 10% of total Zakat resources, are utilised for this programme (Abidin et al., 2022). The programme for economic and social empowerment of farmers by this leading non-government organisation in Indonesia seeks to provide a solution to multiple farming problems. One of their flagship projects, the Pemberdayaan Pertanian Sehat programme, is an organic farmers' empowerment initiative aimed at shifting farmers' attitudes and practices from conventional farming to semi-organic cultivation, promoting safe, affordable, and eco-friendly practices.

The intervention consists of providing steady and gradual support, direction, and introduction to low-cost, locally produced, safe production facilities. It also involves introducing biotech and low-chemical systems through integrated, environmentally friendly farming. With user-friendly green agricultural technology, farmers can reduce production costs while obtaining higher prices for organic produce. In this regard, Shari'ah concepts of financing were Ijarah, Murabahah, Qardul Hasan, and Hibah for semi-organic farming with a view to bringing about a significant increase in farmers' earnings, since a major problem for farmers is the lack of land ownership and lack of access to finance (Hana et al., 2016; Obaidullah, 2015).

The DDR programme has brought greater benefits to the farmer communities. The empowerment programme includes increasing institutional capacity as a key component. The following are some of the ways that farmers and farmer groups (Gapoktan) can be strengthened institutionally. The creation of the Gapoktan forum, the provision of various training programmes in semi-organic agriculture, financial and organisational management of farm groups and Gapoktan administrators, regular monitoring, and connecting with other stakeholders and the market are all ways to increase the ability of farmers. For example, the tutoring process, both regular and sporadic meetings, occurs through visits to the farmers' houses during the organic rice-growing period. Tutoring is done through regular meetings of the group once a week. The process of transfer of appropriate technology and organic rice cultivation is delivered through group meetings. An example of the move towards self-sufficiency is a consensus among farmers that each farmer must save up to 40% of their harvest, which would initially be used to pay land leases for the following year (Hana et al., 2016).

Clean energy solutions and rural infrastructure development

Developing countries have limited access to capital to invest in key sustainable infrastructure, often resorting to local bank loans with unsuitable terms. Malaysia is a major player and pioneer in Green Sukuk initiatives (Liu et al., 2021). The capital market is a much cheaper solution for companies to develop green projects. The notion of environmental stewardship; the protection of air, water, and land; and the ecosystems that depend on them are intrinsic to Shari'ah principles. In 2014, Malaysia introduced the sustainable and responsible investment (SRI) guidelines to establish itself as a centre for sustainable finance. Subsequently, in 2017, Malaysia issued the world's first green SRI Sukuk – to finance the construction of large-scale solar photovoltaic power plants in Kudat, Sabah. Significantly, Malaysia issued SRI Sukuk worth RM 10.58 billion in 2022. With this, the total amount of SRI Sukuk issued under the SRI Sukuk Framework since its launch in 2014 has reached RM 18.92 billion. Malaysia also captured 20% of market share for cumulative issuance of green and sustainability sukuk globally, from 2017 until the first half of 2022, according to the *Green and Sustainability Sukuk Report 2022* (Refinitiv, 2022). A study on Green Sukuk indicates that while the number increased in 2018 and 2019, it fell in 2020. Nonetheless, it was proven otherwise that research on Green Sukuk grew in 2021 and 2022, and this trend is expected to continue (Alam et al., 2023).

Very little headway has been made with regards to the development of rural green infrastructure in the world today, with most of the funding being poured into urban greening projects. Rural areas will still be home to almost 7.4 million people in Malaysia in 2022. About 3.1 million of them reside in 46 remote districts in the peninsula, Sabah and Sarawak. Improving the accessibility, economic opportunities, and viability of these isolated places remains a policy challenge. What more does it cost to find an alternative green solution that does not pollute the environment? For instance, hydroelectric dams are a good renewable energy source that offer several advantages. To achieve Malaysia's energy and climate goals, hydropower is expected to become more and more significant. According to recent findings by the Malaysian Energy Commission, hydropower currently generates about 16% of the nation's electricity, but hydropower's benefits go beyond its usefulness as a cost-effective renewable energy source. In Malaysia, hydropower is being used more and more to lessen flooding in areas of the nation that are vulnerable to flooding. However, this has come with disadvantages for the Native people and the environment. Accordingly, it is imperative to implement appropriate measures and enhance the minimisation of watershed management. For instance, to ensure that the rights of the Indigenous people who will be affected by the Nengiri dam in Kelantan are respected during planning, construction, and the fair distribution of benefits, there needs to be a good environmental monitoring programme, as well as good policies and good governance (Ros, 2021). Nonetheless, the development of rural green infrastructure can also be catered by other sources of renewable energy.

On the other hand, a plan for electrifying the remaining rural homes was developed in 2015 as part of the Rural Power Master Plan. The plan uses

government funding for several programmes designed to accelerate rural electrification. This plan will include hybrids and the Sarawak Alternative Rural Electrification Scheme (SARES) for stand-alone renewable alternative systems for the most remote and inaccessible areas. The administration's electrification plan will move more quickly if these programmes are implemented concurrently. SARES is an innovative government–community partnership model which aims to provide 24-hour electricity supply to remote communities via local microgrids. Through the scheme, government machinery and agencies are mobilised to assist villagers in building, owning, and operating more affordable and sustainable electricity-generating systems. Three hundred isolated villages, comprising 8,700 households, were identified for this community-based scheme utilising micro-hydro and solar systems from 2016 to 2020. The state aims to achieve full electricity coverage by 2025, which will materialise soon (Sarawak Energy, n.d.).

An ideal solution that has spillover effects on rural communities is the ecotourism sector, whereby, while preserving the current ecological environment in identified areas, it will generate revenue for the people living in the surrounding area. Based on the National Eco Tourism Plan 2016–2025, the criteria to develop ecotourism clustered areas are the uniqueness of the location according to cluster, accessibility and connectivity (town, access road, transportation), availability of human resources, environmental risk, and land availability. There are 60 proposed ecotourism clusters, with the states of Sarawak, Sabah, Terengganu, Pahang, and Johor comprising half of the areas. One of the major concerns in developing this sector is the lack of funding for small to medium-sized enterprises or local communities. The fund exists, but it may not be utilised to the same degree. Thus, the Plan identified several actions to provide a remedy, such as matching grants for ecotourism products in Malaysia, providing consultancy services to small/medium-scale ecotourism operators to ensure better access to the Special Tourism Fund and the Tourism Infrastructure Fund, expanding the scope of microcredit facilities, and reviewing the scope and procedures of the Special Tourism Fund and the Tourism Infrastructure Fund so as to be effective in scaling up small/medium-scale local entrepreneurship related to ecotourism. SME Bank has been tasked with partly managing this fund, using Commodity Murabahah Term Financing-i and Commodity Murabahah Revolving Financing-i.

Sustainable rural economy

Measuring the impact of Islamic green finance

To move forward, there must be commitment shown by Islamic financial institutions (IFIs) to spearhead these green initiatives through clear demarcation of stricter key performance indicators (KPIs). Regulators and industry practitioners are still finding the midway in balancing their requirements and IFI capabilities to adhere to that commitment. As of the date of this research, there is no standardised measurement across all IFIs. However, the value-based intermediation (VBI) concept

has been widely used to champion environmental, social, and governance (ESG) initiatives, to emphasise adopting Shari'ah-relevant practices, offerings, and conduct that produce positive and sustainable impacts to the economy, community, and environment, corresponding to the shareholders' sustainable returns and long-term interests (Yusof and Ali, 2021).

A paper titled "VBI: Strengthening the roles and impact of Islamic finance," issued by BNM in 2018, detailed the proposed implementation approaches and strategies to enhance VBI for the strategic direction of IFIs (BNM, 2018). Given that each IFI is unique and cannot be measured using the same methodology, it is essential to have a meaningful impact-based assessment model to demonstrate accountability and build trust with stakeholders. Since there is currently no VBI-specific performance evaluation, the Global Alliance for Banking on Values (GABV), a global, independent network of banks and banking cooperatives, offers metrics that are frequently used as a foundation to evaluate financial institution performance globally. Even so, there is a lack of reporting disclosure in their environmental and social responsibility initiatives, supporting the argument about non-specific measurement in the industry.

The *VBI Report 2022* (Association of Islamic Banking and Financial Institutions Malaysia – AIBIM VBI Report, 2022) states that the VBI Community of Practitioners (CoPs) used the KPI setting in a Strategy Paper to assess qualitative and quantitative impacts. Islamic banking institutions are supposed to pinpoint quantifiable KPIs for every implementation strategy that is less process-based and more impact-based, like the creation of new jobs (i.e. to avoid measuring KPIs by number of engagement sessions held). Table 6.1 incorporates KPIs used by the VBI CoPs and provides insights into financing, assets, and investments, and the impact on climate, environment, and sustainability.

Table 6.1 Key performance indicators of Community of Practitioners (CoPs)

No	*Aspects*	*Performance from January 2017 to September 2020*
1	VBI Financing	VBI-related or aligned financing for the period amounted to over RM 94.2 billion across almost 235,000 accounts. This comprises nearly 26% of total financing approved in terms of value, and slightly above 10% in terms of number of accounts approved. However, renewable energy and green projects accounted for only 9% in terms of value, that is, RM 8.89 billion.
2	VBI Assets/ Investments	Investments in VBI-aligned or related instruments (i.e. Sukuk, shares, indices, and funds) amounted to RM 24.6 billion across 62 portfolio asset classes. These include those categorised in the SRI, ESG, Green, sustainable spaces. This means nearly half (48%) of banks investment portfolios of over RMs51.3 billion (by value) or two-thirds by portfolio/asset classes are VBI aligned or related.

No	*Aspects*	*Performance from January 2017 to September 2020*
3	Impact to Climate, Environment, and Sustainability	It is a more qualitative aspect and mainly around initiatives taken. 1. CIMB is the first and only ASEAN signatory to the United Nations Environment Programme Finance Initiative (UNEP FI) Principles for Responsible Banking (PRB). 2. HSBC Amanah became the first international bank in Malaysia to become an official member of the United Nations Global Compact (UNGC). 3. Southeast Asian banks and the region's national commitment to sustainable finance using SUSBA, an interactive toolkit that enables assessment and benchmarking of critical Environmental & Social (E&S) integration performance for banks across the globe. It enables year-on-year changes to be identified and highlights progression or regression in banks' performance on the integration of E&S considerations in their corporate strategy and decision-making processes. Eight (8) banks were assessed in Malaysia, 2 of which are full-fledged institutions, i.e. Bank Islam and Bank Rakyat. 4. Alliance Islamic has taken a "#BuyForImpact" initiative where they have committed to promoting responsible procurement in their own business and among employees. 5. RHB Islamic introduced the first debit card in the Asia-Pacific with paywave technology using recycled materials. The RHB Visa WWF Debit Card-I, which supports marine life via the Ocean Harmoni initiative, works together with WWF and University Malaysia Terengganu. In terms of offerings: 1. HSBC Amanah is the first to issue an ESG Islamic-structured product. 2. Solar Plus BAE Personal Financing-i was introduced by Public Islamic where existing customers can apply for financing to install rooftop solar panels for their residential houses. 3. CIMB Islamic has formulated a Positive Impact Products & Services (PIPS) Framework which has enabled CIMB SME Renewable Energy Financing, preferential financing rates for new hybrid vehicles and residential properties certified under the Green Building Index ("GBI"), and an EcoSave Savings Account-i, which channels 0.2% of the total average portfolio balance of this savings account to environmental-focused projects and activities. 4. Sustainability-themed Sukuk and Syndication are also intermediated: • RM 245 million IMTN by Edra Solar, the first Green Sukuk in local currency issued under the ASEAN Sustainability and Sustainable & Responsible Framework. • The world's first sustainability-linked syndicated financing of USD 800 million by Axiata Group Berhad. • UiTM Solar Power Sdn Bhd's RM 240 million Green SRI Sukuk, the first educational institution to issue solar sukuk in the world. • Cypark Ref Sdn Bhd's SRI sukuk solar photovoltaic power plant projects.

Source: AIBIM VBI Report (2022).

Conclusion

In conclusion, this chapter highlights the complex and diverse characteristics of the convergence that exists among sustainable agriculture, organic farming, and the nascent domain of Islamic green finance. The historical roots of organic farming, traced back to visionaries like Howard, Balfour, and Rodale, exemplify the enduring concern for soil erosion and health, laying the groundwork for environmentally friendly agricultural practices.

Increased consumer awareness regarding food safety, animal welfare, and the environment has propelled organic production to the forefront of the expanding global agricultural sector. The US Department of Agriculture and the Food and Agriculture Organization definitions cited earlier, elucidate the core principles of organic farming, emphasising the exclusion of synthetic inputs and the promotion of agroecosystem health through sustainable methods.

In an evolving landscape, the introduction of Islamic green finance adds a distinctive and vital dimension. Aligned with the ethical values of organic farming, Islamic green finance integrates principles of sustainability and environmental responsibility. This confluence presents a promising avenue for addressing ecological concerns within the agricultural sector by harmonising finance, ethics, and environmental stewardship.

The study further examines the role of Islamic green finance in promoting a sustainable and inclusive rural economy, emphasising the importance of measuring its impact. The lack of standardised measurements across Islamic financial institutions prompts a consideration of impact-based assessment models. The discussion incorporates KPIs used by the CoPs and provides insights into financing, assets, and investments, and the impact on climate, environment, and sustainability.

As research unfolds, it becomes evident that Islamic green finance has the potential to play a pivotal role in shaping a more sustainable, ethical, and inclusive agricultural future. The varied examples presented throughout the present study underline the industry's ongoing efforts to align financial practices with environmental and social responsibility. However, the need for standardised measurement tools and increased transparency emerges as a crucial aspect to ensure accountability and further the impact of Islamic green finance on global eco-sustainability.

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Part III

Governing principles and policies of Islamic green finance

Routledge

7 Divine principles governing Islamic green finance

Fatimah Mohamad Noor and Rusni Hassan

Introduction

The world is witnessing mass destruction and disaster in people's lives and the whole ecosystem as a result of extreme climate change. Even though climate change is a long-term and natural process of weather shifting and temperature change, human activities such as the burning of fossil fuels, excessive land clearing, the cutting down of forests, agricultural methods, and the practices of industries, transport, and buildings have led to these extreme climate shifts. All these activities have also brought about the release of high levels of carbon dioxide, methane emissions, and greenhouse gases (Dietz et al., 2020).

There has been growing interest among corporations, financial institutions, and institutional investors in achieving net-zero emissions and in publishing climate transition plans by conducting physical and transition assessments of climate risks. In this way, financial markets can integrate their climate transition risk plans into investment decisions (Monasterolo, 2020). The Islamic finance industry has a pertinent role to play in supporting the climate finance agenda aligned with the Paris Agreement. However, the Asian Development Bank (ADB) in its latest report addressed the issue of the lack of a standardised and sound governance framework in the Islamic finance industry that can be aligned with any global standards for climate action (Asian Development Bank, 2022).

Realising the need for a sound governance framework for Islamic green finance, the present study seeks to discuss divine principles that underlie the ethical governance framework of Islamic green finance which are rooted in its main sources of revelation such as the Qur'an and Sunnah. The discussion also investigates the relevance of the Maqasid al-Shari'ah (Objectives of Shari'ah) related to human ethical conduct concerning the environment. This study is expected to provide practical implications in terms of Shari'ah-related policy development with special attention to environmental sustainability. It is hoped that this can facilitate the development of the policies and standards of Islamic green finance to enhance its accountability, integrity, and transparency.

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Instruments of green finance

The emergence of green finance seeks to address issues concerning climate change by offering investment avenues that are friendly to environmental sustainability (Dervi et al., 2022). Green finance also aims at increasing the level of financial flows (from banking, micro-credit, Takaful, and investment) from the public, private, and not-for-profit sectors to sustainable development priorities. To ensure a decent rate of return and environmental benefits and to deliver greater accountability, it is necessary to maintain better management of environmental and social risks (Hummel et al., 2021).

Liu and Wu (2023) indicated that most green financial instruments are aimed at funding environmental and climate-friendly projects such as renewable energy, recycling, and green infrastructure. Green financial instruments involve financial instruments such as private loans, public bonds (corporate, municipal, and sovereign), private equity, public equity, investment funds, and other financial instruments. Moreover, it has been found that green-labelled financial products such as bonds, Sukuk, and loans have been acknowledged across the globe as effective instruments in directing investment capital towards climate change mitigation as well as climate change resilience and adaptation projects (Bhandary et al., 2021).

The green bond market started to indicate promising development in line with the emergence of climate-awareness bonds produced by the European Investment Bank in 2002. This has further accelerated the growth of the green bond market, in which over USD 500 billion green bonds were issued at the end of November 2018. In the context of the Association of Southeast Asian Nations, the Philippines was the first country to enter the green-bond market with renewable certified climate bonds valued at PHP 10.7 billion (USD 226 million), and this bond has been exclusively issued to finance geothermal assets. Ever since the issuance of the Philippines's climate bond, neighbouring countries, such as Indonesia, Singapore, Malaysia, Thailand, and Vietnam, have taken the same step by issuing green bonds for a cumulative total of USD 5.03 billion, as of the end of November 2018 (Bhandary et al., 2021).

Impacts of green finance on environmental sustainability

There are ample studies indicating that green finance initiatives have a significant impact on environmental sustainability. For instance, Sadiq et al. (2023) validated the effectiveness of green finance, eco-innovation, renewable energy output, renewable energy consumption, carbon taxes, and industrialisation as the relationship between these factors and carbon emissions was negative across the BRICS (Brazil, Russia, India, China, South Africa) countries' economies. Khan et al. (2022) considered that green finance reduced ecological footprints and appeared to be environmentally friendly.

Zhang (2023) in his study demonstrated that India, Bangladesh, and Pakistan used multiple green financing initiatives, resulting in a considerable decrease in commercial carbon dioxide (CO_2) across the review period, which extended

environmental protection and confirmed the green economic recovery. Additionally, this study exhibited that fintech development also helped in reducing CO_2 emissions and making a favourable contribution. Similarly, Nenavath and Mishra (2023) revealed that green finance widely helped raise the quality of economic growth by significantly impacting finance structure, financial effectiveness, and environmental quality protection development. At the same time, fintech enhanced the significant effect of green finance in the finance structure and environmental quality protection, while lacking consequences for the association between green finance and economic effectiveness (Nenavath & Mishra, 2023).

Islamic green finance paradigm

In 2015, the Islamic Declaration on Global Climate Change acknowledged the potential role of Islamic finance as a promising Islamic financing avenue (UNFCC, 2015). Moghul and Safar-Aly (2015) further highlighted the influence of religious-based philosophical approaches in finding the solution to environmental issues by underscoring the nexus between moral values and financial markets in Islamic banking and finance. The authors also noted that even though Islamic financial institutions (IFIs) had been developed independently from other ethical financial sectors, the essence of their establishment prioritised ethical and social responsibility in their operations. Furthermore, the potential resilience and stability of Islamic financial practices were evident amidst the global economic crisis in 2008, in which IFIs had a good performance compared to their conventional counterparts (Moghul & Safar-Aly, 2015).

In addition, there has been an increase in demand from investors to look for Shari'ah-compliant green financing since there is also a scarcity in the global supply of environmental, social, and governance (ESG) investments. Green and sustainable Sukuk can fill this gap. Conversely, the demand for green and sustainable Sukuk among Western market investors shows rising trends, such as among investors from the United States and Europe. It is believed that this rising trend could potentially enhance the implementation of the principle of ESG in these regions. This could also widen the scope and diversity of investors in the Green Sukuk and sustainability market (Refinitive, 2022).

Islamic green finance and its contribution to environmental sustainability

In realising the imperative role of Islamic financial institutions for climate-related financing, it was recorded that as of September 2020, 11 institutions across Muslim-majority countries such as Indonesia, Saudi Arabia, the United Arab Emirates, Malaysia, and others had issued a total of USD 10 billion in Green Sukuk. Indonesia appears to be the leading issuer, which contributed 54% of the total USD 10 billion Green Sukuk. Even though Malaysia has the lowest Green Sukuk issuance amounting to only USD 1 billion of the total, it received the highest number of private issuers due to the availability of tax incentives and green bond grants (Azhgaliyeva, 2021).

Ibrahim et al. (2016), however, indicated that the contribution of the Islamic finance industry to green and sustainable projects is still low. This is due to the market for Green Sukuk still being relatively small and with limited supply, which also makes it illiquid as compared to other asset classes (Rozman & Azmi, 2022). Additionally, it has also been found that there has been a scarcity in supplying green-labelled projects, particularly among the Gulf Cooperation Council economies, which rely heavily on the oil industries. Nonetheless, it is expected that the Sukuk market is likely to expand positively as these countries are slowly moving towards more sustainable economies (Refinitive, 2022). Despite these constraints, the green Islamic market has proven effective in solving several environmental issues. For instance, Mat Rahim (2018) demonstrated the significant impact of Green Sukuk in resolving the issues of electric supply and enhancing water quality in three case studies in Malaysia involving Tadau Energy Sdn. Bhd, BEGW (M) Sdn. Bhd, and Sarawak Hydro Sdn. Bhd.

The Asian Development Bank in its latest report underscored the major challenge to the growth of the Islamic climate fund. It was stated that governance principles are one of the main challenges for the development of the Islamic finance and banking industry in addressing the climate agenda. This is due to the industry experiencing a fragmented governance framework as a result of different types of environmental regulations. Moreover, the industry has yet to fully develop governance standards that are in line with the Paris Agreement (Asian Development Bank, 2022). Despite the absence of fully developed Shari'ah standards concerning a climate-related agenda, a few banks have taken a voluntary and independent initiative to form the Task Force on Climate-Related Financial Disclosure (TCFD), introduced by the Financial Stability Board (Asian Development Bank, 2022).

Divine principles governing Islamic green finance

Oneness of God and Vicegerency (Tawheed and Khalifah)

Tawheed refers to the concept of the oneness of God in the Islamic faith. It is also reflected in the unity of Allah's creation. Allah's presence in nature has frequently been addressed in the Qur'an, which indicates that Allah permeates and surrounds human places and the atmosphere as well as the natural world. This leads to the understanding that human beings as an integral part of this atmosphere are not permitted to impose any disruptions on this well-balanced planet that Allah has created (Kamali, 2012). Tawheed also brings up the idea that nature operates as a unified system, and is a key concept in environmental science. For example, the plant needs the mineral to support its growth, by which in turn, human beings and animals will benefit from the plant. This is how a healthy ecosystem works to strike a balance on earth (Kamali, 2012).

Meanwhile, vicegerency (Khalifah) has been granted by Allah to human beings, to realise the mission and accountability to build the earth and utilise its resources with moderation and care for its ecological balance. Moreover, Allah has created human beings and given them power as His vicegerent on earth, affirming Allah's

existence through the oneness of God and serving Allah as part of submission and of being accountable to Allah and other human beings (Hassan & Mohamad Noor, 2020). If humans deviate from this intended path and misuse their power, the harmonious relationship between humans and nature can be disrupted (Hasan, 2022; Kamali, 2012; Bouteraa et al., 2020). In turn, the concept of vicegerency further requires the implementation of other principles such as trust (Amanah), balance and moderation (I'tidal and Wasatiyyah), and justice (ʿAdl) (Kamali, 2012).

Trust (Amanah)

The concept of Khalifah begins with a divine decision in which Allah bestowed trust on human beings (Hassan & Mohamad Noor, 2021). However, only mankind accepts this trust. This suggests that God conferred upon mankind accountability to safeguard the earth and its resources (Beigh & Nika, 2021; Kamali, 2012). Amanah simply means trust, honesty, and loyalty. Having an Amanah means having trust or responsibility for something or someone (Hassan & Mohamad Noor, 2021). As the Khalifah (vicegerent) in this world, humans must uphold the trust to maintain the world and environment. Irresponsible acts and mischief on earth are a great sin. Allah states: "Do not cause corruption on the earth" (Qur'an 2:11).

Justice and benevolence ('Adl wa Ihsan)

The principle of justice underscores the need for just and equitable relationships between humans and the environment. This principle implies that any form of injustice such as aggression against the rights and property of others is totally impermissible in Islam. In this sense, the principle of justice demands that people must respect and protect others' property and rights for the well-being of future generations (Beigh & Nika, 2021). The principle of justice used to be linked with the concept of Ihsan, which refers to benevolence, perfection, and beauty (Qur'an 16:90). This concept of Ihsan is a desire to act in kindness and excellence between humans and the earth. The Qur'an further asserts that God has instilled beauty and perfection in His creations and people have a duty to manifest this inherent beauty (Qur'an 41:7). To realise this, humans are obliged to strike a balance in God's creations and remove any harm and barriers that might hinder their natural growth (Kamali, 2012).

Accountability (Masu'liyyah)

The principle of accountability requires humans who live and make use of all resources to be accountable for their well-being and avoid any exploitation (Hassan & Mohamad Noor, 2020). It has been narrated on the authority of Ibn 'Umar that the Prophet (PBUH) said: "Beware, every one of you is a shepherd and everyone is answerable regarding his flock. The Caliph is a shepherd over the people and shall be questioned about his subjects" (Sahih Muslim, 1829). Also, the Prophet (PBUH) emphasised the need to regularly use extra caution while handling anything on

this earth. There will be no exploitation and aggression on natural resources if this environmental responsibility is well embedded in the mind of every individual (Hasan, 2022).

Moderation and balance (Wasatiyyah and I'tidal)

Achieving moderation and balance requires people to avoid extremism by wisely finding a middle path and taking a well-balanced approach in all aspects of life, especially in social behaviour, decision-making, ideology, the way they spend their life, and the like. The Qur'an has expounded that all the elements and compositions on earth have been created by Allah with the right balance and proportions. However, this well-balanced creation may be jeopardized if people are driven by irresponsible manners and greed, which ultimately creates an imbalance in this perfect ecosystem (Qur'an, 45:49; 15:19). Furthermore, Allah has provided great reminders of the prohibition of wasting natural resources and compares this with the act of the devil (Qur'an 17: 2). The Prophet (PBUH) in this sense, promoted the importance of water conservation and prohibited wastage (Kamali, 2012).

Objectives of Shari'ah (Maqasid al-Shari'ah)

The Maqasid al-Shari'ah (Objectives of Shari'ah) is defined as the overall objective (Maqsad Amm) of Islamic legislation to preserve the social order of the community and ensure its healthy progress by promoting the well-being and virtue (Salah) of human beings. The Salah of human beings consists of the soundness of their intellect and the righteousness of their deeds, as well as the goodness of the things of the world in which they live that are put at their disposal (Ibn Ashur, 2006). Another term, Maslahah (public interest), has been classified into three primary categories. Firstly, Daruriyyah (the essentials), is a type of public interest; if harm or collapse occurs, it will bring about disorder in societal life and interrupt the normal functioning order of religious life in the worldly realm and the hereafter. The main components of protection in this category encompass aspects like faith, life, intellect, posterity, and wealth. Secondly, Hajiyyah (the complementary), if neglected, will contribute to difficulty and hardship in people's lives. However, it will not cause a total collapse of the entire society. Thus, it is imperative to curb any forms that could lead to hardship and ensure that life is free from any distress and predicaments. The last category is Tahsiniyyah (the embellishment), which seeks to find perfection and refinement in individual life and behaviour (Dusuki & Bouheraoua, 2011).

Preserving the environment is part of protecting life (Maqsad Hifz Nafs)

As discussed earlier, protecting life is a Maslahah Daruriyyah within the category of maslahah. This means that if this maslahah were neglected, it might cause the moral degradation, destruction, and collapse of society. Al-Qaradhawi (2001) identified that preserving the environment is part of protecting life (Kamali, 2012;

Ariffin et al., 2020). In line with the argument of Maslahah Daruriyyah, damaging the environment, creating pollution, and diminishing natural resources can create imbalance and disruption to the earth and threaten the lives of human beings (Muslimin & Chakim, 2020; Thoker, 2023).

The right to enjoy life has been granted by Allah to all humankind and it is a symbol of a gift from Allah. Violation of this right is strongly prohibited, and it is considered akin to corruption, which Allah has warned of many times with regard to the unjust act of corruption. Such corruption has a big potential to disrupt the whole system that supports human life and livelihood. In the same vein, the Prophet (PBUH) encouraged human beings to treat the natural world in an ethical manner, such as ensuring the good treatment of animals, plants, and land, by conserving natural resources, and by hindering any corruption that might cause a major threat to the lives of people and the whole ecosystem. As narrated by Anas bin Malik: Allah's Messenger said, "There is none amongst the Muslims who plants a tree or sows seeds, and then a bird, or a person or an animal eats from it, but is regarded as a charitable gift for him" (Sahih al-Bukhari, 2320).

Furthermore, the Qur'an and Sunnah also shed light on several means to ensure that the objective of protecting life is part of preserving the environment. These are as follows:

Protection of life through cleanliness and purity

Islam emphasises environmental conservation by promoting cleanliness to protect life. Taking care of personal hygiene is considered an act of devotion and a religious obligation in Islam. In addressing the important aspect of external and internal cleanliness, the Prophet (PBUH) gives a stern reminder about the rejection of prayer if an individual body is tainted with dirty elements. In this sense, it was narrated that Ibn 'Umar said: "The Messenger of Allah said: Allah does not accept any prayer without purification, and He does not accept any charity from ghulul (breaching of trust)" (Sunan Ibn Majah, 272). This reminder appears to be in line with the prohibition of any type of pollution to the environment. Pollution is a type of disruption and corruption that has become a major threat in society nowadays. Uncontrolled pollution such as water pollution, and air pollution, has caused the inherent new diseases which have taken away many lives of people.

Protection of life through greening the earth

Forestry and greening the earth by cultivating the land through planting trees and farming are among the pillars of environmental conservation in Islam. This seeks to ensure the efforts of today's conservation can also be enjoyed by the upcoming generations. The Qur'an has underscored in several verses about the blessing of Allah in providing humanity with the means to engage in this practice of cultivation. On the other hand, Prophet (PBUH) put a great measure into environmental conservation by introducing the concept of protected areas which is designated to protect wildlife, uncontrolled deforestation, and safeguard

general land from illegal logging and many more. This is in line with the modern practice of environmental conservation efforts (Saged et al., 2020). In addition, Prophet (PBUH) also extends this ethical behaviour of conserving the environment during the conflict and war. Prior to the war, Prophet (PBUH) gave stern warnings to his followers and instructed them not to cause harm to weak people such as children, the elderly and women as well as prohibit damaging the crops and palm trees. This demonstrates how Islamic ethics are very much concerned with the preserving environment and controlling ethical conduct even in a most complex situation.

Protection of life through sustainable land development

Developing land, promoting agriculture and utilising natural resources responsibly are among the important encouragements in Islamic teaching about environment conservation. Sustainable land development is one of the three fundamental purposes of human creation in this worldly life alongside submission to God and governance (Saged et al., 2020).

In a similar vein, Kamali (2012) expounded that building and development (I'mar) is a part of the roles and responsibilities of Khalifah (vicegerent) on earth which is guided by the objectives of Shari'ah to uphold justice, attain well-being and avoid harm. Developing land responsibly and avoiding corrupt practices related to land development has been a part of the teachings of all Prophets. In Qur'an, Allah said: "And to Thamud (We sent) their brother Salih. He said, O my people, worship Allah; you have no deity other than Him. He has produced you from the earth and settled you in it, so ask forgiveness of Him and then repent to Him. Indeed, my Lord is near and responsive".

(Qur'an 11: 61)

Preserving the environment is part of protecting wealth (Maqsad Hifz Maal)

The responsibility to preserve the environment involves protecting wealth, such as ensuring the sustainability of resources from damage and destruction. The main purpose of protecting nature as part of protecting wealth is to improve productivity, guide good consumption, and ensure fair distribution. This can ensure the rights of future generations to benefit from environmental sustainability, through avoiding the threat of extinction of animal species and the depletion of natural resources (Muslimin & Chakim, 2020; Thoker, 2023).

Islamic green finance is one of the ways of supporting the effort to ensure the sustainability of the environment. Certain principles in the preservation of wealth could ensure the transparency, integrity, and accountability of Islamic green finance. These principles are derived from the general objective of Shari'ah in the protection of wealth. Shari'ah has prescribed several means to achieve the objective of protecting wealth by preserving the environment. This includes several key principles as discussed by (Kamali, 2017). They are as follows:

- Justice (‘Adl) – Justice will ensure the rights of owners are protected and there is a just and equitable distribution of wealth and opportunities among the society. This principle may have implications for Islamic green finance practices in ensuring fair and equal distribution of proceeds.
- Circulation (Rawaj) – This mainly refers to the availability and movement of goods and services in the market and their widest possible distribution amongst people. This is similar to the previous principle, which can be realized in the aspect of the use of proceeds. The distribution of proceeds must be made to the respective recipients.
- Clarity (Wuduh) – Clarity and specification are therefore essential for the preservation of Mal (assets) and the exchange of goods and services amongst people. Lack of clarity can cause conflict among people, which Shari’ah seeks to prevent, just as it prevents ambiguity and confusion in the ownership of mal and transactions related to it. In terms of practical implications, this principle requires Islamic green finance to establish clear and transparent disclosure and reporting.
- Stability (Isbat) – Stability and proof in the preservation of wealth are determined through a regime of law, contracts, and transactions that establish a stable environment for ownership. Ownership is protected by clarity in its modes of acquisition and transfers through mutual agreement, contracts of exchange, documentation, witnessing, judicial order, reconciliation, and other means of proof. The realisation of this principle requires the establishment of a sound governance policy for Islamic green finance to ensure its stability and growth.

Conclusion

Based on the above discussion, several conclusions can be drawn. Firstly, green finance is a type of financing that is aimed at addressing issues concerning climate change by offering investment that supports environmental sustainability. The growth of green finance has impacted environmental preservation in many areas, such as renewable energy and the lowering of carbon emissions. Secondly, the Islamic financial industry has been perceived as an alternative for investors who are looking for Shari’ah-compliant investment, and there is a rising demand for this among investors. However, the market for Islamic green finance is still relatively small and a robust ecosystem is needed to accelerate its growth. Thirdly, divine principles governing Islamic green finance provide a framework for moral and ethical values as to how individuals and societies should interact with the environment. The key divine principles highlighted in this study are Oneness of God and Vicegerency (Tawheed and Khalifah), Trust (Amanah), Justice (‘Adl), and Benevolence (Ihsan), Accountability (Masu’liyyah), Moderation and Balance (Wasatiyyah and I’tidal), and Objectives of Shari’ah (Maqasid Shari’ah).

This study further recommends the integration of these divine principles (‘Adl, Rawaj, Wuduh, Isbat) into existing standards which share similar values regarding the ethical principles towards the environment. These divine principles serve as a fundamental basis for the formulation of an Islamic ethical framework

for environmental sustainability. This framework also identified the Maqasid Shari'ah that underpinned environmental sustainability and highlighted the role of the Maqasid Shari'ah in protecting the environment. This study also recommends incorporating the general principles of preservation of wealth into existing green finance frameworks such the Sustainable and Responsible Investment (SRI) Sukuk framework, and green bonds to strengthen the Shari'ah-compliant practice of green Islamic finance and enhance the integrity, accountability, and transparency of green Islamic finance.

The main purpose of this study is to discuss the divine principles pertaining to Islamic green finance that are rooted in the teachings of the Qur'an and Sunnah. However, there is a certain limitation that needs further research. Such a limitation requires future research by reviewing specifically the existing global standards on green finance and aligning them with the divine principle's framework. This could facilitate the policy and standard development concerning green Islamic finance and support the robust ecosystem of Islamic green finance.

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8 Fiqhi and Fatwa rulings governing green finance

Nur Farhah Mahadi, Saidatolakma Mohd Yunus and Maryam Batubara

Introduction

This section explores in detail the commendable initiatives and efforts of some Muslim countries with respect to Fiqhi and Fatwa rulings on climate and environmental issues (green financing), towards a more sustainable and responsible financial system. The segments of the Islamic financial system, that is, Islamic banking, Islamic capital market, and Takaful have taken significant steps to promote sustainability and environmental responsibility through the introduction of Shari'ah-compliant and green financing products and services.

Many countries are on their way to becoming low-carbon nations, and various efforts have been undertaken to acquire the position of a low-carbon nation, as the goal is to reach net-zero carbon emissions. This begins at the highest level of government, with the introduction and implementation of laws and regulations, policies that promote the formation of a low-carbon country and progress through a public commitment to cultivating a low-carbon way of life.

The Maqāṣid al-Sharīʿah, which is the foundation of *Islamic finance* shares common principles and values on the preservation of the environment and society. Green Sukuk, with its specific structural requirements and underpinning philosophy that concurrently express economic, environmental, and Islamic values, has the potential for overcoming some of the issues faced by green finance.

Green finance involves mobilizing resources to address climate and environmental issues (green financing) and improve the management of financial risk related to climate and the environment (greening finance). Transforming our economies to be more sustainable requires substantial investments, notably to support our green and low-carbon transition (Hani, 2020). Sustainable finance is an evolution of green finance, as it considers environmental, social, and governance issues and risks to increase long-term investments in sustainable economic activities and projects (Hong et al., 2023).

Methodologies

Muslim scholars have applied several methods of developing and elaborating new legal rulings in Islamic finance with regards to climate and environmental issues

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(green financing), such as interpretation by way of Ijtihād, eclecticism (Takhayyur), necessity (al-Ḍarūrah al-Sharīʿah), and permissible stratagems (Makhārij).

According to Al-Qaraḍāwī (1996), the Islamic finance industry has frequently made use of the interpretation by way of Ijtihad in either of the two forms, that is, Ijtihād Inshā'ī (creative deduction of laws) which refers to creating a new law for which no precedence issue can be found in classic Fiqh treatises, and Ijtihād Intiqā'ī (selective deduction of legal rules).

Numerous Fiqh academies and organisations have resolved to adopt Ijtihād al-Jamāʿī (whereby groups of scholars join and deliberate upon complex issues of law to concur upon resolutions) as their most preferable methodological tool to sort out complex issues of law (Khan, 2013). The exercise of Ijtihād in the modern Islamic finance industry is done through collective consultation (Ijtihād al-Jamāʿī) by competent jurists. Therefore, contemporary collective Ijtihād is undertaken by means of a prior invitation to the council members, for example, the Sharīʿah Advisory Council (SAC), to gather in a certain place at a given time to discuss particular issues. Eventually, a verdict will be declared based on juristic consensus.

Fiqhi and Fatwa rulings on green finance

The growth of Islamic green finance unlocks an Islamic-compliant avenue for the creation of a low-carbon and climate-resilient economy. Islamic finance, which is inherently compatible with principles of green finance, seeks to channel investments towards purposes that bring about sustainable technologies and businesses, and environmental benefits (Ahmed et al., 2015; Obaidullah, 2017; UNPRI, 2017; RFI, 2018). Those carbon emissions may be neutralized with efforts to offset emissions, such as by planting trees or through conservation programmes that subsidize renewable energy, which reflect a Ḥadīth narrated from ʿUbādah bin Ṣāmit that the Messenger of Allah (saw) ruled:

> "*There should be neither harming nor reciprocating harm*." (Sunan Ibn Mājah, ḥadīth 2340)
>
> This applies to humans and non-humans, our present and our future. This ḥadīth is the basis of one of several qawāid al-fiqhiyyah (Islamic legal maxims), such as "harm must be removed or mitigated"; "when it is not possible to avoid harm, then the lesser of the two harms should be tolerated to avoid the greater harm"; and "avoidance of harm takes priority over the attainment of some benefit". These are the principles and wisdom that guide humanity at large.

In Islam, the principle of Wasatiyyah requires maintaining the balance of Mīzān (equilibrium), which entails the avoidance of waste, extravagance, and corruption. Preserving the environment from the Sharī'ah perspective must comply with the concept of Mīzān, which is to utilize the environment responsibly. However, the duty of Islamic finance is to further transform the concepts of Iḥsān, Mīzān, and voluntary charities into an actionable activity for the benefit (Maṣlaḥah) of the

society. Sharī'ah promotes Iḥsān in every act; the concept of Iḥsān denotes doing something in the best possible way to achieve excellence and perfection. It is narrated that the Prophet (saw) said:

> "*Verily Allah has enjoined goodness to everything*".
>
> (Ṣaḥīḥ Muslim, hadīth 4810)

Fasad (the promotion of disorder) is prohibited under Islamic teachings, together with unethical transactions and dealings that include interest (Ribā), uncertainty or deceptive contracts (Gharar), and gambling (Maysir) (RFI, 2018). Businesses should fulfil people's needs within the boundaries of a sustainable and efficient economic system that reflect Islamic compliance (Ḥalāl) or theological purity (Ṭayyīb).

Hence, financial activities that induce disorder, including environmental depletion, are thus prohibited (Obaidullah, 2017; RFI, 2018). In the face of climate change, environmental degradation, and subsequent humanitarian crises, Islamic scholars argue that the injunctions between Sharī'ah and environmental sustainability must contribute to environmental conservation and climate action which strictly adheres to Islamic financial principles. Narrated by 'Abdullah bin 'Umar, Allah's Messenger (saw) said:

> *"Surely! Every one of you is a guardian and is responsible for his charges: The Imam (ruler) of the people is a guardian and is responsible for his subjects; a man is the guardian of his family (household) and is responsible for his subjects; a woman is the guardian of her husband's home and of his children and is responsible for them; and the slave of a man is a guardian of his master's property and is responsible for it. Surely, every one of you is a guardian and responsible for his charges*".
>
> (Ṣaḥīḥ al-Bukhārī, ḥadīth 252)

Following the Ḥadīth, combining the expertise of Shari'ah scholars and green experts, a Shari'ah-compliant green finance may be considered and developed in the future following Fiqhi rulings. Islamic finance Sharī'ah supervisory boards have offered numerous opportunities to promote a more sustainable and responsible global financial system, following the Fiqhi and Fatwa rulings on green finance.

Fiqh on positive environmental aspects

Sustainable projects

By funding clean energy and eco-friendly technologies, Fiqh reduces pollution and conserves resources for future generations. The protection of water, air, and earth from pollutants is an individual religious duty of every Muslim. It is reported that the Prophet (saw) said:

> "*You should not pass urine in stagnant water which is not flowing then (you may need to) wash in it*".
>
> (Ṣaḥīḥ al-Bukhārī, ḥadīth 106)

In March 2023, corresponding to the Maybank Group's sustainability commitment for mobilising RM 80 billion in sustainable financing and achieving a carbon neutral position, the Maybank Group launched an integrated automobile finance solution in Malaysia, specifically catering to customers interested in electric vehicles (EVs) and hybrid vehicles. The solution encompasses a range of facets pertaining to the ownership of EVs or hybrid vehicles. Etiqa Takaful, a subsidiary of the Maybank Group, announced it would become the first Takaful operator to provide Takaful coverage on the EV home charger. This coverage is provided as a complementary extension to Etiqa private automobile insurance or a certificate specifically for recently registered battery-powered electric vehicles (BEVs) or plug-in hybrid electric vehicles (PHEVs) (Maybank, 2023).

Climate-related Fatwa

Climate change and the recent environmental crises have required the issuance of Fatwas to keep pace with societal and climatic development and the evolution of people's lives, contributing to a more sustainable and responsible financial system. During Egypt's Dar al-Ifta Seventh International conference titled "Fatwa and Sustainable Development Goals", it issued a climate-related Fatwa charter for the fight against climate change based on Sharī'ah principles. The issuance of Fatwas focuses on meeting Sustainable Development Goals, promoting environmentally friendly practices, raising awareness of the danger of climate change from a religious perspective, and prohibiting environmentally harmful practices (Aman, 2022).

Islam considers climate change a sort of damage, alteration, and mischief caused by human beings. In one of its verses, the Qur'ān regards mischief as a crime and calls attention to the retribution awaiting those who do it:

> "*Do not spread corruption in the land after it has been set in order. And call upon Him with hope and fear. Indeed, Allah's mercy is always close to the good-doers*".
>
> (Al-Aʿrāf 7:56)

To address the long-term effect of climate-related issues, a Sharī'ah compliant financial product known as Green Sukuk has been launched, which aims to sustain environmental and climate-friendly projects. Green Sukuk is a structured financial product shaped to ensure a better environmental outcome. It involves an array of financing mechanisms and investments employed to promote the development of green projects or minimize the impact of other development projects on the climate, or a combination of both (Al Jasser, 2021).

The Takaful industry has incorporated ethical and environmentally conscious practices through risk management products, that is, climate risk-related Takaful. The Takaful industry contributes to disaster risk management by minimizing the damage of natural disasters through expanding the use of Takaful products such as climate-risk Takaful to help accelerate the recovery from natural disasters. Those with Takaful or flood cover would get some relief from the compensation payable with respect to the loss or damage caused by the floods. In this relation, the supreme of the Maqāṣid al-Sharīʿah is to protect faith, freedom of belief, and worship for all (Al-Baqarah 2:256, Al-Kahfi 18:29, al-Ḥājj 22:40), the sanctity of human life (Al-Mā'idah 5:32, Al-Isrā' 17:33), reason, progeny, and private property.

Banks and the banking system are exposed to climate change through macro- and microeconomic transmission channels that arise from climate risk drivers which generate significant costs and losses for banks and the banking system. In this regard, financial institutions shall understand the transmission and impact of climate-related risks on existing risk and ensure their risk management systems and processes account for climate-related risks. Green financing involves mobilizing resources to address climate and environmental issues, on the one hand, and improving the management of financial risk related to green financing, on the other (Hong et al., 2023).

Environmental protection

Some Muslim scholars have criticized the Western economies and financial systems as responsible for the global environmental crises (Cattelan, 2018). The adoption of Islamic economics framework precepts based on the al-Qur'ān and the Sunnah, the Uṣūl al-fiqh (the science of methodology), and other tools such as Qiyās (analogy), Maṣlaḥah (public good), and the practice of multidisciplinary Ijtihād (exercise of personal reason), for a comprehensive environmental ethic, represents an alternative approach to this crisis which would allow fulfilment of the obligations of Islamic ethics regarding environmental protection to keep pace with societal and climatic development.

Allah (swt) breathed into human being His spirit (As-Sajadah 32:9) and has awarded him with the role of Khalīfah (Al-Baqarah 2:30–31) to promote a more responsible use of natural resources (Al-Naḥl 16:65–69; Yasin 36:61–62), and be functional to environmental protection and sustainable development. Legal instruments that could be dedicated to the protection of natural resources and limit climate change impacts are Iḥyāʿ (acquisition of un-owned land through reclamation, to make it productive, hence, bringing life to the land), Iqṭāʿ (land granted by the state to farmers), Ijārah (leasing of the land to cultivators), the Ḥarīm (institution of protected zones), the Hīmā (reserve of land established for public purposes and for preservation of natural habitat), Waqf (endowment established for charitable purposes), and the Ḥiṣbah (traditional office of the public inspector to ensure that public and private land, resources, and property are used correctly) (Cattelan, 2018).

The obligation to care about environmental protection is aligned with a sound Islamic ecosystem in the light of the Maqāṣid al-Sharīʿah, besides the general duty to do what is right and avoid what is wrong, that is, not to cause corruption on the earth (Al-Qurʾān Al-Baqarah:11–12; Al-Nisā:119; Al-Aʿrāf:56; Al-Rūm:41) as a constitutive element of the ummah.

> "*Let there be a group among you who call ʾothersʾ to goodness, encourage what is good, and forbid what is evil – it is they who will be successful*".
>
> (Al-Qurʾān Ali ʿImrān:104)

> "You are the best community ever raised for humanity – you encourage good, forbid evil, and believe in Allah".
>
> (Al-Qurʾān Ali ʿImrān:110)

This duty places an equal burden on individuals and the whole Muslim community and falls within the socio-economic duty of solidarity, together with the obligation of assisting and supporting others in structuring a novel relationship between the human being and the environment, based on the sustainability of resources.

Green plants

The need to contribute to the re-sequestration of carbon through the urgent development of tree-planting projects through civic initiatives in several countries is encouraged. We also encourage Muslims to participate in as many tree-planting projects as possible with other persons of faith and civic organizations. Narrated by Anās bin Mālik, Allah SWT said:

> "There is none amongst the Muslims who plants a tree or sows seeds, and then a bird, or a person or an animal eats from it, but is regarded as a charitable gift for him".
>
> (Ṣaḥīḥ al-Bukhārī, ḥadīth 513)

Narrated Abū Hurayrah: The Anṣār said to the Prophet (saw):

> "*Distribute the date palm trees between us and our emigrant brothers*". He replied, "*No*". The Ansar said (to the emigrants), "*Look after the trees (water and watch them) and share the fruits with us*". The emigrants said, "*We listen and obey*".
>
> (Ṣaḥīḥ al-Bukhārī, ḥadīth 518)

Human beings are an integral part of the global ecological balance (Mīzān) that exists in the vastness of the universe, a balance that they are asked to maintain (Al-Qurʾān Al-Raḥmān: 5–8). They are obliged to abstain from taking actions that might harm the environment, and they must adopt a behaviour aimed at protecting it from any danger that can damage it.

Societal impact

Community development

Green finance encompasses applying Islamic legal principles to guide environmentally sustainable financial practices, for instance Islamic investment houses and other investment fund administrators and managers to immediately develop fossil-free investment vehicles and portfolios that include investments in renewable and clean energy companies. Investments often target projects with social benefits, like affordable green housing and sustainable agriculture, uplifting communities. In 2023, Qatar Islamic Bank (QIB) launched a green mortgage product that provides financing for energy-efficient homes. The product offers reduced profit rates for homes that meet specific energy efficiency criteria, such as LEED certification or Energy Star rating (Global Finance, 2023). QIB is working with Daman Islamic Insurance Company (Beema) Takaful to provide the Takaful coverage on the group credit life Takaful to indemnify the certificate holder against natural and permanent accidental death.

The emergence of Green Sukuk is consistent with Malaysia's strategy of the Sustainable and Responsible Investment (SRI) Sukuk Framework (which also governs Green Sukuk) in 2014 (SCM, 2014), in the 10th and 11th Malaysia plans and the New Economic Model (Economic Planning Unit, 2009, 2015) to expand the Islamic financial market and to be at the frontier of Islamic financial innovations.

Economic inclusivity

The concept of sustainable Islamic green finance constitutes individuals, institutions, and different stakeholders involved in the economic process, that should act in a responsible way for the protection and preservation of the natural world. It is the individual and collective duty and responsibility of humanity (Al-Zalzalah 99:4–8) to protect the creation that has been entrusted to the human being and, as the responsibility towards creation is voluntarily accepted (Al-Aḥzāb 33:72), the human being is responsible for his behaviour to develop Allah's gifts of natural resources for its prosperity.

It is a duty of the current generation to preserve the ecosystem for the next generation without degrading or polluting its resources and potentials. To this effect, the Qur'an states:

> "*And the earth we have spread it and cast therein firmly set mountains and caused to grow therein (something) of every well-balanced thing. And We have made for you therein means of living and (for) those for whom you are not providers. And there is not a thing but that with Us are its depositories, and We do not send it down except according to a known measure. And We have sent the fertilizing winds and sent down water from the sky and given you drink from it. and you are not its retainers*".
>
> (Al-Hajr 15:19–22)

This requires the maintenance of the delicate ecological balance, biodiversity, and sustainability of all forms of life on earth. The Qur'an refers directly to such balance (al-mīzān), not only on earth but also in the planetary order, and warns against the disturbance of that balance (Al-Raḥmān 55:5–9) or of corrupting the earth, land, and sea, with its adverse effect on all people (Ar-Rūm 30:41). As humanity should take care of the earth, Allah created the earth also to take care of humanity (Al-Jāthiyah 45:12–13), so long as we abstain from waste (Al-Anʿām 6:141; 7:31).

There are approximately 200 verses in the Qur'ān concerning the environment and many Ḥadīth of the Prophet (saw) explain the relationship between humans and the natural environment around them. Therefore, green finance is very much aligned to Islamic finance in terms of advocating positive values such as social responsibility, shared prosperity, and sustainable growth (Kamali et al., 2019).

A vibrant Islamic green finance ecosystem also requires an equally facilitative regulatory framework. Some related policies for making a greener Islamic financial system in Malaysia include:

- Islamic Banking: Bank Negara Malaysia (BNM) issued Value-Based Intermediation (VBI): Strengthening the Roles and Impact of Islamic Finance in 2018; Value-Based Intermediation Financing and Investment Impact Assessment Framework in 2019; and in 2020 the Financial Sector Blueprint 2022–2026.
- Islamic finance practice can apply positive screening approaches covering wider Islamic ethics moving beyond compliance into best practice, consistent with the Value-Based Intermediation concept. Diagram 8.1 shows how VBI benefits the community and customers, which is aligned with the Maqāṣid al-Sharīʿah that shares common principles and values on the preservation of the environment and society.

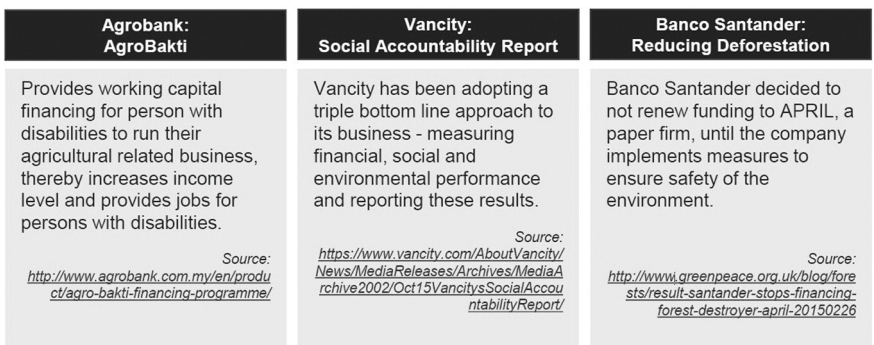

Diagram 8.1 Examples of how VBI benefits the community and customers.

Source: Bank Negara Malaysia (2018).

- Takaful Industry: In 2021, the BNM issued VBI for Takaful Framework.
- Islamic Capital Market: 2017: Guidelines on Sustainable and Responsible Investment (SRI) Funds, and Islamic Fund and Wealth Management Blueprint. 2019: Sustainable and Responsible Investment (SRI) Sukuk Framework. 2020: Waqf-Featured Fund Framework. 2021: Capital Market Masterplan 3 (2021–2025).

Therefore, the Malaysian government set the nation's aspiration to achieve a net-zero greenhouse gas emissions by 2050 in the 12th Malaysia Plan, 2021–2025. In line with this, the National Energy Transition Roadmap was introduced in 2023 to provide the framework for transforming the energy landscape in the country.

Ma'qil ibn Yasar reported: The Messenger of Allah (saw) said:

> "*No servant is given authority by Allah and he does not fulfil its duties sincerely but that he will never smell the fragrance of Paradise*".

In another narration, the Prophet (saw) said, "*Allah will forbid him from entering Paradise*" (Ṣaḥīḥ al-Bukhārī, ḥadīth 6731).

Following this Ḥadīth, several philanthropic funds for environmental conservation have been initiated in Muslim countries. They have a framework and a belief system which mandates protection of the earth and its natural resources. In fact, the Malaysian government has implemented several programmes that reflect a green economy and support the Malaysia 2040 low-carbon aspiration. The Ministry of Natural Resources, Environment and Climate Change (NRECC) established Wakaf Air (water endowment fund) in collaboration with Yayasan Waqaf Malaysia to finance small-scale water service projects (The Sun, 2020). The NRECC has introduced the Wakaf Masjid Hijau (green mosque endowment fund) to support mosque development projects that utilise green technology throughout Malaysia (Sobian, 2022). This is supported by non-governmental organisations and private firms which are also engaging in solar energy endowment projects in mosques and educational institutions. Wakaf Air and Wakaf Masjid Hijau are alternative financing instruments that complement the government's efforts in providing better water services to the people.

Philanthropy instruments such as Waqf and Zakat funds may be structured into broader financing purposes that have impacts on social and environmental dimensions. For instance, Majelis Ulama Indonesia (MUI) has become active not only in Fatwas per se, but with respect to actions involving Muslim community in the matters of environment and climate change (Mangunjaya et al., 2015). In addition, there is the introduction of Waqf Forest by Yayasan Hutan Wakaf Bogor, the Green Kurban and Waqf Integrated Farm by Sinergi Foundation, the planting of 10,000 tamanu trees in 100 hectares of Waqf land in Bogor by Green Waqf Indonesia, the Modern Vanname shrimp farming pond by Green Waqf MUI, and the Green Waqf Initiative by Islamic Chamber of Commerce (Listiana, 2022).

Conclusion

This study discusses leveraging the continuous demand for green finance with a low-carbon and climate-resilient economy. Islamic financial segments have undertaken commendable initiatives and efforts with respect to Fiqhi and Fatwa rulings on climate and environmental issues (green financing), to a more sustainable and responsible financial system.

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9 Law reform affecting Islamic green finance

How is it structured?

Hjh Akhtarun Naba' Billah

Introduction

In Islam, all human activities should be based on (Shari'ah) Islamic law, which is sourced from the Qur'an and Sunnah. In case these two sources cannot accommodate problems arising from current issues, Islamic scholars can use secondary sources such as Ijma' (general public consensus), Qiyas (the equivalent of law to other laws), Istislah (reasoning based on public interest), Istihsan (desire), Urf (customs or habits of the community), and Sadd al-dhara'i (closing facilities that lead to damage) (Ahmed, 2017). Muslims believe that God, as the creator of laws and regulations, has implicit and explicit purposes that will always be good for them. The purpose of establishing Islamic law is often referred to as the Maqasid al-Shari'ah. The term "Maqasid Shari'ah" derives from the word "Maqsad", or "Maqsid", which comes from the Arabic word that means "purpose, wisdom, and intent", and the term "Shari'ah", which means "road" or "road to a watering place", but can also mean "Islamic law". Muslim scholars have agreed that the ultimate goal of the Maqasid Shari'ah is to serve the interests of all human beings and to save them from any danger in life. The Maqasid Shari'ah is a valuable instrument for the development of society and humanity to achieve human perfection throughout life in this world and the hereafter. In the Maqasid Shari'ah, the protection of the public interest (Al-Maslahahi) includes three subsections: necessities (Al-Daruriyat), complements (Al-hajjiyat), and comfort (Al-Tahsiniyat). Then, based on Al-Ghazali's framework (Abduh, 2019), necessities (Al-Daruriyat) includes five elements: protection of faith (Al-Din), protection of self or soul (An-Nafs), protection of intellect (Al-Aql), protection of posterity (An-Nafs), and protection of property (Al-Mal).

The protection of faith (Al-Din) is the belief in Allah, the prophets, the books, the angels, the final day of judgement, and the faith in destiny (Azmat et al., 2021). Monotheism is at the core of the Islamic faith as a Muslim community. The pillars of Islam include Shahadat (confession), Salat (prayer), fasting, Zakat, and Hajj/pilgrimage. Protection of faith includes meeting the needs of social, economic, and social justice, as well as a sense of care and tolerance. Protection of life or self (an-Nafs) aims at protecting humans and humanity, relating to rights such as the right to life, to legal transactions, to freedom, to health protection, to equality,

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to seeking and choosing freely, and to other human rights. Protection of intellect includes intellectual rights such as high-quality religious and scientific education at affordable prices, library and research facilities, freedom of thought, and intellectual awards. Protection of posterity is related to providing improvements from generation to generation, such as proper education, moral and intellectual education, a clean and healthy environment, and freedom from conflict and insecurity. Protection of property is related to property, which has the characteristics of something that is desired and obtained by the owner with effort (Muktasab), can be hoarded (Iddikhar), can be measured (Miqdar), and has an obligation to transfer exchanges (Tadawul). Property protection has dimensions including protection of wealth and ownership, acquisition and development, preservation of wealth and damage, preservation of the circulation of wealth, and protection of wealth values. It broadly means guaranteeing the property rights of citizens by the state, ensuring the welfare of citizens such as eradicating poverty, ensuring equitable distribution of the community's economy and regional development, providing a sense of security and honour, promoting technological developments, and supporting other forces related to the progress of the state and citizens. The values contained in the objectives of Islamic law demonstrate that Islamic law provides support for the sustainability of a better and just human life (Ayub, 2020).

Post-Covid-19 phenomena and global overview on the green financial system

In 2020, China set the goal of achieving "peak carbon" by 2030 and "carbon neutrality" by 2060. As the world's largest carbon emitter, China has only 30 years to shift from "peak carbon" to "carbon neutral", far below the average level of 70 to 80 years in developed countries. However, achieving the goal of "carbon peaking" and "carbon neutrality" is a huge challenge, with a tight schedule, and is a heavy task and involves great difficulty. Equally, this means that economic and social transformation to green and low-carbon is required to achieve a win-win and sustainable development for the economy, energy, environment and climate. The transformation of the real economy will face greater pressure. Scientific and technological innovation is the basis and the key to supporting China's goal of carbon neutrality. Green innovation is the cornerstone of green development and green transformation of society, and financial bottlenecks are a major impediment to the development of green innovation. Insufficient green innovation leads to high costs for green products and services, making the development of green production and green consumption limited(Ding et al., 2020).

Therefore, in 2016, the People's Bank of China issued "Guidance on Building a Green Financial System", making China the first country in the world to have its central government promote the building of a green financial system. In 2017, the State Council decided to set up "green financial reform and innovation pilot zones" in five pilot provinces across the country, marking a new stage of development for green finance in China, combining top-down design and bottom-up regional exploration (Ding et al., 2020).

Enterprises are the mainstay of innovation and play a vital role in China's efforts to build itself into a world power in science and technology. In the process of corporate innovation, the allocation of financial resources plays a key role, and the increased flow of financial resources to green industries leads to the optimal allocation of resources such as land and labour. In theory, the green finance pilot policy influences corporate innovation through the following channels: firstly, the "debt financing mechanism", where the green finance pilot policy emphasizes measures such as providing loans at low-interest rates, facilitating bond issuance and listing or providing more favourable premiums to green industries, while adopting punitive high-interest rate loans for polluting industries or refusing to issue loans, prevents enterprises from going public and charging higher premiums and other measures, which largely promotes the innovative development of green enterprises and forces polluting enterprises to transform and upgrade through innovation. Secondly, for the "innovation input mechanism", green finance may bring a certain "innovation compensation effect" to enterprises, prompting them to increase innovation input to promote enterprise development and eventually form excess returns. Unfortunately, the existing studies have not yet comprehensively tested the above theoretical analysis, and few scholars have explored the impact of green finance pilot policies and their mechanisms based on both quantitative and qualitative perspectives of green innovation (Jin et al., 2022).

Therefore, how exactly do China's green finance pilot policies affect corporate green innovation? More importantly, do they significantly increase research and development (R & D) expenditure, alleviate firms' financing constraints and promote their innovative development? Are there significant differences in the impact of green finance pilot policies between polluting and green sectors? This requires empirical testing, as suggested by Feng et. al. (2022). In view of this, (Feng et al., 2022) took the pilot green finance policy as an entry point to explore in-depth the implementation effect of the pilot green finance policy and its impact difference and mechanism of action between polluting and green industries from the perspective of micro enterprises, which is of great theoretical and practical significance for deepening the innovative pilot green finance policy, expanding the pilot green finance reform pilot zone and promoting the green and efficient development of enterprises.

Methodology

This study used a systematic literature review (SLR) approach to search for references related to Islamic finance sustainability, to discuss the relationship among Islamic finance, Islamic law and the UN Sustainable Development Goals (SDGs). First, we identify the relationship between Islamic law and sustainability using Al-Ghazali's Framework of Maqasid al-Shari'ah and the UN-initiated SDGs. Second, we identify findings from papers generated using SLR, and we explain the findings to link the relationship between Islamic finance, Islamic law and the SDGs using narrative methods (Alhammadi, 2022). The SLR approach allows for a more comprehensive discussion because it involves dividing a discussion into several

sections and subsections and provides easy monitoring of the research topic. The systematic presentation of SLR is aimed at minimizing subjectivity and bias in a study. In addition, SLR tends to produce higher-quality, more comprehensive and more transparent systematic reviews than other types of literature reviews (Ciancarini et al., 2023).

First, we determined the database to be used in the study. The selected database greatly influences the quality of published studies that can be used as a reference. The database that we chose for our SLR was Scopus, the largest database which provides access to peer-reviewed academic journals. This study examined the sustainable development of Islamic finance and its relationship with Islamic law and the SDGs set by the UN General Assembly (Ali, 2020).

Second, we formulated a search protocol review using keywords that matched the research question through Boolean operators in the Scopus database. Our search for publications was limited to publications by title, abstract or keywords using the following Boolean phrases within the title, abstract and keyword: TITLE-ABS-KEY (Islamic AND finance AND sustainable AND development). The use of these phrases is aimed at providing relevant search results related to the sustainable development of Islamic finance, and this search phase resulted in 97 publications (output).

After obtaining the output results from the keywords used, the inclusion and exclusion criteria were then determined in order to minimize subjectivity in article selection, such as only using articles in English. The inclusion criterion was papers on Islamic finance topics such as Islamic instruments and banking, while the exclusion criterion was papers discussing unrelated topics using a sample from Islamic countries.

We also performed a series of filters on the publications of the Scopus database. First, we limited the source type to journals, books and book chapters (25 papers excluded). Second, we selected the final publication stage only (three papers excluded). Then, we excluded duplicate publications (two papers excluded). The application of the exclusion criterion resulted in the inclusion of 70 articles, and the final publication stage left as many as 67 publications. Then, papers were selected by reading their texts as a whole and using a thematic analysis of each finding to ensure that the article fit the topic of discussion. We excluded two papers because the topic was not relevant to Islamic finance in the discussion of Islamic instruments for sustainability. Based on the results of a series of SLR processes in the Scopus database, a total of 65 publications emerged.

Discussion

Islamic finance refers to Shari'ah principles with the aim of achieving the Maqasid al-Shari'ah. In practice, Islamic finance must contain the elements of the Maqasid al-Shari'ah, and it is forbidden to apply the concept of Hilah (manipulating God's Law) in practice. In Islamic finance, the concept of al-Tawhid, which is fair and free from Riba and Gharar, is the main goal of helping humanity, such as lifting oneself out of poverty (Al Madani et al., 2020). The Islamic financial system provides

protection of wealth for productive purposes, provides business opportunities and generates employment.

In Islamic banking, profitability is the second most important factor after Shari'ah compliance, in which Islamic banking has limitations on investing in interest-bearing instruments, thereby reducing incentives and adding to a more productive source of external funding. An Islamic financing instrument is Sukuk, which can achieve human welfare and sustainable development (Khan, 2019). It is not limited to material wealth but extends to prosperity and socio-economic development through the achievement of the Maqasid al-Shari'ah, which are both relevant to the SDGs. Regarding company equity, Shari'ah-compliant companies are more likely to increase book debt ratios during periods of equity decline than companies that are not (Satt et al., 2020).

Various innovations in the context of realizing the SDGs programme were carried out, one of which was the development of green programmes correlated with efforts to protect the environment in a sustainable manner. One application of this green economy is green banking. The five types of green behaviour, namely, conservation, sustainable work, avoiding harm, influencing others and taking the initiative, have significant positive impacts on the growth of green banking (Karake-Shalhoub, 2008). Global mobilization to improve financial stability, achieve the SDGs and mitigate climate change requires innovative structures and frameworks to develop new financing instruments and improve the efficiency of existing ones. The ethical principles and legal contracts inherent in Islamic finance offer a different avenue for financial innovation that incorporates the principles of the Maqasid al-Shari'ah (Abdullah, 2014). The unleveraged green investment trust represents a case of financial innovation because it allows the pooling and allocation of investment funds for development projects in addition to facilitating liquidity management for Islamic financial institutions and open market operations for central banks.

Position in Malaysia

Under the Islamic Financial Services Act (IFSA) (IFSA 2013), BNM (the Central Bank) was conferred regulatory and supervisory powers and was also empowered to issue guidelines and circulars on Shari'ah requirements to promote financial stability and ensure Shari'ah compliance. Following thereon, the IFSA provides that the operations, structure and terms and conditions of Islamic financial products and services provided by financial institutions must be Shari'ah compliant (Jan et al., 2019). Any entity that conducts Islamic banking business or international Islamic banking business must possess the licences granted by the minister of finance on the recommendation of BNM. Foreign institutions may offer Islamic banking services in Malaysia with a valid license under the IFSA (Thani & Ibrahim, 2020). Factors that will be taken into consideration when assessing license applications are whether the aims and operations of a business will involve any element that is contrary to Shari'ah, and the reputation of the applicant for operating in a manner consistent with the standards of good governance and integrity (Mahadi et. al., 2019).

There are various measures taken by the authorities to strengthen consumer protection, including:

- The issuance of the revised BNM's Rules on Prohibited Business Conduct in 2016 to supplement the prohibitions on financial institutions from engaging in conduct deemed to be inherently unfair to consumers under Schedule 7 of the IFSA;
- The establishment of the Financial Ombudsman Scheme under the Islamic Financial Services (Financial Ombudsman Scheme) Regulations 2015; and
- The setting up of the Malaysia Deposit Insurance Corporation (MDIC) pursuant to the Malaysia Deposit Insurance Corporation Act 2011 (MDICA), under which the MDIC insures consumers against the loss of their deposits (including Islamic deposits) in financial institutions in Malaysia for up to 250,000 ringgit per depositor per financial institution in the event of loss caused by failure of a financial institution holding such deposits (Hussain et al., 2020).

Hypothetical recommendations for green financial reform

To be able to study the impact of the Green Financial Reform and Innovation Pilot Zone policy on corporate green innovation in-depth, the policy effect was assessed based on the quantitative and qualitative perspectives of green innovation, using data from Chinese A-share listed enterprises from 2010 to 2019 (Ghlamallah et al., 2021). The results show that: (i) the green financial reform and innovation pilot zone policy does have a significant promotion effect on both the quality and the quantity of enterprises' green innovation, and other proxies for green innovation also yield consistent findings, indicating that the green financial reform and innovation pilot zone policy achieved significant results, and the implementation and promotion of green finance do have a significant promotion effect on green innovation, providing a basis for the green financial innovation pilot zone experience (Li et al., 2019). This result is also supported by parallel trend tests and counterfactual tests, among others. The present study examines the mechanism through which green finance affects corporate green innovation, investigating two channels, namely corporate R & D investment and debt size, and finds that green finance does promote an increase in the quantity of corporate green innovation through the channel of increasing the proportion of corporate R & D investment and long-term borrowing, but there is no credit size expansion channel in the improvement of corporate green innovation quality (Liu, 2021). In addition, this study introduced the environmental policy of the Central Environmental Protection Inspection and found that environmental regulation can enhance the role of corporate green innovation in the pilot green finance policy. In terms of heterogeneity, there are significant differences in the impact of green finance on the green innovation of enterprises in different types of pilot zones, different ownership and different industries. Specifically, the analysis of heterogeneity by pilot zone category shows that the effect of green finance on green innovation of enterprises in the eastern region is stronger. State-owned enterprises are more sensitive to green finance policies (Imronudin et al., 2020).

The pilot green finance policy has a stronger effect on promoting green innovation among non-polluting enterprises than polluting enterprises.

Based on the above findings, the current study proposes the following policy recommendations. Firstly, the pilot zone for green financial reform and innovation should explore replicable experiences and be reproduced on a broader scale. The pilot zone for green financial reform and innovation is an important practical exploration of China's use of financial regulation and other market instruments, and the pilot policy allows each pilot region to build pilot zones that are tailored to local conditions, with their own focus and characteristics, based on the regional institutional environment and resource endowment. Differentiated policies are set according to the type of enterprise, and the policy is revised in a timely manner to optimize the allocation of resources further. This has a certain effect on inducing green innovation in enterprises.

Secondly, a clear guidance programme should be formulated for heavily polluting industries to stimulate enterprises to innovate on their own. For the green innovation of heavily polluting enterprises, the government should further improve the financial support and innovation incentive policies, such as providing government subsidies to enterprises with actual technological innovation needs, while strengthening the supervision of their funds to ensure the use of funds in place, forming a number of major projects and pilot demonstration projects with good emission reduction effects and that can be replicated; heavy polluting industries are the main target of the green financial reform and innovation pilot zone (Nobanee et al., 2016). The pilot green finance policy should make environmental risks visible, raise the cost of pollution and force enterprises in heavily polluting industries to innovate.

Thirdly, a development model of "government environmental regulation and market capital guidance" should be formed to stimulate more social capital to invest in corporate green innovation. From the perspective of environmental authorities, it is important to ensure the timeliness, effectiveness and authority of environmental law enforcement; increase environmental investigations and punishments in high-environmental and social-risk industries; establish a platform for sharing environmental information on enterprises; and play a positive role in promoting environmental regulation in green financial policies. The government should give full support to the function of environmental regulation; promote the market to guide more social capital into green industries; provide financial support for green innovation; and form a new model of green financial reform and innovation (Paltrinieri et al., 2020).

Compared to Western countries such as those in Europe and the United States, the green finance policy started late in China. Based on the implementation of the new development concept, the People's Bank of China has identified green finance as a key task, and in terms of monetary policy, through support tools such as preferential interest rates and special green refinancing, financial institutions are incentivized to provide financial support for carbon emission reduction and better serve the goal of carbon peaking and carbon neutrality, thus accelerating the promotion of financial resources and environmentally optimizing the overall

layout of resources. As an important way to achieve the goal of carbon neutrality, how should China's green finance work? The current incentive mechanism for green financing is not yet perfect (Refinitiv, 2021). For financial institutions, the return on investment for some green finance projects is low, and some of the social benefits cannot be directly translated into economic benefits. It is recommended that future policy consideration be given to increasing the banking sector's incentive to support green industries, for example, reducing the risk weighting of green assets and giving priority to the payment on financing in green assets. At the same time, China should combine its local advantages and start from within enterprises, for example, by adopting incentives such as tax exemptions or tax reductions to encourage enterprises to carry out independent innovation and better play the role of green finance as a guide for capital allocation.

Conclusion

In its development, Islamic finance and law have a close relationship with the implementation of the SDGs initiated by the UN in 2015. The innovations resulting from Islamic financial products abide by the objectives of Islamic law (Maqasid al-Shari'ah) that support the implementation of the SDGs. The essence of the goal of sustainable development is to achieve a better and more sustainable future for every human being (Razimi, 2016).

This study utilized an SLR of articles retrieved from the Scopus database. We used 65 Scopus-indexed publications consisting of 52 research articles, two review articles, one conference article, and 10 book chapters. We found various correlations of topics related to Islamic finance and SDGs. In our findings, the most discussed articles on the implementation of Islamic finance in sustainable development were those related to humanity (philanthropy, CSR or ethics in the financial industry). These findings provide clear evidence that Islamic finance and law essentially support the goal of sustainable development for the benefit of all humans and living beings in the world (Scholtens et al., 2017). Thus, we believe that Islamic finance can be a means of assisting in the achievement of the SDGs established by the UN. However, in its implementation, awareness and support from the government, regulators and related institutions are still needed to support the implementation of these SDGs, especially in the development of Islamic finance (Smolo et al., 2020).

Our findings offer at least two implications. First, for actors in the Islamic banking financial industry, it is important to maintain Shari'ah compliance in their activities (Wu et al., 2021; Satt et al., 2020). This is because compliance with Shari'ah can be helpful and beneficial for business and environmental sustainability (Ul-Hassan et al., 2013). Second, policymakers might need to provide Islamic law and regulations, particularly to protect consumers and business actors that operate their business activities using Shari'ah principles.

Further research may need empirical evidence to test how Islamic finance affects sustainable development in Muslim countries (Wang et. al., 2021). Studies in individual countries might not be good enough for generalization but they are important in order to investigate the specific characteristics of the country. In

contrast, cross-country empirical studies might lack data, and they are difficult to execute. Through single-country studies, researchers can conduct surveys and investigate the impact of Islamic banking on the aspects of humanity, society and poverty, among others (Wang et al., 2021).

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Part IV

Investment techniques in Islamic green finance

10 Corporate social responsibility in the Islamic green economy

Romzie Rosman and Marziana Madah Marzuki

Introduction

The term "green economy" was first coined in a pioneering 1989 report for the government of the United Kingdom by a group of leading environmental economists entitled *Blueprint for a Green Economy*. The Organization for Economic Co-operation and Development (OECD) promotes green growth, acknowledging that "green and growth can go hand in hand" by fostering economic growth and development and, at the same time, ensuring that natural assets continue to provide the resources and environmental services on which human well-being relies (OECD, 2011). The concept has received significant international attention over the past few years as a tool to address the 2008 financial crisis and as one of two themes for the 2012 UN Conference on Sustainable Development (Rio+20).

Accordingly, this has resulted in a rapidly expanding literature, including new publications on the green economy from various influential international organisations, national governments, think tanks, experts, non-governmental organisations, and others. In terms of the Islamic green economy, Wiratama and Safitri (2023) state that from an Islamic perspective, the environment and the economy are two factors that must support each other. Their study finds that economics should be associated with sustainability, as it is in line with Islamic teachings as it is related to the environment. The study found a positive correlation between economics and green growth in major Muslim countries.

The relationship between economy and the environment has been emphasised in Islamic teaching based on its objectives known as the Maqasid al-Shari'ah. Kasri et al. (2023) state that the growing demand for sustainability based on the Sustainable Development Goals (SDGs) that has been promoted by the United Nations has triggered discussion among Islamic finance scholars on the compatibility of the secular-based SDGs with the Maqasid al-Shari'ah. This is because the aims of the Maqasid al-Shari'ah are to promote the well-being of people in every aspect of life, concerning to their affairs not only in this world but also in the hereafter. Thus, the comprehensiveness of the Maqasid al-Shari'ah emphasises the relationship not only with God as the ultimate owner of this universe, but also covers the relationship between the human being and society, the environment, and the economy, which is consistent with the SDGs. However, the development of

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the sustainability concept has overlooked the base of this religious value. In fact, religion and good values have always been closely linked, since the teaching of practically any religion has always highlighted the need for good values practices that are ethically correct to maintain harmony among the living and in the afterlife.

Islam is a comprehensive religion that promote fairness and justice to everyone in this universe. According to Ayed et al. (2021), "The very objective of the Shari'ah which is known as Maqasid al-Shari'ah is to promote the well-being of the people, which lies in safeguarding their faith (din), their self (nafs), their intellect ('aql), their posterity (nasi), and their wealth (mal)". Thus, the construct of sustainability that has been emphasised in the SDGs is consistent with Islam as a religion and acts as the foundation in measuring economic performance. Based on the Maqasid al-Shari'ah, Islam promotes the rule of "no harm and no injury" (*la dharar wa la dharir*) that was communicated via the Prophet (PBUH) based on Qur'an, to ensure that there is no adverse impact of private economic behaviour on third parties or on society (Yusof et al., 2014).

Stressing the concept of sustainability, which relates to economy, society, and the environment, studies have been done to relate the concept of corporate social responsibility (CSR) with the green economy (Awawdeh et al., 2021; Gilchrist et al., 2021; Licastro & Sergi, 2021). Nevertheless, there are only very limited studies that relate religion with CSR and the green economy due to limited awareness or less understanding of how religion plays an important role in the concept of sustainability, as discussed above. There is active discussion on this aspect as recently, both the concept of CSR and of the green economy have been well promoted as an important driver of good performance or an indicator of ethical values among the firms or institutions.

CSR is an evolving concept that reflects various views and approaches regarding corporate relationships with the broader society (Fordham & Robinson, 2018). CSR is a concept that captures the responsibility of business to the environment, its stakeholders, and the wider society (Blowfield, 2008). CSR can be related to an Islamic green economy where Islamic finance and economics principles align with environmental conservation and social responsibility in several ways. For example, many CSR initiatives focus on environmental sustainability that emphasises the Islamic teaching of stewardship over the earth, where there is a need for responsible management and sustainable use of natural resources, aligning with the goals of a green economy. Also, the concept of Zakat aligns with the philanthropic elements of CSR, emphasising the importance of helping the underprivileged community.

Marzuki et al. (2023) highlighted that CSR has always been related to the Islamic social finance mechanism known as Zakat. These two terms CSR and Zakat have been well practised by organisations to support the objectives of the SDGs. Based on the authors' investigation, it has been found that financial institution like development financial institutions (DFIs) have aligned their Islamic social finance and CSR activities with SDG 3 especially during a crisis. Based on their study, they conclude that Islamic social finance and CSR are critical to enhancing banking sustainability. Murphy and Smolarski (2020) make the argument that, based on Islamic business ethics, stakeholder theory, and corporate governance literature, as

well as the concepts of the Maqasid al-Shari'ah, firms have the moral obligation to assists government in addressing challenges related to sustainable socio-economic development. Thus, based on these arguments, the relationship between CSR and the Islamic green economy is further discussed as below.

Literature review

Development of Islamic green economy and corporate social responsibility

The concept of CSR emerged in the 1950s as a philosophy of business doing good for society, including incorporating corporate philanthropy (Bowen, 1953). Until 2000, companies had already utilised CSR to align with relevant international and industry standards such as the United Nations Sustainable Development Goals, the United Nations Global Compact, and International Financing Standards (Fordham & Robinson, 2018).

In 2011, the United Nations Environment Programme (UNEP) published a report entitled *Towards a Green Economy*. It describes an economy that improves human well-being and social equity, while significantly reducing environmental risks and ecological scarcity (UNEP, 2011). According to Allen and Craig (2016), as critical global challenges like climate change come to the fore, scholars are advocating a shift in CSR from a discretionary or voluntary activity to an immediate and integrated response. Hence, this recognises a business's pivotal role and impact in addressing these pressing issues related to the green economy. Moreover, Islamic finance is a financial and economic model based on principles and ethical values in which sustainable development and social responsibility play an essential role (Franzoni & Allali, 2018). Hence, CSR is aligned with Islamic teachings, particularly in supporting the Islamic green economy.

Regarding the Islamic green economy, Rusydiana et al. (2022) conducted a bibliometric analysis of the nexus between a green economy and Islamic finance. The study provides quantitative information and concludes that Islamic finance and a green economy support one another. In addition, Sukuk is a potential instrument in Islamic finance for promoting a green economy. Also, Islamic finance views the green economy as a concept that can create ethical responsibility (Rusydiana et al., 2022). It can be concluded that Islamic finance supports the same principle for environmental preservation and balancing as a green economy. Notably, based on the report *Islamic Green Finance: Development, Ecosystem and Prospects*, there is a potential for Islamic finance to support climate mitigation, including the use of Islamic finance instruments to finance green activities, including renewable energy, natural resources, and energy efficiency projects (Securities Commission Malaysia and World Bank Group, 2019). The report outlines some of this discussion as follows:

- A business-as-usual approach no longer works under the current climate change phenomenon.
- There is a strong nexus between Islamic finance and green finance.

- Innovations in term of structures is important to increase the amount of funding for environmentally beneficial projects.
- Islamic green finance requires a robust ecosystem to grow faster.
- Standards and guidelines serve as key building blocks for Islamic green finance.
- Developing successful Green Sukuk programmes requires commitment from issuers, investors, policymakers, and industry practitioners.

Hence, Islamic finance can tremendously support the growth of a green economy because the negative effect of non-sustainable investments on assets and portfolios exacerbates the impact of climate change.

Conceptual studies on green economy and corporate social responsibility

A green economy is defined as low-carbon, resource-efficient, and socially inclusive (UNEP, 2011). Accordingly, in a green economy, growth in employment and income is driven by public and private investment into the economic activities, infrastructure, and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services. A framework for green growth strategies developed by the OECD (2011) states that the overarching goal of the framework for green growth is to establish incentives or institutions that increase well-being by (1) improving resource management and boosting productivity, (2) encouraging economic activity to take place where it is of best advantage to society over the long term, (3) leading to new ways of meeting objectives 1 and 2, which is innovation. Furthermore, the report emphasises that greening the growth path of an economy depends on policy and institutional settings, level of development, resource endowments, and particular environmental pressure points. However, countries are expected to face other challenges and opportunities in greening growth.

The green economy concept has recently emerged in mainstream public debate. The widespread interest in the green economy has been caused by multidimensional economic, ecological, and social crises, and by numerous initiatives launched by international and regional organisations seeking recovery from these crises (Ryszawska, 2019). The UNEP (2011) characterises a green economy as one that positively influences people's well-being and social equity while reducing environmental risk and consuming natural resources. According to Ryszawska (2019), the study emphasises CSR's role in the transition to the green economy. The arguments include that the present scope and method used in implementing CSR in business are insufficient according to the radical green economy transition. The author further argued that the green economy needs new business models and a new concept of CSR.

In Islam, the concept of green economy is well documented based on the Maqasid al-Shari'ah, which is built on the five fundamental pillars, Nafs (the human self), Din (religion), Aqal (intellect), nasl (posterity), and Mal (wealth). According to Campra et al. (2021), these five pillars emphasise the general objectives of Shari'ah, which is to promote long-term well-being by considering all aspects of life including the aspects of environmental protection and social development. Binding together the

basis of religion, the human self, intellect, and posterity with the circular economy paradigm, it promotes the concept of being "socially responsible". Litardi et al. (2019) stress that even though there is nothing in the Islamic faith or law that dictates that corporations should be "socially responsible", recognising the concept of CSR, which emphasises conducting business while preserving the environment, it is understood that CSR lies at the very heart of the Islamic faith and law. Among the Shari'ah remarks about CSR themes is caring for the environment, and this is recalled with reference to the importance of the environment and Allah's creation. Thus, there is a strong tendency to protect and safeguard the environment through CSR and this highlights the link between CSR and the Islamic green economy.

Empirical studies on the green economy and corporate social responsibility

Empirically, few studies have managed to relate CSR and the green economy. These studies include the CSR disclosure of manufacturing firms, the current stages of the green economy, the role of CSR and the green economy in the enterprise's reputation and performance, and other relationships. However, only a minimal number of studies have been conducted on the relationship between CSR and the Islamic green economy, where both CSR and the green economy are very much related to Islamic finance and the Maqasid al-Shari'ah.

Firstly, Chan and Ong (2022) assessed the Corporate Social Responsibility Disclosure (CSRD) across workplace, marketplace, community, and environmental dimensions in 97 Malaysian manufacturing firms from 2017 to 2019. Their study computed a CSR disclosure index based on content analysis of the firms' annual reports. The study also examined the impact of CSRD on corporate financial performance (CFP) and determined which CSR dimension is most affected CFP. The findings show that CSRD levels in manufacturing firms in Malaysia were still low and a mixed relationship was found between CSRD and CFP. Interestingly, it was discovered that community-, workplace-, and marketplace-related responsibility activities affected performance the most. This study identified which manufacturing firms engage in the green economy and how CSR may influence these firms' financial performance.

Secondly, Khan et al. (2021) explored the relationship between environmental awareness, green practices, firm reputation, and performance. The study focused on the role of green CSR practices in an enterprise's reputation and performance by applying structural equation modelling. The authors examined the intricate connections between ethical leadership and CSR practices that are proxies for environmental training and initiatives, direct community support, ecological design, enterprise reputation, indirect community assistance, and enterprise performance within 404 firms in Pakistan. In relation to green practices, the study found that these are significant in building a positive image of the firms. Also, these practices improve the level of a firm's performance.

Thirdly, Kasayanond et al. (2019) investigated the level of green initiatives among 46 companies from three main sectors, manufacturing, services, and primary production. The results show that companies in Malaysia increasingly prioritise the green economy, which will lead to a boost in economic sustainability

driven by environmentally conscious practices. This suggests that the country's trajectory towards a green economy is closely tied to the perception of its future importance. Moreover, the study reveals that heightened awareness of the green economy among businesses will result in upward environmental sustainability, enhancing Malaysia's current state of green economic development.

Finally, Yacob et al. (2019) undertook an investigation of green initiatives and environmental sustainability of manufacturing SMEs in Malaysia. They collected data from survey instruments responded to by 260 SMEs. The findings show that energy management, water conservation, and waste management are related to environmental sustainability. Also, it is found that the owners' intention towards green fully mediates the relationship of green initiatives and environmental sustainability. However, green technology adoption as a moderator does not have any influence on environmental sustainability. This study shows the need for green initiatives to support the green economy and a sustainability agenda.

Table 10.1 shows a summary of the literature regarding the green economy and CSR, with the authors' remarks on the gaps with the Islamic green economy based on the article findings.

Table 10.1 Summary of the literature studies regarding the green economy and corporate social responsibility (CSR) and the gaps with the Islamic green economy

No	*Title*	*Authors*	*Main Findings*	*Remarks: The Gaps with the Islamic Green Economy*
1.	Corporate Social Responsibility and Firm Performance among Malaysian Firms	Chan and Ong (2022)	1. The findings revealed low levels of CSR disclosure within manufacturing firms. 2. From the CSRD dimension, the community, workplace, environmental and marketplace-related CSR activities significantly impacted the performance of the companies.	1. CSR dimensions represent the foundational pillars of the Islamic green economy, embodying the principles of social responsibility, environmental stewardship, and ethical business practices. By prioritising these dimensions, businesses align with the core values of the Islamic economic framework, fostering a sustainable and equitable approach to economic development while ensuring a positive impact on communities and the environment. 2. Muslims as Khalifah shall be responsible for environmental matters and governance practices. Islam places a high value on transparency to prevent mismanagement and corruption, emphasising the importance of upholding ethical principles in all aspects of engagement.

Table 10.1 (Continued)

No	*Title*	*Authors*	*Main Findings*	*Remarks: The Gaps with the Islamic Green Economy*
2.	How do environmental awareness and corporate social responsibility practices benefit the enterprise? An empirical study in the context of emerging economy	Khan et al. (2021)	1. Green practices are a statistically significant influence on firms' positive image and performance.	1. While CSR remains a public relations tool for corporate entities or SMEs, firms focusing on green economy should apply the concept of the Maqasid al-Shari'ah in relation to CSR practices. This approach is crucial, considering the proven positive impact on evidence-backed green practices and improved firm performance.
3.	Environmental Sustainability and its Growth in Malaysia by Elaborating the Green Economy and Environmental Efficiency	Kasayanond et al. (2019)	1. Approximately 85% of the assessed high technology companies regarded the green economy as the most crucial initiative for the future success of their businesses. 2. A majority of the respondents believe there is a capability to build positive turnover within three years, while a minority assume that turnover is at a steady rate despite companies implementing green economy practices.	1. The perception of the green economy differs among various stakeholders, but what truly matters is the collective effort directed towards it, viewed as a form of worship (Ibadah). 2. Islamic green economy circulation includes ensuring resource efficiencies, lowering carbon emissions and pollution, improving ecosystems, and mitigating environmental risks. Prioritising resource efficiency is crucial for urban areas to progress towards an Islamic green economy, aiding global sustainability efforts.

(*Continued*)

Table 10.1 (Continued)

No	*Title*	*Authors*	*Main Findings*	*Remarks: The Gaps with the Islamic Green Economy*
4.	An empirical investigation of green initiatives and environmental sustainability for manufacturing SMEs	Yacob et al. (2019)	1. Energy management was the most substantial factor in managers' environmental concerns, followed by waste management and water conservation. 2. Owners' intention towards greenness fully mediates the relationship between green initiatives (water conservation, waste management and energy management), and SMEs' sustainable green practices.	1. Investing in environmentally friendly technology, material recycling, and green practices holds significant importance for the future, aligning with the promoting of ethical and sustainable business principles within an Islamic economic framework, regardless of immediate consumption. 2. The emphasis on creating a "green" economy that generates "green jobs" corresponds to the Islamic principle of contributing positively to society through economic activities. Encouraging the development of green businesses and products aligned with environmental sustainability echoes the broader aim of contributing to societal welfare within Islamic financial principles.

Conclusion

The conceptual studies on the green economy and corporate social responsibility (CSR) establish a framework for understanding the principles of a green economy. A green economy is defined as low-carbon, resource-efficient, and socially inclusive, aiming to reduce carbon emissions, enhance energy and resource efficiency, and prevent biodiversity loss. This is in line with the concept of Islamic finance and Islamic teachings as emphasised in the Maqasid al-Shari'ah. Moreover, the emergence of the Islamic green economy concept is driven by global crises and initiatives from international organisations seeking recovery. However, the current scope and methods of implementing CSR are deemed insufficient to transition to the Islamic green economy. A new business model is required to redefine the concept of CSR in a way that can support the realisation of an Islamic green economy. Moreover, only a limited number of studies have investigated the relationship between CSR and the green economy, highlighting the importance of disclosure across the workplace, marketplace, community, and environmental dimensions. Additionally, research on the role of CSR and the green economy emphasises the

positive influence of ethical leadership on firm performance. In the context of the Islamic green economy, there is a growing emphasis on environmentally conscious practices for firms that include small and medium-size enterprises (SMEs). These SMEs have shown a keen interest in green initiatives by providing more CSR activities.

From the studies discussed here, several recommendations can be made to improve the CSR initiatives supporting the Islamic green economy. First, companies should understand the Maqasid al-Shari'ah as prescribed by the Qur'an and Sunnah and its relationship to the green economy and CSR. This understanding could help companies in enhancing the practices of CSR and the green economy in line with Islamic teachings, and hence enhance the CSR disclosure in social, community, and environmental dimensions. Likewise, there is a need for ongoing evaluation of the impact of CSR activities on supporting the development of an Islamic green economy. Additionally, companies should be encouraged to increase awareness of the Islamic green economy, fostering a better understanding of its importance, where educational programmes can be crucial in driving the transition towards environmentally conscious practices. Finally, government policies should encourage and support green initiatives for SMEs in addressing energy management, waste management, and water conversation concerns, which aligns with Islamic teachings.

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11 Ethical investing

How does SRI Sukuk affect the green economy?

Nik Anis Idayu Nik Abdullah and Razali Haron

Introduction

Ethical investing, also called sutainable and responsible investment (SRI), is concerned with making investment decisions that consider both financial returns and ethical considerations (Acharya & Dimson, 2007). It requires evaluating investments' environmental, social, and governance (ESG) impact and aligning them with personal values and beliefs (Martínez et al., 2009). Investors who prioritize ethics are dedicated to supporting companies and initiatives that align with their values of sustainability, social justice, and positive societal impact. These investors understand the significance of investing in projects that generate financial returns while contributing to society's greater good. By investing in socially responsible projects, ethical investors can aid in promoting sustainable development and addressing social and environmental challenges. As Anas and Mounira (2009) highlighted, ethical investors prioritize initiatives that uphold ethical values and work towards a more promising future for everyone.

On the other hand, the Islamic green economy represents a convergence of Islamic principles and sustainability goals, aligning ethical investing with environmental and social considerations. It encompasses a range of financial and economic activities that adhere to Shari'ah principles while promoting sustainable development and addressing environmental challenges. The concept of the Islamic green economy aligns with the principles of sustainability and the transition towards a circular economy (Genovese et al., 2017). The integration of SRI strategies, which involve integrating companies with high environmental, social, and governance (ESG) scores, can be applied to an Islamic stock universe to promote sustainability in the Islamic green economy (Erragragui & Revelli, 2016).

The Islamic green economy has multifaceted significance in the context of ethical investing and sustainability. For example, the Islamic green economy tries to foster ethical investment practices that fit with Islam's ideals and values, encompassing a set of ethical and moral guidelines (Hamizar, 2023). These guidelines are rooted in the principles of Shari'ah, which prohibit engaging in activities deemed unethical or against Islamic values, such as investing in enterprises associated with alcohol, gambling, or weapons. Investments in initiatives and businesses that contribute to societal and environmental well-being are in accordance with these guiding

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principles. This characteristic makes it appealing for individuals seeking to engage in ethical and responsible investment practices.

The Islamic green economy goes beyond advocating for environmental stewardship and sustainable resource management. It also promotes investment in renewable energy, clean technologies, and conservation efforts. Moreover, the concept of social well-being, encompassing education, healthcare, and poverty reduction, is also a key focus of this framework. By prioritizing both environmental and social sustainability, the Islamic green economy offers a comprehensive approach to promoting a more prosperous and equitable society.

To broaden its reach, the Islamic green economy capitalizes on the surging global interest in ethical and sustainable investments. As investors seek to bring their financial portfolios into line with their ethical convictions, the Islamic green economy emerges as a promising option for ethical investment within the Islamic finance system. By investing in the Islamic green economy, one can support the advancement of pioneering green technologies and sustainable practices, which may ultimately bolster renewable energy, energy efficiency, and eco-friendly infrastructure.

Islamic finance offers financial instruments that are relevant in supporting the green economy (Rusydiana & Bahri, 2022). For example, retail Green Sukuk in Indonesia can be developed using a Maqasid approach, which aligns with the objectives of sustainable development (Khalilurrahman & Mubarrak, 2022). Aligning Islamic banking sustainability indicators with the UN Sustainable Development Goals (SDGs) can also contribute to the positive effect of sustainable business practices on the financial results of Islamic banks (Jan et al., 2021).

Many Islamic green economy projects contribute to community development and well-being by prioritizing local economic development through creating jobs and fostering entrepreneurship. Sustainable projects that are part of the Islamic green economy often empower marginalized communities by providing access to essential services, education, and job opportunities. Apart from community development, the Islamic green economy also encourages international collaboration to address global challenges like climate change and resource depletion. It supports partnerships and investments in projects that impact positively impact on a global scale. In Islamic banking, the Accounting and Auditing Organisation for Islamic Financial Institutions plays a role in developing reporting standards for Islamic financial institutions (Hassan & Harahap, 2010). Additionally, a higher ethical objective framework, based on the Maqasid al-Shari'ah framework, can be used to evaluate Islamic banks' ethical, social, environmental, and financial performance (Mergaliyev et al., 2019).

Integrating SRI principles into the Islamic green economy represents a progressive approach to aligning ethical and sustainable investment practices with Islamic finance principles. This integration seeks to harmonize the core values of Islamic finance, which emphasize ethical and responsible financial conduct, with the goals of achieving sustainability and environmental stewardship. In summary, the Islamic green economy represents an essential approach to ethical investing and sustainability. It provides a platform for investors to align their financial goals with

their ethical values, promotes responsible and sustainable economic development, and contributes to global efforts to address environmental and social challenges. The Islamic green economy is a dynamic and evolving field that demonstrates the compatibility of Islamic finance principles with sustainability, and its significance is likely to grow as the world seeks solutions to pressing ethical and environmental issues.

Evolution of SRI within Islamic finance

Islamic finance is a financial system that is based on the ethical and moral guidelines of Shari'ah law, which are derived from the teachings of the Qur'an. Its core principles include fairness, transparency, and responsibility in financial transactions, with a focus on promoting social and economic justice. Some of its key principles include the prohibition of interest (*Riba*), the avoidance of uncertainty (*Gharar*), and the sharing of profits and losses (*Mudarabah*) (Komijani & Taghizadeh-Hesary, 2018). Ethical investing, on the other hand, prioritizes long-term financial returns while considering ESG factors. Therefore, integrating ESG factors into the Islamic investment process may be necessary, as excluding "sinful" activities may not fully comply with all the ethical and social guidelines prescribed by Islamic sources (Erragraguy & Revelli, 2015).

SRI has a keen interest in investing in companies that place sustainable practices, social responsibility, and good governance at the forefront of their operations. Moreover, Islamic finance strongly advocates for investments in environmentally conscious projects and businesses, such as renewable energy, clean technology, and sustainable agriculture, to promote environmental stewardship. Consequently, this approach is in perfect harmony with SRI's mission of supporting companies that contribute to a greener and more sustainable future.

Islamic finance and SRI share common ground in recognizing the significance of social impact in investment decisions. Islamic finance emphasizes the importance of investments that promote social welfare and help eradicate poverty. It encourages financial inclusion, microfinance, and ethical business practices. The principles of Islamic finance reflect a strong sense of social responsibility ingrained in its underlying values, which is why investments made through this approach strive to benefit the broader society. Similarly, SRI seeks to invest in companies that take social impact seriously and are committed to social equity, labour rights, and community development. The approach seeks to promote sustainability and long-term growth while ensuring that investments reflect the investor's ethical considerations. SRI aims to create a better future for society and the environment by investing in companies prioritising social responsibility.

In Islamic finance and SRI, transparent governance and transparency are crucial. Islamic finance upholds the principles of transparent contractual terms, accountability, and disclosure, which are essential for building trust between stakeholders. It aims to promote ethical business practices and discourage fraudulent and corrupt activities. At the same time, SRI emphasizes the need for open reporting and robust corporate governance to ensure responsible business conduct that aligns with

investors' values and societal expectations. By adhering to these principles, Islamic finance and SRI seek to promote sustainable economic growth that benefits all stakeholders while safeguarding the wider community's interests.

Recent years have seen a notable expansion in Islamic finance, which is anticipated to continue. In Islamic finance, SRI concepts are being integrated as one growth area. As a subset of ethical finance, the concept of SRI within Islamic finance has also evolved, reflecting the need to align financial activities with ethical and social values. The development of SRI in Islamic finance has been fuelled by various influential factors. A significant contributor is the heightened recognition among Islamic finance practitioners and investors of the significance of ethical and socially responsible investment practices. Additionally, SRI harmonizes with Islamic principles by prioritizing abstention from investments in industries or practices that undermine Islamic values, including alcohol, gambling, and interest-bearing transactions. Another pivotal factor is the global emphasis on sustainability and conservation, which has encouraged the incorporation of ESG criteria in Islamic finance.

In Islamic finance, SRI goes beyond avoiding prohibited investments and encompasses actively investing in projects and enterprises that promote environmental and social sustainability. The emergence of Islamic financial products and tools that adhere to SRI standards has fuelled the expansion of SRI within Islamic finance. For instance, establishing ethical investment funds and SRI-compliant Sukuk provides investors access to responsible investment opportunities. With these factors driving growth and increasing awareness of responsible investing, SRI is becoming an essential and ever-evolving element of Islamic finance.

According to research conducted by Refinitiv's EIKON database, which examines over 6,500 publicly listed companies, there is a clear correlation between Shari'ah compliance screening and more robust ESG performance in 2019. Shari'ah-compliant companies that receive capital from Islamic financial institutions have ESG scores that are, on average, 6% higher than non-compliant companies, with particularly notable differences in environmental (7.3% higher) and social (7%) scores. Non-financial Shari'ah businesses perform even better, with ESG scores 10% above average. Given this complementary relationship, there are growing calls for the further integration of Islamic and ESG screening processes.

SRI and Islamic finance dichotomy

There are many similarities between Islamic finance and SRI. Both aim to promote social welfare and prioritize ethical considerations (Erragragui & Revelli, 2016). They carefully allocate funds based on high moral and ethical standards (Wahab & Naim, 2020). Additionally, both Islamic finance and SRI avoid investing in industries or activities that are considered unethical or harmful to the environment or human rights, or that engage in unethical practices (Lanzara, 2021).

As the global financial landscape continues to evolve, there is an increasing recognition that Islamic funds and SRI share common principles and values. This creates a unique opportunity for collaboration between the two parties (Yesuf &

Aassouli, 2020). Experts have even proposed the development of fixed-income products that cater to both SRI- and Shari'ah-compliant investors, effectively bridging the gap between conventional and Islamic financial markets (Bennett & Iqbal, 2013). By aligning their investment goals with ethical and moral values, Islamic funds and SRIs work towards promoting sustainable and responsible investing practices that benefit society and the environment. This convergence of interests highlights the potential for greater synergy and mutual benefits between Islamic funds and SRIs.

When examining the differences between Islamic finance and SRI, it is important to note that there are notable distinctions between the two. One of the most significant differences is that Islamic funds operate as non-interest-bearing investments, as interest is forbidden in Islamic finance due to religious beliefs (Lusyana & Sherif, 2017). This means that investors in Islamic funds are not paid interest on their investments but instead receive a portion of the profits generated by the fund (Hamid & Masood, 2011). SRI does not have these strict prerequisites and can encompass a more comprehensive array of investment approaches. SRI focuses more on investing in companies that align with certain ethical or social values rather than adhering to specific religious principles.

Based on Noordin et al. (2018), it is evident that Islamic finance and SRI share many similarities in their objectives and practices. Both strive to promote social welfare and prioritize ethical considerations. Erragragui and Revelli (2016) also emphasize their shared focus on promoting social welfare and ethical considerations. Furthermore, Yesuf and Aassouli (2020) highlight the potential for Islamic finance and SRI to contribute to sustainable development goals.

Opportunities and challenges

The Islamic green economy is a promising blend of ethical finance and environmentally conscious practices based on Islamic principles. This economic model aims to combine Islamic finance with environmental stewardship, paving the way for a more responsible and environmentally sustainable future. However, this model has its own set of challenges and complexities. This chapter explores the various opportunities and challenges that must be overcome to fully realize the environmental and ethical aspirations of the Islamic green economy.

Islamic finance and SRI are committed to ethical and responsible financial practices. Harmonizing these two approaches can attract more investors, including those prioritising Islamic finance principles, ESG values, or both. This can potentially increase financial flows into green and socially responsible projects. One significant advantage of Islamic finance is its resilience during financial crises. By avoiding excessive leverage and speculative investments, Islamic financial institutions were less affected by the 2008 global financial crisis (Iqbal & Mirakhor, 2011). This stability appeals to investors looking for sustainable and stable investment opportunities. The focus on sustainability means that investments are more resilient to external shocks and environmental crises, which can protect investors from losses associated with unsustainable practices. By harmonizing

Islamic finance and SRI, investors can diversify their portfolios, reducing risks and increasing the potential long-term financial returns. This diversification can lead to a more stable and resilient investment strategy.

Further, by harmonizing the principles of Islamic finance and SRI, investors can align their investments with ethical and moral values, ensuring that they do not harm society or the environment. This integrated approach can increase transparency and disclosure requirements for companies, making it easier for investors to evaluate their social and environmental performance and encouraging them to improve in these areas. Ultimately, this combination can lead to investments that have a greater positive impact on society and the environment. Funds and projects that meet Islamic finance and SRI criteria are more likely to contribute to social well-being and environmental sustainability.

However, a significant obstacle in reconciling Islamic finance and SRI lies in their differing rules and principles that may not correspond to the criteria established by SRI and ESG investors. This balancing act can be complex and require considerable time as it may necessitate the implementation of even more intricate screening procedures that could potentially delay investment decisions. Additionally, there may be apprehension about whether harmonized investments can achieve competitive financial returns while sustaining their social and environmental focus. Some investors may harbour concerns that emphasizing ethical values may result in underperformance compared to conventional investments.

Another potential challenge for Islamic finance is the limited availability of investment products, as not all green projects and companies will meet the criteria and comply with the Shari'ah law. This could reduce the diversification opportunities for investors. However, with the growing demand for ethical and sustainable investments, financial institutions are actively developing innovative Shari'ah-compliant investments that provide attractive financial returns while adhering to Islamic principles. Innovations in Shari'ah-compliant investments are continually evolving to meet the needs of Muslim investors and cater to ethical and financial considerations. Some examples of innovative Shari'ah-compliant investments include:

- Sukuk (Islamic bonds): Sukuk are structures that are Shari'ah-compliant and offer an alternative to conventional bonds. They represent asset or project ownership, providing returns by sharing revenue or lease agreements. Innovative forms of Sukuk, such as Green Sukuk, raise funds for environmentally friendly or socially responsible projects.
- Islamic Real Estate Investment Trusts (REITs): Islamic REITs invest in income-generating real estate properties and provide an avenue for real estate investment without involving interest-based financing.
- Social Impact Investing: Impact investing in projects and businesses that align with Islamic finance principles is gaining traction as these investments focus on addressing social and environmental issues while adhering to Shari'ah guidelines.

- Islamic Venture Capital: Islamic venture capital firms invest in start-up and early-stage companies to provide opportunities for entrepreneurs who want to follow Islamic finance guidelines.

Similarly, the lack of standardized global guidelines for harmonizing Islamic finance and SRI can lead to confusion and inconsistencies in the market. This may result in different interpretations of a socially responsible or green investment. There is a need for consistent reporting and evaluation methodologies to ensure transparency and comparability across different investments. However, efforts are underway to develop global standards and frameworks for sustainable investing.

Islamic finance and SRI share common ground in their commitment to ethical and responsible financial practices. Harmonizing SRI and Islamic finance principles for green economy initiatives can offer unique advantages regarding ethical alignment, diversification, and impact. Both aim to create positive change and contribute to a more sustainable and equitable world. By combining the principles of Islamic finance with the framework of SRI, investors can create investment strategies that generate financial returns and make a meaningful impact on society and the planet. However, it also poses challenges related to differing criteria, complex screening processes, limited investment options, lack of standardization, and potential performance trade-offs. Overcoming these challenges will require the development of clear and widely accepted guidelines for harmonizing these approaches and a commitment from both investors and companies to work towards common goals of sustainability and responsibility.

Conclusion

Integrating SRI principles into the Islamic green economy represents a synergistic approach to addressing ethical, environmental, and social concerns while promoting responsible financial practices. This integration creates a financial ecosystem that is compliant with Islamic ethics and contributes to a more sustainable and equitable global economy. It underscores the potential for Islamic finance to be a proactive force in addressing contemporary challenges and advancing the principles of ethical finance.

Stakeholders, policymakers, and investors interested in ethical finance and environmental stewardship based on Islamic principles can contribute to sustainability in several ways. Firstly, they can collaborate with financial institutions to develop ethical financial products (green bonds, SRI Sukuk, Islamic microfinance etc.) that adhere to Shari'ah principles, leveraging its ethical principles to create a value-driven and resilient financial system. Secondly, they can work on developing and creating a standardized regulatory framework on Islamic ESG criteria that can guide ethical investment globally and, simultaneously, increase the priority of sustainable development for companies. Additionally, stakeholders can advocate by implementing mechanisms to monitor and assess the environmental and social impact of investments, as this data-driven approach can help ensure

that all investments contribute to the greater good while minimizing negative consequences.

By adopting a range of sustainable measures, stakeholders, policymakers, and investors can make a meaningful contribution to sustainability while remaining true to Islamic principles. Through their actions, they can play a pivotal role in promoting ethical finance and environmental stewardship within Islamic finance, thereby positively impacting society, the environment, and the global economy. By embracing sustainable practices such as reducing carbon emissions, investing in renewable energy, and supporting socially responsible businesses, these key stakeholders can drive the transition to a greener and more sustainable future while safeguarding Islamic finance principles. This benefits the environment and helps build stronger and more resilient communities that are better equipped to tackle the challenges of the twenty-first century.

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Routledge

12 Contributions of SRI Sukuk to SDGs

An analysis of selected cases

Souhaila Guedira, Mohamed Cherif El Amri and Mustafa Omar Mohammed

Introduction

Sukuk are usually referred to as Islamic investment certificates. Literally, the term "Sukuk" (from the singular Sakk) means certificates. Technically, Sukuk are considered certificates of investment representing the value of an asset. According to the 17th standard of Accounting and Auditing Organization for Islamic Finance Institutions (AAOIFI), Sukuk are defined as "certificates of equal value representing undivided shares in ownership of tangible assets, usufruct and services, assets of particular projects or special investment activity" (AAOIFI, 2015). For the Islamic Financial Services Board (IFSB), the definition of Sukuk is "certificates that represent the holder's proportionate ownership in an undivided part of an underlying asset where the holder assumes all rights and obligations to such asset" (IFSB, 2009).

The Securities Commission of Malaysia defines Sukuk as "certificates of equal value which evidence undivided ownership or investment in the assets using Shari'ah principles and concepts endorsed by the Shari'ah Advisory Council (SAC)" (Securities Commission Malaysia, 2014). Commonly referred to as Islamic bonds or asset-backed securities, Sukuk are different from bonds and conventional securities mainly in the respect that they do not represent a loan or a simple monetary receivable but real assets that are Shari'ah compliant (compatible with Islamic law) and as per the underlying contract (sale, lease, partnership or agency).

Sukuk are an important instrument of the Islamic capital market as they provide benefits for both issuers and investors including corporations, governments, organisations and SMEs. The roles played by Sukuk are crucial as they represent a Shari'ah-compliant tool for investors to get returns and they provide diversification opportunities with lower funding costs for issuers as well as being a flexible financial scheme compared to their conventional counterpart, offering several possibilities of underlying contracts, representing an interesting mechanism of liquidity management and equal wealth distribution in the society (Sairally & Muhammad, 2017). Since their first issuance in the 1990s, Sukuk development and growth have experienced an interesting increase, maintaining their attractiveness to issuers and

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investors and contributing significantly to the expansion of the Islamic finance industry globally. In fact, the total global Sukuk issuance amounted to USD 123.15 billion in 2018 and reached USD 145.7 billion in 2019 (increased by 18.32%), with Malaysian dominance of the Sukuk market, followed by Indonesia, Saudi Arabia, UAE, Turkey and Qatar (International Islamic Financial Market (IIFM), 2019, 2020).

However, most of the existing Sukuk in the market do not usually take environmental, social, and governance (ESG) matters into consideration, and they focus mostly on projects and investments for pure financial benefits and private business. Some of the sovereign Sukuk may be considered as investments for the benefit of the nation and for the public good, but their volume is comparatively small. There has been increasing interest towards "green" investments, considering ESG issues, attracting investors who seek ethical, sustainable and responsible projects and investments. Accordingly, green and sustainable and responsible investment (SRI) Sukuk issuance increased, with the lead of Malaysia and its SRI Sukuk Framework launched in 2014. Therefore, the present authors believe that it is interesting and important to study and analyse SRI Sukuk investments and their contribution to the Sustainable Development Goals (SDGs) of the United Nations. Thus, the chapter investigates to what extent the SRI Sukuk play a role in achieving the SDGs in the light of existing SRI Sukuk cases. Some previous studies focused on the technical details of some issued SRI Sukuk, their scheme and financial characteristics, with little emphasis on their social and green impacts (Abdullah & Saiti, 2016; Alam et al., 2016; Ali et al., 2018; Fasha et al., 2018; Keshminder et al., 2019; Marwan & Ali, 2015, 2016; Marwan & Haneef, 2019; Richardson, 2019; Wahab & Naim, 2020). The research objectives of this chapter are to examine and analyse SRI Sukuk through selected cases in different sectors to understand their social and environmental impacts as well as evaluate and analyse their contribution to the related SDGs. A qualitative research method is adopted, based on a critical survey of the extant literature to understand the SRI Sukuk concept, the different elements and the scope of the available framework, in this study of selected cases of SRI Sukuk in different sectors, analysis and discussion of their environmental and social impacts, and evaluation of their contributions to some related SDGs.

The remaining parts of this chapter are organised as follows. The second section provides an overview of the literature concerning the concept of SRI, and presents the SRI Sukuk framework along with its characteristics, elements and requirements. The third section presents and discusses selected SRI Sukuk cases in four different sectors, namely the Malaysian Ihsan SRI Sukuk for education, the Telekosang ASEAN Green SRI Sukuk for hydropower energy in Malaysia, the Kuala Ketil Solar Farm ASEAN Green SRI Sukuk for solar power energy in Malaysia, and the SRI Sukuk related to Waqf as illustrated by the Bencoolen Waqf Sukuk in Singapore. The section analyses the different cases in relation to their contribution to the SDGs of the United Nations. The fourth and last section concludes the chapter.

Literature review

The concept of SRI

The literature provides different acronyms for "SRI", including Social (or socially) Responsible Investments (Abramson & Chung, 2000; Bennett & Iqbal, 2013; Endl, 2012; Ministry of Finance Malaysia, 2013; Renneboog et al., 2008; Statman, 2007; Syed, 2017); Sustainable, Responsible and Impactful investments (Centre for Islamic Wealth Management, 2015); and Sustainable and Responsible Investment (CIMB, 2015; Marwan & Ali, 2015; Securities Commission Malaysia, 2014). In general, the concept of SRI could be used to refer to any kind of investment that takes into consideration ethical, environmental and social elements in the investments' choice, processes, objectives, organisation and management. As (Moghul & Safar-Aly, 2014) pointed out, SRI investments and projects combine both investors' financial objectives and ESG concerns. It is important to note here that the consideration of ESG elements does not mean restraining investment opportunities but instead following investment portfolios and strategies that join social and environmental benefits to financial and economic ones (Brzeszczyński & McIntosh, 2014; Fung et al., 2010; Kassim & Abdullah, 2017). The social and environmental concerns in SRI projects consider social well-being in terms of reducing poverty, homelessness and unemployment; enhancing healthcare services and labour quality; avoiding investment in harmful industries including weapons, alcohol, tobacco and gambling; protecting consumers; and promoting responsible use of natural resources (Endl, 2012; Marwan, 2015; Marwan & Ali, 2016; Atan et al., 2018). The governance elements of SRI support organisational approaches and processes that emphasise transparency, join efforts, collaboration, active ownership and management systems, and the support of all these concerns and practices on a large scale in the financial industry.

In fact, SRIs are not limited to asset management investments but also include pension funds, foundations, endowments (education, healthcare, religious etc.), institutions and individual investors. From an investor's perspective, the choice of SRI projects could be related to one specific concern or issue among those mentioned previously. In addition, it could be a matter of a single individual choice of investment applied to a part of assets, or could be an important strategic criterion of qualitative assessment of the projects, coupled with a quantitative and financial one that concerns an individual's total portfolio and funds invested (Bennett & Iqbal, 2013).

SRI Sukuk framework

As a leading country and a hub of Islamic finance, Malaysia took the initiative since 2011 in promoting and encouraging SRI projects and investments. This started with the launching of the Capital Market Masterplan 2 by the Securities Commission Malaysia in 2011 as an official first step, setting an agenda to develop a suitable framework and atmosphere for investors willing to support SRI projects

through measures that favour the growing interest in green bonds and social impact bonds (SIBs) (Securities Commission Malaysia, 2011). By 2014, the way was paved for Malaysia as an important market for SRI via Sukuk products after the official budget speech of the Malaysian prime minister in 2013, which was followed by revisions made by the Securities Commission to the existing Sukuk guidelines in August 2014, enriching them with requirements and criteria for SRI Sukuk issuance (Securities Commission Malaysia, 2014).

The guidelines on SRI Sukuk issuance concern financing projects and investments that fulfil certain conditions, such as: i) preserving and protecting the environment and natural resources; ii) conserving energy use; iii) promoting the use of renewable energy; iv) reducing greenhouse gas emission; v) improving the life quality of the society. In addition, the framework considers existing projects and provides assessment guidelines for the eligibility of the projects being included under one of the categories of SRI displayed in the guidelines. As such, existing projects are considered SRI ones if they are related to sectors like: i) natural resources; ii) renewable energy and energy efficiency; iii) community and economic development; iv) Waqf (endowment) properties or assets' development (Securities Commission Malaysia, 2014). The first category deals with investments concerned with sustainable land use, sustainable forestry and agriculture, biodiversity conservation, remediation and redevelopment of polluted or contaminated sites, water infrastructure and related treatment and recycling, as well as sustainable waste management. The second category regroups projects for renewable energies like solar, wind, hydro, biomass and geothermal, in addition to investments in systems for efficient power generation and transmission, and projects that reduce greenhouse gas emissions and energy consumption. The third category of SRI projects is tuned towards services benefiting humans directly in terms of public medical and educational services, community services, urban revitalisation, sustainable buildings and affordable housing investments. The fourth category is an interesting and smart addition to the SRI framework as it recognises the importance and the role of Waqf for societies and the environment. In particular, it has proven to be an efficient mechanism in several regions and countries throughout history (Andalusia, Egypt, Turkey, etc.). It is worth noting that the guidelines also provide a set of disclosure requirements and reports for investors and SRI project issuers to meet objectives of transparency, efficiency, compliance, governance effectiveness and others.

Analysis of selected SRI Sukuk cases

SRI Sukuk for education: Malaysian Ihsan SRI Sukuk

The first-ever SRI Sukuk were issued in Malaysia in May 2015 by the Khazanah National Berhad, the investment fund of the government of Malaysia that holds and manages commercial assets of the government for strategic investment projects, with a total nominal value of RM 1.0 billion for a 25-year tenure from its first issuance. The Sukuk programme, called Ihsan SRI Sukuk, is managed by a special purpose vehicle (SPV) named Ihsan Sukuk Berhad. The first issuance was valued

at RM 100 million, with 4.3% as annual distribution return for the seven-year period. In June 2017, Khazanah issued a second tranche of the Ihsan SRI Sukuk for RM 100 million. The Sukuk would provide funding for schools under the "Trust School Programme" (TSP) under Yayasan AMIR, which is a non-profit foundation established by Khazanah to improve and develop the accessibility and quality of education in Malaysian public schools, established by the government as a long-term investment project. The programme was operating prior to the launching of the Sukuk with 30 schools from urban and rural areas, and the issuance of the Ihsan SRI Sukuk would enable including more schools and students in the programme. In fact, the concerned stakeholders are students, in addition to teachers, school leaders, parents and the community at large. The principle financial adviser or lead manager of the Sukuk issuance was the CIMB Investment Bank Berhad, while CIMB Islamic Bank Berhad along with Amanie Advisors Sdn. Bhd. acted as joint Shari'ah advisers. The other characteristics of the Ihsan SRI Sukuk are that the programme falls under a public private partnership (PPP) with the Ministry of Education, and the underlying contract was based on the Wakalah bi al-Istithmar, or an agency for investment in the form of combined investment of tangible assets and commodities. Furthermore, the Ihsan SRI Sukuk for education enables the Sukuk holders to convert their investment in the Sukuk into donations at any time they wish during the tenure period. This means that they can renounce their claims on the Sukuk they hold while receiving tax vouchers from the Khazanah for equivalent amounts of their claims. In addition, the Sukuk can be traded and sold in the capital market, with a strict and specific investment evaluation system. It is interesting to mention that the social impact of the Sukuk is seriously taken into consideration by applying a "pay for success" structure through a set of key performance indicators (KPIs). The report related to KPIs for a five-year observation period that would evaluate and assess the Sukuk holders' participation in the social impact obligation related to the Trust School Programme and define accordingly their returns of the Sukuk they hold (CIMB, 2015; Khazanah Nasional Malaysia, 2015, 2017).

According to the *Impact Study Report* for TSP 1.0 released by (LeapEd Services, 2018), the programme was designed and launched in order to achieve four main strategic goals in the education field in Malaysia: i) developing high-quality leadership; ii) improving the quality of learning and teaching; iii) maximising student achievement; and iv) strengthening the engagement of parents, community and other concerned stakeholders. The programme began in 2010 with ten schools that were only supported by one corporate sponsor, and with the issuance of the Ihsan SRI Sukuk, the number increased to cover 90 schools in the different 13 states of the country (60 schools since the issuance of the Sukuk in 2015), impacting more than 70,000 students and 6,000 teachers in 2019. Eventually, the importance and role of the Sukuk issued to support the programme will be considerable when assessing the qualitative impact. The lessons conducted in the selected schools follow an "Assessment for Learning" approach of teaching adapted to the specific needs and capabilities of the students, and the lessons are conducted in different subject-based classrooms designed for the specific course. The teachers

receive special trainings and assistance, and parents are more involved in the educational journey of their children. The *Impact Study* reports that the interviewed parents were satisfied with the improvements in their children's education with the TSP, as well as their involvement (the parents) in the educational process in terms of understanding the programme, and having better communication with the teachers and the administrative staff. The report also confirms that more than 80% of the teachers, administration and leadership teams concerned with the programme in primary and secondary schools expressed their satisfaction and benefit from it mainly based on the approach that is followed of knowledge sharing, skills building, pedagogy practices and technics.

When it comes to the UN SDGs, the corresponding goal related to this SRI Sukuk project is the SDG 4 for establishing quality education in terms of ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. Since the Ihsan SRI Sukuk support financing the TSP that targets primary and secondary school levels, they contribute more specifically to achieving some of the objectives of the targets 4.1, 4.6, 4.7, and 4.a of SDG 4 according to the available surveyed information, as explained earlier. The target 4.1 concerns the sub-target of ensuring, by 2030, that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. The SDG 4.6 target aims by 2030 to ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy. The SDG 4.7 target is more related to the content of the educational programme and soft-skills learning, which are included in the Malaysian educational programme and agendas, and directly linked to the objectives of the Khazanah SRI Sukuk, in terms of knowledge and skills needed to promote sustainable development, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity. The SDG 4.a target is of a medium- and long-term objective aimed for by the SRI Sukuk in this case, which is building and upgrading education facilities that are child-, disability- and gender-sensitive and provide safe, non-violent, inclusive and effective learning environments for all (United Nations, 2015). We can also consider the contribution of the Ihsan SRI Sukuk to the SDG 17 of partnerships for the goals since the SRI Sukuk scheme is in the form of a PPP based on agency for investment (Wakalah bi al-Istithmar) between Khazanah National and the Malaysian Ministry of Education.

SRI Sukuk for hydropower energy: Telekosang ASEAN green SRI Sukuk

In this section we will examine and analyse the project of development of an integrated small hydropower scheme on the Telekosang River in Tenom, Sabah, Malaysia. The project, which is financed through the issuance of SRI Sukuk or Islamic Medium-Term Notes (IMTN) for a nominal value of RM 470 million, is considered the first mini-hydro green SRI Sukuk in the world. The project was launched in August 2019 and is expected to be completed by July 2021, where MIDF Amanah Investment Bank Berhad is the main financial adviser. The underlying contract of the project is based on the Wakalah bi al-Istithmar, or an agency for

investment, and the project is set under the SRI Sukuk Framework of the Securities Commission of Malaysia, as detailed in the earlier section, in addition to other local, regional and global green investment standards. The Telekosang ASEAN Green SRI Sukuk project (TAGSS) was initiated to solve the electricity disruptions in Sabah, especially in the rural areas, by providing a local voltage stability scheme to the region. In fact, the project is designed in the form of a cascading hydroelectric scheme consisting of two hydropower plants situated along the Telekosang River, where the run-off discharge of Plant 2 (TH2 of 16MW) will be used as the water intake source for Plant 1 (TH1 of 24MW) (RAM Sustainability, 2019; Telekosang Hydro, 2018, 2020).

The environmental and social impacts of the project are considerable in terms of financing environmentally friendly solutions for the existing energy supply challenge of the region, contributing to mitigating climate change effects, and supporting the simulation of the socio-economic development of the community. Regarding the environmental effects, the TAGSS project is based on the idea of generating electricity through hydropower, which has a minimal carbon emission footprint compared to other techniques of power production using fossil fuel. The expected annual power output of the project is estimated at 245.280 GWh with 172,909 tonnes of CO2 emissions avoided annually (Telekosang Hydro, 2020). These renewable energy impacts fall under the SDG 7 of insuring access to affordable, reliable, sustainable and modern energy for all. Greenhouse gas (GHG) emissions of energy production are reduced with the Telekosang project; the transition from a high-carbon energy system to a low-carbon one is initiated; and there is engagement in reducing the climate change factors. In addition, the Telekosang region in Sabah would benefit from a continuous sustainable clean energy supply to meet the local daily needs in energy consumption in a green and responsible way. As for the socio-economic benefits of the project, they fit under the SDG 8 of local employment and commerce opportunities that has the aim of promoting sustained, inclusive and sustainable economic growth, and full and productive employment and decent work for all. The project would secure up to 600 jobs during the construction, installation and maintenance of the hydropower system. The local community of the nearby villages of the project' plants would be prioritised for the available employment opportunities (RAM Sustainability, 2019; Telekosang Hydro, 2020). Moreover, the workers would be able to develop their skills and expertise in operating and maintaining the hydropower plants, and the local businesses such as machinery suppliers and contractors would have the chance to increase their income from such a project. The SRI Sukuk issued for financing the Telekosang project would be contributing to the SDGs' targets, mainly SDG 7 and SDG 8, as discussed.

SRI Sukuk for solar power energy: Kuala Ketil Solar Farm ASEAN green SRI Sukuk

In October 2019, Edra Solar Sdn. Bhd. issued a RM 245 million SRI Sukuk, or ASEAN Sustainability SRI Islamic Medium-Term Note for a project involving a solar photovoltaic plant in Kuala Ketil, Kedah, Malaysia. The underlying contract

is a 25-year power purchase agreement (PPA) with Tenaga Nasional Berhad, the National Electricity company of Malaysia, and the leading financial adviser for the operations is OCBC Al-Amin Bank Berhad. The project fulfils the Malaysian SRI Sukuk Framework and other regional and global standards of green, sustainable and social investments. Another interesting aspect of the project, besides the large capacity of this solar plant of 50 MWac, is the social and economic development of the community that will occur through reserving 40 acres of land surrounding the solar plant as a buffer zone designed for fruit farming activity by the local community with zero cost (Edra Solar, 2019). The investment is therefore considered the first Malaysian solar power project that includes a social perspective. In fact, the assigned land for the fruit farm has been found very suitable for agricultural activities based on the studies conducted, in terms of the nature of the soil and its mineral components, which will allow for the establishment of plantations to grow pineapples or other fruits. The community benefits of the financed fruit farm project would affect the life of more than 2,600 farmers, while creating 106 direct employment opportunities related to the solar farm investment. The proceeds from the SRI Sukuk will be used in refinancing the total costs of the Kuala Ketil Solar Farm up to 80%, including the cost of the related fruit farm plantations (Edra Solar, 2019).

This SRI Sukuk project targets three main goals through its link with the SDGs of the United Nations. The first one is the SDG 7 of affordable and clean energy. The Kuala Ketil SRI Sukuk investment financed the production of solar energy as a renewable energy for the region. Moreover, the clean electric energy generated by the solar farm contributes to reducing carbon emissions and their polluting effects on the environment both at the local and the nationwide level of Malaysia. The second goal targeted is the SDG 8 concerning decent work and economic growth. In fact, as discussed above, the fruit farm project included in the SRI Sukuk financing scheme would support socially and economically the local community and its development, especially as related to the pineapple production industry and its techniques. It is believed that the buffer zone around the solar farm would make an important contribution in empowering the socio-economic aspects of the region by stimulating the generation of additional revenue and job opportunities for the local farmers. The third target is linked to the SDG 17 of partnership for the goals, in terms of the PPA between Edra Solar, the issuing company, and Tenaga Nasional Berhad, the Malaysian National Electricity company. This partnership agreement would result in facilitating and achieving the main objectives of the investment project, which implicitly contributes to the SDGs 7 and 8 in this case.

SRI Sukuk linked to Waqf: Bencoolen Waqf Sukuk in Singapore

The Waqf property in this case concerns the mosque at Bencoolen Street in Singapore established in 1826 by Omar Bin Ali Aljunied, taken over later by Indian Muslim trustees, and then by Majlis Ugama Islam Singapura (MUIS), the Muslim Religious Council of Singapore. According to (MUIS, 2020), the objective of the Waqf is managing and maintaining the mosque for worship, while the net income received from the rentals of the shops on the same street (part of the Waqf) would

be used to cover the maintenance expenses as well as the payment of the Imam (prayers leader), the Qadi (judge), and the Muazzin (who calls for prayers) of the mosque. However, the income generated was not enough over the years, and the old mosque and shops were in need for renovation and redevelopment. In fact, Bencoolen Street is known for a high number of commercial and strategic activities, hosting Bencoolen Hotel, the prestigious and busy shopping area of Orchard Road, education centres, and other central activities of the city. The development project of the Masjid Bencoolen Waqf suggested by MUIS consisted of the modernisation of the mosque, the establishment of a commercial complex, and the building of high-quality apartments totalling a value of S$ 35 million.

To do so, a joint venture agreement was established between MUIS, its fully owned subsidiary that assigned the management of Waqf properties to Warees Investment, and the "Wakaf Fund". For that, MUIS issued in September 2002 a S$ 35 million Musharakah (partnership) Sukuk. The financing and organisation of the Waqf renovation project consisted of two parts. The first part comprised the financing and execution of the renovation and construction work of the project through the Musharakah Sukuk investment: MUIS was responsible for providing the financial means, and Warees Investment participated in the project through its administrative services and management expertise (along with a small amount), while the Waqf fund provided land and a S$ 4.8 million contribution. MUIS would hold the ownership of the serviced apartments managed by Warees, and both would share the related profit according to their capital share as per the Musharakah agreement. The Waqf fund would keep the mosque and the linked commercial units, which would serve to finance the mosque expenses and management services (MUIS, 2002; Warees Investments, 2002). The second part involved the establishment of an Ijarah lease contract between the SPV of the serviced apartments and Ascott International, a property maintenance company, for a ten-year leasing agreement. The Ijarah income from the first-year rental would be S$ 1.3 million, increasing from the second to the tenth year to reach S$ 1.8 million. The income would be distributed partly to the Sukuk holders and the remaining amount would be given to MUIS and Warees as per the Musharakah agreement for investment returns and management fees. The project resulted in renovating the mosque, increasing its capacity and facilities with a three-storey commercial space for sustaining the mosque's activity and operations, in addition to the 12-storey service apartment building managed by Ascott. The total value of the Waqf project increased in ten years from S$ 800,000 to more than S$ 71 million. It is worth mentioning that the Bencoolen Waqf Sukuk won in 2006 the Regional Award for the category of Regional Continuing Contribution to Islamic Finance, at the Sheikh Mohammed Bin Rashid Al Maktoum Islamic Finance Awards for its Islamic Sukuk financing model (Warees Investments, 2020).

As explained earlier, Sukuk issued for establishing and developing Waqf projects are considered as SRI Sukuk, and it can be seen from the example of the Bencoolen Waqf Sukuk project that the SRI Sukuk issued, secured the financing and the development of the Waqf mosque along with the newly constructed commercial building and the service apartments. The business activity of the shops

would be sufficient now to cover all the maintenance and management expenses of the mosque since the value of the Waqf increased after the redevelopment project investment. Furthermore, the SRI Sukuk of the Bencoolen Waqf project contributes to the SDG 8 for decent work and economic growth through the employment opportunities provided by the shops and the commercial complex that was created. The Musharakah (partnership) contract as the basis for the issued Sukuk could be considered a contribution to the SDG 17 concerning partnership for the goals, illustrated here by the partnership between MUIS and Warees Investments for participating in the achievement of the SDG 8.

Conclusion

The SRI Sukuk cases studied and analysed here are contributing some of the targeted Sustainable Development Goals, mainly the SDG 4 for quality education, the SDG 7 for clean and affordable energy, the SDG 8 for decent work and economic growth, and the SDG 17 on the partnership for the goals. As for the Sukuk market in general and SRI Sukuk issuances, Malaysia has been taking the lead, especially with the launching of the SRI Sukuk Framework and related guidelines and their importance in terms of organising the SRI Sukuk sector, providing a sound legislative background and ensuring necessary disclosure requirements and reporting. It can be clearly deduced from the analyses and discussion in this chapter that SRI Sukuk are valuable and important. They represent the essence and the spirit of the Sukuk as Islamic financial instruments. Under SRI Sukuk schemes, financial needs are served, coupled with social and environmental responsibility and sustainability. It is interesting to see the increasing interest and share of SRI Sukuk issuance. However, there is still more room for encouraging investors to come on board and fund SRI-related projects and investments, especially those contributing to SDG targets. Similarly, it is important to encourage other countries and regions to embark on the SRI Sukuk journey.

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Part V

Application of Islamic green finance

13 Governments' initiatives towards Islamic green finance

Normarianie Razali, Ahmad Hafiz Abdul Aziz and Rusni Hassan

Introduction

The strong demand for green bonds, Green Sukuk, and environmental, social and governance (ESG) has been evident since 2015, especially after more than 175 countries have demonstrated their commitment by signing the Addis Ababa Action Agenda, and the UN Sustainable Development Goals (SDGs), a disaster risk framework in Sendai, and the Paris Climate Agreement at the Conference of the Parties (COP) 21. This accomplishment laid a robust foundation for governments and private sectors to enact sustainable development policies to achieve economic growth underpinned by greater social inclusion, reduced environmental degradation, and natural habitat conservation.

According to the Paris Agreement, efforts will be made to keep the rise in global average temperature to 1.5° Celsius over pre-industrial levels and to keep it well below 2° C. Hence, to achieve net-zero emissions by 2050, global greenhouse gas (GHG) emissions must be lessened by 45% by 2030. In its latest synthesis report, the (Intergovernmental Panel on Climate Change, 2023) warned that the continued increase in GHG emissions would hamper efforts to combat climate change. Unsustainable energy use and changes in land use, lifestyles, patterns of consumption, and production are the primary drivers of this issue. For example, approximately 79% of GHG emissions came from a combination of energy, transport, industry, and buildings based on Climate Watch data for 2019, while 22% is from agriculture, forestry, and other land use (AFOLU). In addition, flooding, catastrophic storms, rising sea levels, intense droughts, water scarcity, and declining biodiversity are examples of climate change effects.

Inadequate mobilising finance is among the critical barriers to adaptation highlighted at the COP 27. At least USD 4 to 6 trillion in investments annually are required for greening the global economy and achieving the Paris Agreement targets. Thus, managing such funding will involve a comprehensive transformation of the financial system from policymakers, financial regulators, financial institutions, investors, and other key stakeholders in the financial markets.

The Coalition of Finance Ministers for Climate Action (2023), in a Framework and Guide for Ministers and Ministries of Finance (MOF), recommended that MOF leverage thematic bonds, including green bonds, for sustainable development

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projects. A strong signal of government commitment to achieving net-zero targets can be showcased by issuing sovereign green bonds, and it can boost reputation and build investors' confidence in climate policies.

Several Malaysian policies have been developed in accordance with the UN SDGs and the Paris Climate Agreement. Under the Paris Agreement, Malaysia has set an unconditional target of 45% reduction in carbon intensity against gross domestic product (GDP) below 2005 levels, to be achieved in 2030. The 11th Malaysian Plan (2016–2020) underlined four focus areas to advance Malaysia in pursuing green growth for sustainability and resilience, namely: strengthening the enabling environment for green growth; adopting the sustainable consumption and production concept; conserving natural resources for present and future generations; and strengthening resilience against climate change and natural disasters (Economic Planning Unit, 2015). According to the Ministry of Natural Resources Environment and Climate Change Malaysia (2023), as shown in Table 13.1, the total GHG emission reductions achieved (without land use, land-use change, and forestry (LULUCF)) are 24,450.33 Gg CO2 eq., 26,327.76 Gg CO2 eq., and 30,402.76 Gg CO2 eq. for the years 2017, 2018, and 2019, respectively. Meanwhile, the total emission reductions achieved for similar years, including LULUCF mitigation efforts, are 70,743.30 Gg CO2 eq., 70,515.08 Gg CO2 eq., and 48,040.54 Gg CO2 eq., respectively.

The 12th Malaysian Plan (2021–2025) reinforced the Malaysian commitment to advancing sustainability and the green economy. Building upon the green growth initiatives of the 11th Plan, sustainability and resilience will be enhanced

Table 13.1 Summary of emission reductions achieved in 2017, 2018, and 2019

Sector	*Sub-Sector*	*Mitigation Actions*	*Emission Reductions Achieved (Gg CO2 eq.)*		
			2017	*2018*	*2019*
Energy	Renewable Energy	RE Implementation through Feed-in Tariff mechanism	507.51	676.59	908.98
		Other RE from Public and Private Licensees	233.19	378.19	292.33
		Net Energy Metering	-	5.54	5.53
		Large-Scale Solar	-	99.46	733.14
		Hydropower Generation	9,316.10	8,348.13	8,194.71
	Energy Efficiency	National Energy Efficiency Action Plan (NEEAP)	1,284.18	2,144.26	3,164.66

Table 13.1 (Continued)

Sector	*Sub-Sector*	*Mitigation Actions*	*Emission Reductions Achieved (Gg CO2 eq.)*		
			2017	*2018*	*2019*
	Transportation	Rail-based public transport	179.32	200.26	269.61
		Use of energy-efficient vehicles	119.23	114.71	140.15
		Use of palm-based biodiesel in blended petroleum diesel	1,174.30	1,174.30	1,677.57
		Use of natural gas in vehicles	81.66	66.76	54.07
	Oil & Gas	Reduction of venting and flaring	2,940.00	3,760.00	4,910.00
Waste		Paper recycling	3,937.76	4,398.87	4,746.94
		Biogas recovery from palm oil mill effluent	3,115.12	3,367.78	3,749.19
Industrial Processes and Product Used (IPPU)		Material substitution in cement production	1,554.27	1,585.17	1,548.09
Agriculture		MyOrganic Certification Programme	7.68	7.76	7.80
Land Use, Land-Use Change and Forestry (LULUCF)		Reducing Deforestation, Sustainable Management of Forest, and Conservation of Carbon Stocks	46,292.97	44,187.32	17,637.78
Total (without LULUCF)			24,450.33	26,327.76	30,402.76
Total (with LULUCF)			70,743.30	70,515.08	48,040.54

Note: Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change.

by addressing climate change and pollution, reducing disaster risks, managing natural resources efficiently and strengthening the enabling environment for effective governance. The strategies to be implemented include accelerating the transition to the circular economy, promoting green and resilient cities and townships, enhancing green mobility, augmenting low-carbon energy, extending producers' responsibility, and implementing evidence-based and risk-informed actions to increase resilience against climate change and disasters. Emphasis will also be placed on

safeguarding natural capital, ensuring sustainable utilisation of resources and benefit sharing, strengthening environmental governance, scaling up green financing, and instilling a sense of shared responsibility (Ministry of Economy, 2021).

The prime minister in 2023 introduced the Ekonomi MADANI with sustainability as one of the core values. The Ekonomi MADANI currently will be supported by the Mid-Term Review 12th Malaysia Plan (MTR 12MP), the National Energy Transition Roadmap (NETR), the Hydrogen Economy and Technology Roadmap, and the New Industrial Master Plan 2030 (NIMP 2030).

Government's current economic policies supporting green economy

Ekonomi MADANI framework

The Ekonomi MADANI framework was launched on 27 July 2023. Restructuring the economy and raising the standard of living in Malaysia are the two key goals of this framework. The overarching goal of the framework is to build a better and more sustainable Malaysia. The whole-of-nation approach is intended to be used to implement the framework, which calls for the mobilisation of resources and teamwork from a wide range of stakeholders, including the public and private sectors, government-linked companies (GLCs), nongovernmental organisations (NGOs), and the general public (Ministry of Finance, 2023).

In pursuing this framework, the government emphasises two main thrusts: raising the ceiling to strengthen the economy and grow the nation's wealth, and raising the floor to ensure quality and equitable benefits for all. The framework consists of both short- and medium-term measures to drive the achievement of these two thrusts. The framework will support and supplement newly developed policies, including the MTR 12MP, the NETR, and the NIMP 2030 (Ministry of Finance, 2023).

With a wide range of targets, the Ekonomi MADANI aims to address pressing issues that directly affect both the people and the economy and lift the country's economic performance. Accelerating the implementation of projects, particularly those aimed at upgrading dilapidated schools and clinics, is one of the initiatives related to sustainability under the Ekonomi MADANI. Additionally, the government aims to eradicate hardcore poverty through the roll-out of Inisiatif Pendapatan Rakyat (IPR) to provide opportunities to increase and diversify income that enables financial independence and resilience. To lessen the financial strain on the public, the Payung RAHMAH concept was also developed, and it is aimed at solving issues related to cost of living (Ministry of Economy, 2023b).

The Ekonomi MADANI aims to advance Malaysia as a leader of the global Islamic economy. Thus, the comprehensive financial ecosystem will be modernised, centring on the Maqasid al-Shari'ah principles. In line with the MADANI framework, the government will collaborate with Islamic financial industry players to offer more digitalised, innovative, and diversified Islamic financial instruments by leveraging Islamic social finance such as Zakat, Waqf, and Sadaqah. A sustainable and effective Islamic finance that encompasses the Halal and Tayyib principles will be aligned with the growing global ESG funds (Ministry of Finance, 2023).

Underpinned by the Maqasid al-Shari'ah, the Securities Commission Malaysia (2023) introduced several aspirations such as humanity, justice and benevolence, flexibility and innovation, and accessibility and inclusivity that can support the two thrusts of Ekonomi MADANI.

Low-carbon and climate-resilient components will be highlighted in Malaysia's development planning to form a more effective and environmentally friendly economic landscape as the nation aims to achieve its net-zero goal by 2050 (Ministry of Finance, 2023). In ensuring a steady and sustainable supply of clean energy for all, the government seeks to expedite the energy transition under the NETR. This aspiration will include increasing renewable energy generation capacity, installing solar panels in government buildings, and implementing a renewable energy trading policy through the electricity market system. Along with promoting new green growth initiatives through incentives, the government will lead in developing the hydrogen economy and carbon capture, utilisation, and storage (CCUS) (Ministry of Economy, 2023b).

Malaysia will reassess the land-use approach to balance developmental, agricultural, and conservation needs. Ensuring the optimisation of land to resolve food security and conserve biodiversity assets is imperative. By optimising the use of currently available agricultural land through adopting technological advances, upgrading the irrigation system, and offering financing facilities, specifically for modern agricultural technology applications, the government aims to improve the self-sufficiency level (SSL) further and boost food security in this effort. In addition, creating nature-based solutions through conservation and reforestation efforts will be intensified to improve environmental integrity (Ministry of Finance, 2023).

The 12th Malaysia Plan, 2021–2025 (12MP)

The 12th Malaysia Plan, 2021–2025 (12MP), is a medium-term plan to achieve a prosperous, inclusive, sustainable Malaysia. Since its implementation, Malaysia has registered commendable socio-economic development, particularly in spurring Malaysia's economic recovery post-Covid-19 crisis despite experiencing several global and domestic challenges. Nevertheless, continuous effort needs to be intensified to ensure the targeted outcomes of the 12MP are achieved. Thus, reviewing the targets, policies, and strategies of the 12MP is imperative in ensuring Malaysia remains on the right growth trajectory (Ministry of Economy, 2023a)

The MRT 12MP, 2023–2025 encompasses revised policies and strategies in line with the aspirations of the Ekonomi MADANI to transform Malaysia into a prosperous and high-income nation. The MTR 12MP introduces 17 Big Bold measures to catalyse socio-economic development in the remaining period of 2023–2025 through at least 71 main strategies and initiatives across the key enabler and the three focus areas, namely strengthening sustainability, building a prosperous society, and achieving a high-income nation. The Big Bold measures include developing high growth high value (HGHV) industries, enhancing fiscal sustainability, retargeting subsidies, accelerating the energy transition, advancing digitalisation and technology through GovTech, and empowering micro, small and

medium enterprises (MSMEs). Meanwhile, the Big Bold initiatives also include reforming social protection; acculturating MADANI society; improving access to healthcare services, housing, and public transportation; and reforming the labour market and wages towards ensuring future-ready talent. The MTR 12MP identifies three primary areas of focus: enhancing sustainability, creating a thriving society, and becoming a high-income country.

Financial regulators' initiatives in greening the financial sector

Bank Negara Malaysia (BNM) (Malaysia Central Bank) has issued the Climate Change and Principle-Based Taxonomy (CCPT) to support the development of the green finance market. The CCPT classifies different stages of sustainable practices adoption mainly by financial institutions, as shown in Table 13.2. With a particular emphasis on how corporate activities impacted pollutants, the environment, and efficiency of resources, the Taxonomy articulates how guiding principles were assessed, including the incorporation of broader environmental objectives through the principle of no substantial harm. Furthermore, the Value-Based Intermediation Financing and Investment Impact Assessment Framework (VBIAF) Sectoral Guides published by BNM, will be used as a reference for in-depth sectoral clarification on activity-based metrics and climate-related and environmental risk-mitigation measures. The purpose of the VBIAF is to assist an impact-based risk management system that evaluates the financing and investment operations of Islamic financial institutions in accordance with their own unique VBI obligations. The VBIAF also serves as a reference for other financial institutions intending to incorporate ESG risk considerations into their risk management system. Six VBIAF Sectoral Guides have been published: Manufacturing, Oil and Gas, Palm Oil, Construction and Infrastructure, and Renewable Energy and Energy Efficiency sectors. Underpinned

Table 13.2 Malaysia's CCPT taxonomy

Classification		*Economic Activity (Transaction Level)*		*Overall business*	
		GP1 Climate change mitigation	*GP2 Climate change adaptation*	*GP3 No significant harm to the environment*	*GP4 Remedial efforts to promote a transition*
Climate supporting	C1	GP1 or GP2 or both		√	√
Transitioning	C2	GP1 or GP2 or both		X	√
	C3	X		X	√
Watchlist	C4	GP1 or GP2 or both		X	X
	C5	X		X	X

Source: Bank Negara Malaysia

by these sectoral guides, AIBIM (2023) stated that Malaysian Islamic banks in 2022 provided RM 78.06 billion in VBI financing, which served 114,883 accounts. The VBI financing in 2022 accounted for 10.83% of the total financing amount. As in the previous report, SMEs and MSMEs were the largest recipients of VBI financing in 2022, representing 35.14% of total VBI financing. There was an increase in net-zero and green financing compared to the previous year.

Meanwhile, the Securities Commission Malaysia has issued the Sustainable and Responsible Investment Taxonomy to guide capital market participants. The SRI Taxonomy has four major categories – environment, transition, social, and sustainability – but does not provide specific thresholds for the concerned sectors. There will be broader components related to the environmental objectives in SRI than the CCPT, like the biodiversity ecosystem and the circular economy.

Bursa Malaysia issued the country's first ESG index in 2014 that aligned with global ESG frameworks such as the Carbon Disclosure Project (CDP) and the Global Reporting Initiative (GRI). In 2015, Bursa Malaysia revised its listing guidelines to require listed firms to include narrative statements on managing material economic, environmental, and social risks and opportunities. The listing requirements regarding sustainability disclosure were further updated in 2022, complemented by a *Reporting Guide* and a set of six detailed toolkits. According to a (KPMG, 2022) survey of Sustainability Reporting, the rate of listed firm sustainability reporting in Malaysia reached 97%, outperforming most countries in Asia and the world.

In addition, Bursa recently established the world's first Shari'ah-compliant voluntary carbon exchange in line with the global demand for voluntary carbon markets (VCM). Activities and initiatives that lessen, eliminate, or hamper greenhouse gas (GHG) emissions will be financed by the VCM. Companies can accomplish their voluntary climate targets and redress their carbon emission footprint by taking part in the voluntary carbon market.

The government supports to green the economy

The government has taken several initiatives to facilitate the development of green projects. Under the National Green Technology Policy (NGTP), which was launched in 2009, the government allocated RM 3.5 billion for the Green Technology Financing Scheme (GTFS) from 2010 to 2017. The GTFS has been continued with the allocation of RM 2 billion for 2019–2020, RM 2 billion for 2022–2023 and RM 3 billion until 2025. The GTFS offers a 60% guarantee of the financing amount and a rebate of 1.5% to 2% on the interest/profit rate charged by the financial institutions. With improved access to finance from private and commercial financial institutions, this incentive seeks to hasten the growth of green projects.

Additionally, BNM assigned RM 1.1 billion for the High Tech and Green Facility (HTG), with the goal of assisting innovative start-ups and SMEs in expanding their operations and investing in three key areas of technology, that is, biotech, digital tech, and green tech, in order to support a long-term and stable economic recovery. Financing without guarantee is available at a maximum interest rate of

3.5% annually, or up to 5% annually with guarantee charge (guaranteed by Credit Guarantee Corporation Malaysia Berhad (CGC) or Syarikat Jaminan Pembiayaan Perniagaan Berhad (SJPP).

Furthermore, the government also provides Green Investment Tax Allowances (GITA) and Green Income Tax Exemption (GITE) to incentivise companies that undertake green technology projects involving capital investments incurred for business purposes or for their consumption, whereby such investments are expected to derive green results. Qualifying activities are renewable energy services; energy efficiency services; services related to green buildings; green data centres; green certification of products, equipment and buildings; green townships; and electric vehicle (EV) services.

In promoting the utilisation of sustainable finance and the strengthening of Malaysia's position as a global hub of sustainable finance, the government provides Sustainable and Responsible Investment (SRI) Sukuk and the Bond Grant Scheme to incentivise and encourage more issuers to finance green, social, and sustainability projects through Sukuk issued under the SC's SRI Sukuk Framework or bonds issued in Malaysia under the ASEAN Green, Social and Sustainability Bond Standards, and to facilitate companies in transitioning to low-carbon and better sustainability practices through Sukuk issued under the SC's SRI-Linked Sukuk Framework or bonds issued under the ASEAN Sustainability-Linked Bond Standards. Under this grant scheme, the issuer can claim the grant based on an issue or programme, 90% of the actual external review cost subject to a maximum of RM300,000. In addition, the SRI Sukuk and Bond Grant Scheme recipient will enjoy a five-year income tax exemption from Year of Assessment 2021 until 2025.

Bank Negara Malaysia (BNM) and the Securities Commission Malaysia established the Malaysia International Islamic Financial Centre Leadership Council (MLC) to drive the development of talents in Islamic finance, including in sustainable finance. The MLC is an important enabler to position Malaysia as a global marketplace and international gateway for Islamic finance. As an industry-led platform, the MLC is guided by the aspirations outlined in the Financial Sector Blueprint and the Capital Market Masterplan 3 (CMP3). The Council, which comprises 10 prominent local and international industry figures, has since actively engaged with the industry players and key partners, and participated in various domestic and international platforms as part of its strategic and advocacy roles in advancing Islamic finance and its impact creation. As part of its immediate priorities, MLC will strive to unlock impactful innovations and collaboration towards delivering outcomes in positioning Malaysia as the preferred Islamic fundraising and investment destination, addressing inequality, advancing sustainability, elevating relevant human capital and knowledge initiatives in Islamic finance, and strengthening digital empowerment (Ministry of Finance, 2023).

Conclusion

The efforts undertaken thus far will facilitate Malaysia in achieving its commitments under the Paris Climate Agreement and the UN SDGs targets. Implementing MTR

12MP, NETR, and NIMP 2030 under the Ekonomi MADANI framework will help the country meet the net-zero targets in 2050. The Ekonomi MADANI aims to achieve seven targets (indicators) within the next ten years: 1) Reach top 30 largest economy; 2) Attain top 12 in global competitiveness; 3) Reach top 25 on the Human Development Index; 4) Increase labour share of income to 45%; 5) Improve Malaysia's position in the Corruption Perception Index to Top 25; 6) Move towards fiscal sustainability, targeting deficit of 3%, or better; 7) Increase the female labour force participation rate to 60% (Ministry of Finance, 2023).

The green and sustainability agenda as key elements in the Ekonomi MADANI can facilitate the Malaysian economy to achieve five of these indicators due to alignment with global trends in adopting the ESG in business and investment strategy, as can be seen in the trend, that is, investment, banking, insurance/takaful, and international trade. In fact, the protection of life, wealth, and lineage as part of the Maqasid al-Shari'ah implicitly advocates a green and sustainability agenda. A wide-ranging ecosystem with clear policies and regulations on sustainability, incentives for green projects and sustainable finance, and adequate talents will further advance and strengthen Malaysia's position as a global hub for Islamic sustainable finance.

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14 Shari'ah instruments that facilitate Islamic green finance

Anwar Hasan Abdullah Othman and Razali Haron

Introduction

Climate change and environmental degradation are pressing global issues that pose serious threats to the planet and future generations (InigoGonzalez-Ricoy & Rey, 2019). Green finance plays a crucial role in addressing these challenges by providing financial resources and incentives for sustainable and environmentally friendly projects and initiatives (Taghizadeh-Hesary & Yoshino, 2020). A growing emphasis has been placed on "sustainable finance" and "green finance" in the mainstream financial industry in recent years. In general, these terms are used to identify financial instruments that provide capital for projects and activities that aim to improve the environment, develop a sustainable economy, and foster a transition to a low-carbon, climate-resilient economy (Liu & Lai, 2021). Conventional green finance involves using various financial instruments and mechanisms to fund environmentally sustainable projects and initiatives. This includes green bonds, green loans, sustainability-linked loans, green investment funds, carbon offset credits, green equity, environmental impact bonds, energy efficiency financing, and green project finance (Shideler et al., 2021; Ghosh, 2022). These financial instruments are used to mobilize capital for green projects and promote sustainability in various sectors, including energy, transportation, infrastructure, and more. They help align financial objectives with environmental goals, making it possible to transition to a more sustainable and eco-friendly economy.

Islamic finance and environmental sustainability can be interconnected in several ways, as Islamic finance principles emphasize ethical and responsible financial conduct (Brescia et al., 2021). In other words, the integration of Islamic finance and environmental sustainability is an evolving field due to such key aspects. For instance, regarding prohibition of harmful activities, Islamic finance principles forbid involvement in activities that are considered harmful to society and the environment (Kamla et al., 2006). One of the Qur'an's frequently referenced instances highlighting humanity's capacity to disregard the Earth's well-being is found in the following passage: "*And We made the sky a protected ceiling, but they, from its signs, are turning away*" (Qur'an, 21:32). Another piece of evidence,

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in *Surah Al-A'raf* (The Heights), stated, "*O Children of Adam! Look to your adornment at every place of worship, and eat and drink, but be not wasteful. Verily He does not love the wasters*" (Qur'an, 7:31). Moreover, in concerning ethical investment, Islamic finance encourages ethical and socially responsible investing (Ahmed, 2019). Regarding risk sharing, in Islamic finance, there is a focus on risk-sharing and the sharing of profits and losses (Hasan, 2015). This can encourage investments in projects that promote environmental sustainability, as investors and project owners both have a vested interest in the success of the endeavour. In addition, interest-based financing in Islamic finance such as interest payments (Riba) are usually avoided (Hasan, 2015). This can be advantageous for environmentally sustainable projects, especially since they often involve long-term investments that may not align well with traditional interest-based financial methods. Furthermore, Islamic finance frequently employs asset-backed financing, where tangible assets are used as collateral (West, 2012). This approach can support investments in green projects by allowing assets like renewable energy infrastructure to serve as collateral, enhancing the feasibility of environmentally sustainable initiatives. In addition, in environmental ethics, Islamic finance principles are rooted in ethical and moral values (Rizk, 2014). These values can be extended to promote environmental ethics, encouraging sustainable practices and responsible environmental stewardship. Therefore, there is potential for Islamic finance to play a role in financing environmentally friendly projects and promoting ethical investment practices.

Islamic finance provides a range of instruments for funding environmentally sustainable projects in accordance with Shari'ah principles (Laldin & Djafri, 2021). Notable options include issuing Green Sukuk (Islamic bonds) for eco-friendly initiatives, Islamic microfinance for small-scale green businesses, crowdfunding platforms adhering to Islamic finance principles, and Islamic investment funds (Ador et al., 2014; Tahiri Jouti, 2019; Testa et al., 2022; Yesuf & Aassouli, 2020). Waqf funds can also be used for eco-friendly projects, while partnerships (Musharakah and Mudarabah) offer flexible financing solutions (Latif et al., 2018). Takaful (Islamic insurance) can support ethical and sustainable investments, and ethical screens help ensure investments are eco-friendly and aligned with Islamic values (Gor, 2013). Nevertheless, Islamic finance faces challenges in incorporating environmental responsibilities, including a lack of focus on environmental issues in traditional Islamic finance, limited awareness and education financial persons of, difficulties in product development, concerns about greenwashing, the absence of clear regulatory frameworks, the need for specialized environmental, social, and governance (ESG) screening tools, and management of environmental risks. To tackle these obstacles, it is imperative for Islamic finance institutions, environmental organizations, governments, and regulatory bodies to collaborate. Furthermore, the innovation of financial products that satisfy both Islamic finance principles and green finance criteria can unlock the potential of Islamic green finance. Therefore, this study will delve deeply into the instruments that facilitate Islamic green finance and explore their structures and applicability.

Literature review

Obaidullah's 2018 study underscores the harmony between Islamic finance and environmental protection and sustainability, with the goal of benefiting society. It underscores the congruence of these objectives with Shari'ah principles and the UN Sustainable Development Goals (SDGs). The research proposes that Islamic finance can have a significant impact on global climate finance solutions, particularly through Islamic social funds that cover the expenses of clean technologies. To utilize Zakat funds for this purpose, the recipients might be required to demonstrate economic disadvantage. Furthermore, it examines the role of Waqf, Zakat, and Sadaqa in addressing humanitarian crises resulting from climate change, including the direct provision of climate-related goods and services, research, and the promotion of climate action awareness. It also highlights the potential of Islamic green funds and Islamic Green Sukuk, similar to sustainable and responsible investment (SRI) funds and green bonds, in furthering the climate change agenda. In addition, in 2021, a study by Liu and Lai focused on the development of Green Sukuk, or Islamic green bonds, in Malaysia since their inception in 2017. The research evaluates how effectively Green Sukuk addresses challenges within the domain of green finance. It employs a financial ecosystems approach, examining Malaysia's progress in Green Sukuk by integrating aspects from the global green bond framework, collaborating with the World Bank, and utilizing Malaysia's expertise in Islamic finance to enhance its position as a global Islamic financial hub. The study, drawing from document analysis and interviews with key stakeholders in financial centres like Kuala Lumpur, uncovers the increasing worldwide adoption of Green Sukuk. While this aligns with Malaysia's nation-building objectives, including expanding the Sukuk market and showcasing its leadership in Islamic financial innovation, the research underscores limitations in improving the existing green bond system. An important concern revolves around the incorporation of established green bond principles, which, while facilitating the international acceptance of Green Sukuk, also raise questions about the potential for greenwashing. By exploring the interaction between various ecosystems in green and Islamic finance, the study reveals the challenges and restrictions associated with Green Sukuk and its role in Malaysia's state-building and climate action.

Syarifuddin (2022) sought to identify preferred Islamic financial tools for advancing the green economy transition. Using the Analytical Network Process-Benefit Opportunity Cost Risk (ANP-BOCR) methodology, insights were gathered from two expert groups: academicians and practitioners. The central finding underscores the importance of the "benefit" aspect in the urgent transition to a green economy, emphasizing the need to prevent and reduce natural resource damage, in line with Shari'ah objectives. The study's standard formula revealed Islamic asset management as the top choice for immediate green economy transformation, while long-term sustainability shifts highlight the significance of Islamic corporate and investment banking. Furthermore, Benaziez and Hassan (2020) focused on examining the applicability of Green Sukuk as a practical financing mechanism for Canada's endeavour to achieve carbon neutrality. Acknowledging the limitations of

conventional green bonds in this specific context, the research explores alternative financial tools. It draws upon analyses of Green Sukuk structures and market development in Malaysia and Indonesia to present a pathway for its incorporation within Canada's financial landscape. The study underscores the ethical principles and environmental obligations inherent in Shari'ah law, drawing a contrast between G and typical green bonds. Additionally, it investigates the impact of Green Sukuk in Malaysia and its potential to influence Canada's green finance sector and environmental objectives. The study's notable recommendations encompass adjustments to regulations, the establishment of a framework for Green Sukuk, standardization of the market, and the introduction of incentives to attract both issuers and investors.

Musari (2022) proposes the integration of Green Sukuk and Cash Waqf Linked Sukuk (CWLS), with the aim of establishing Perpetual Green CWLS as an innovative green financing solution. This collaboration is regarded as a creative approach to secure financial support for addressing climate change, which has become a pressing global development priority due to the escalating impact of severe weather events, particularly on disadvantaged and low-income communities. Moreso et al.'s study had the goal of identifying suitable contractual arrangements for the issuance of Green Sukuk and examining the kinds of development projects that could be applied in Malaysia. Given that Green Sukuk products are relatively new in the Islamic capital market, the study predominantly adopted a qualitative methodology and drew upon secondary data as its reference source. This preliminary investigation was structured as an explanatory study, intended to provide investors with valuable insights into the innovative concept of Green Sukuk within Islamic finance. The study's results unveiled multiple viable contractual options for the issuance of Green Sukuk, as well as the diverse project categories compatible with this financing method. Ultimately, these findings have the potential to instil confidence and enhance investor trust in Green Sukuk.

Ari and Koc (2021) discussed the role local communities in rural areas can play in driving renewable energy adoption. Through a community Green Waqf, the author presents a conceptual financing model for renewable energy that takes advantage of community initiatives involving the private sector, charitable organizations, and the local community. The study proposes the adoption of the community green Waqf as a financing mechanism for renewable energy assets in rural regions, aligning with the Islamic institutional framework of Waqf. This financing model leverages the combined efforts of the community, private sector, and philanthropic sector to promote the feasibility and acceptance of renewable energy projects. The potential consequences of implementing the community green Waqf financing model include effectively addressing challenges related to the supply and demand of renewable energy for smallholder farmers. This, in turn, fosters sustainable economic growth and contributes to a fair transition towards clean energy solutions. Similarly, Mahsun et al. (2022) conducted a study to create a governance model for Waqf to boost sustainable income generation. They developed a comprehensive Waqf model that incorporates environmental considerations, using the balanced scorecard framework as a guide. The study highlighted the underutilization of the

Waqf regulatory system and the need for improvements, particularly in response to low levels of Waqf literacy, the capacity of Nazhirs (Waqf custodians), and technology adoption. It also underscored the presence of limitations within the Waqf management system and the significance of addressing these shortcomings. To deal with these deficiencies, the study applied the balanced scorecard approach, implementing specific strategies with a particular focus on enhancing productivity and promoting growth. The ultimate objective was to optimize Waqf management, gain deeper insights into Waqf ecosystems, increase productivity in Waqf management, enhance the profitability of Waqf assets, and improve the distribution of Waqf to its intended beneficiaries (Mauquf 'Alaih). Furthermore, Hasan and Syahruddin's (2022) proposal revolves around advancing the concept of a green economy through the enhancement of green Waqf for carbonization technology. This research primarily adopted a qualitative approach, involving an in-depth study of relevant literature. The findings of this study underscore the strong recommendation for leveraging green Waqf to support the green economy. Within the Islamic charitable framework, Waqf is anticipated to assume a vital role in promoting environmental conservation. The avenue for environmental preservation is primarily through effective waste management. Employing carbonization technology for waste management holds the potential to supply renewable energy, which, in turn, plays a pivotal role in promoting environmental preservation, elevating living standards, and accelerating economic development.

Sari and Sulistyowati (2023) evaluated the efficiency of Islamic microfinance institutions (IMFIs) at KSSU Harum Dhaha Kediri (Indonesia) in their efforts to implement the green economy. The research adopted a qualitative approach with a case study design, involving the collection of data through focused open-ended interviews. Data analysis encompassed processes of data reduction, data presentation, and the drawing of conclusions. The study's findings indicate that IMFIs at KSSU Harum Dhaha Kediri have not yet achieved full effectiveness in realizing the green economy. This can be attributed to a rise in the realization of non-performing financing (NPF). Additionally, Abdul Hamid et al. (2019) investigated the relationship between social capital and the promotion of green growth in Malaysia, with a specific focus on determining whether faith-based social capital contributes to sustaining economic growth. This research covered a data set spanning from 1970 to 2015. The research findings unveiled both long-term and short-term associations between various facets of social capital, including Zakat (a form of Islamic charity), and the advancement of green economic growth in Malaysia. Importantly, the findings indicated that the causality was unidirectional, with social capital playing a significant role in driving green economic growth. These outcomes have substantial policy implications, underscoring the need to consider social well-being and adhere to the principles of Shari'ah in the measurement of green economic growth.

In general, the literature review reveals that previous research has predominantly centred on Islamic Sukuk within the context of green finance discussions. Much of the attention has revolved around Islamic green finance instruments like Sukuk, which are closely aligned with Islamic financial principles. Conversely, there has been relatively slight emphasis on other Islamic finance instruments, such as Islamic green Waqf, Islamic green microfinance, Islamic green crowdfunding,

and Islamic green investment funds. The current study, therefore, aims to shed more light on these instruments, recognizing their potential to significantly enhance Islamic environmental responsibility and contribute to addressing the risks associated with climate change.

Structure and applicability of Islamic green finance instruments

Islamic green finance instruments are structured to align with Islamic finance principles while promoting environmental sustainability (Rahman et al., 2022). They can be applied to various sectors and projects that aim to reduce the ecological footprint and contribute to a more sustainable and ethical economy (Ibrahim & Shirazi, 2020). There is a variety of Islamic green finance instruments that have been introduced to integrate Islamic finance values with environmental goals and the applicability of these instruments extends to various sectors. These instruments include Islamic Green Sukuk, Islamic Green Waqf, Islamic green microfinance, Islamic green Takaful, Islamic green crowdfunding, and Islamic green investment funds (Abubakar & Handayani, 2020; Al-Anzi & Al-Duaij, 2004; Prastowo, 2015; Afroz et al, 2019; Muhamat, 2017; and Al-Roubaie & Sarea, 2019). The following section will provide in-depth understanding of the framework structure of each Islamic green finance instrument and its applicability.

Islamic Green Sukuk (IGS) instrument

The Islamic Green Sukuk is a financial instrument that integrates the tenets of Islamic finance with a strong emphasis on environmental sustainability (Nehal, 2023). It represents an innovative approach to raising funds for projects that have a positive impact on the environment and align with Islamic finance principles (El Amri et al., 2021). Figure 14.1 shows a breakdown of the structure of IGS

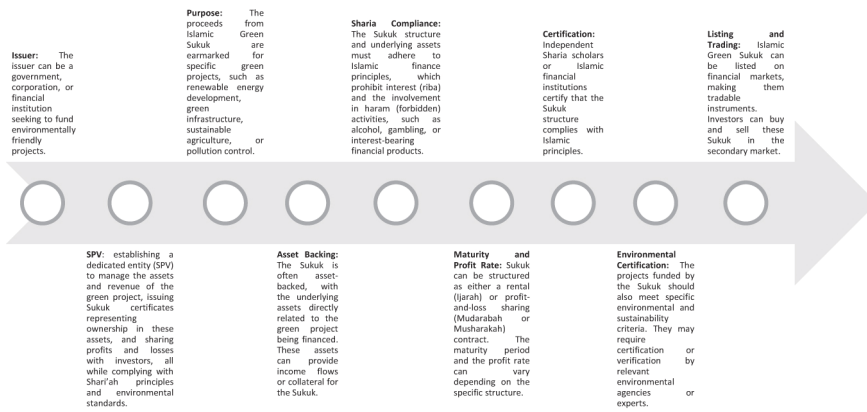

Figure 14.1 A breakdown of the structure of the IGS instrument.

Source: Authors' compilation.

instruments, which includes issuers, special purpose vehicles, purpose, asset backing, Shari'ah compliance, maturities and profit rate, certification, environmental certification, listing, and trading.

Applicability and impact of Islamic Green Sukuk instrument

The Islamic Green Sukuk (IGS) offers a financing mechanism that harmonizes Islamic finance principles with eco-friendly ventures. This encompasses financing for environmentally responsible projects, such as renewable energy endeavours, sustainable transportation initiatives, and eco-conscious construction (Aslam, 2021). It enables diversification of funding sources for governments, corporations, and organizations by allowing them to issue IGS, appealing to a growing market of socially responsible and environmentally aware investors (Ali et al., 2023). Its primary aim is to promote environmentally sustainable projects, contributing to reduced carbon emissions, preservation of biodiversity, and overall environmental safeguarding (Rahman et al., 2022). The issuance of IGS also plays a pivotal role in fostering the development of Islamic finance and green finance markets, attracting both Islamic and non-Islamic investors interested in sustainable investments (Ahmed, 2017). Moreover, it aids in mitigating risks associated with climate change, regulatory changes, and damage to reputation by funding green projects through Sukuk (Ari & Koc, 2021). IGS can broaden the investor base to encompass ethical and environmentally conscious investors, as well as those seeking Shari'ah-compliant investments (Aassouli et al., 2018). Governments can incorporate IGS into their broader environmental and economic policies to stimulate private sector investment in green projects and infrastructure (Abdullah & Nayan, 2020). Figure 14.2 provides a concise overview of the versatility and impact of IGS.

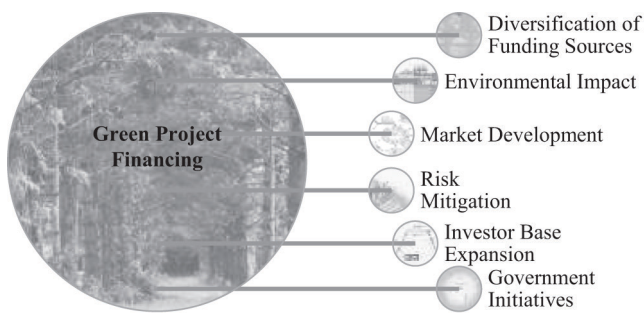

Figure 14.2 Applicability and impact of IGS.

Source: Authors' compilation.

Islamic green Waqf instrument

The Islamic green Waqf (IGW) mechanism combines Islamic principles with a focus on environmental sustainability (Ebrahim et al., 2021). It draws its inspiration from the "Waqf" concept, a facet of Islamic finance that resembles an endowment or philanthropic trust. The primary purpose of the IGW is to provide financial support for environmentally friendly projects and initiatives, with the goal of advancing ecological sustainability and addressing environmental challenges (Ebrahim et al., 2021).

This instrument permits individuals, entities, or even governments to allocate specific assets or funds within a Waqf structure that is dedicated to green and sustainable undertakings (Bakar et al., 2023). The profits or earnings generated from these assets are then directed towards initiatives that promote environmental responsibility. The following shows the structure of the IGW instrument, which includes Waqf fund, Shari'ah compliance, sustainability focus, and governance.

The structure of IGW instruments:

- Waqf Fund: A Waqf is an endowment or charitable trust in Islamic finance. Islamic green Waqf instruments establish a Waqf fund dedicated to financing environmental and sustainable projects. The funds in this Waqf are contributed by donors who want to support eco-friendly initiatives.
- Shari'ah Compliance: To ensure Shari'ah compliance, the investments made from the Waqf fund should adhere to Islamic finance principles.
- Sustainability Focus: Islamic green Waqf instruments target environmentally friendly projects, such as renewable energy, green infrastructure, reforestation, and other sustainability initiatives.
- Governance: These instruments typically have a governance structure that oversees the allocation of funds, ensures transparency, and monitors the performance of the projects funded by the Waqf.

Applicability of Islamic green Waqf instrument

Islamic green Waqf (IGW) instruments combine Islamic finance principles with environmental sustainability goals. They offer a structured way to finance green projects, promote charitable giving, and address environmental and social challenges in a manner consistent with Islamic values (Ari & Koc, 2021). IGW instruments are specifically designed to raise funds for environmentally friendly and sustainable projects. They can be used for various initiatives, including renewable energy, conservation, sustainable agriculture, eco-friendly infrastructure, clean water, and more. These instruments also support charitable efforts, promoting wealth redistribution in alignment with Islamic principles. Additionally, they engage communities in decision-making and provide a platform for individuals and institutions to combine philanthropy with ethical and sustainable investments (Jaafar & Brightman, 2022). The adaptability and impact of IGW include 1) the financing

of green projects, 2) charitable initiatives, 3) wealth redistribution, 4) community engagement, and 5) philanthropy and impact investing.

Islamic Green microfinance instruments

Islamic green microfinance (IGM) instruments integrate Islamic financial principles with the objectives of promoting environmental sustainability. They are tailored to offer financial solutions to individuals and small enterprises with limited income, while upholding the tenets of Islamic finance and encouraging eco-friendly behaviours (Sari &,2023). Figure 14.3 illustrates the diverse IGM instatements' structure.

Applicability of Islamic green microfinance instruments

IGM instruments play a vital role in promoting economic inclusion and environmental consciousness within Islamic finance and microfinance sectors (Prastowo, 2015). Particularly, these instruments have versatile applications, including renewable energy projects. IGM instruments can be used to finance projects like solar power installations, wind turbines, and other renewable energy initiatives (Obaidullah, 2018). Agricultural Sustainability: These financial tools support environmentally responsible farming practices, such as organic farming and sustainable irrigation systems (Obaidullah, 2015). Clean water and sanitation: IGM can help extend access to clean water and sanitation facilities in underserved areas (Prastowo, 2015). Eco-friendly businesses: small businesses that focus on eco-friendly products or services, like recycling or waste reduction, can benefit from

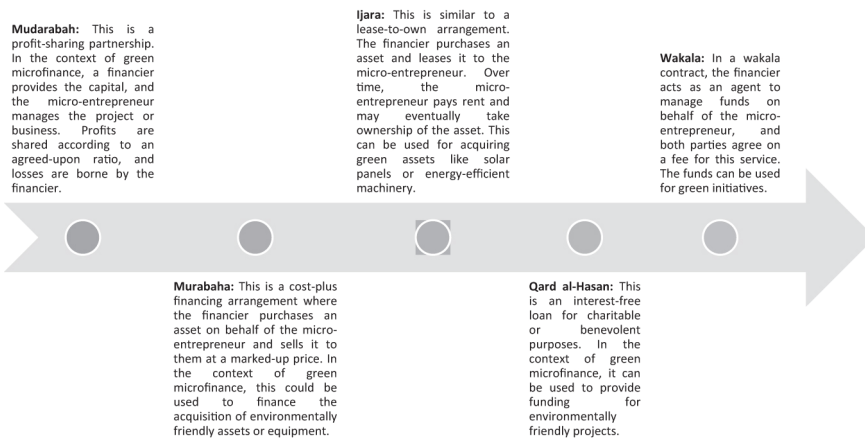

Figure 14.3 The diverse IGM instatements' structure.

Source: Authors compilation.

IGF support (Ari & Koc, 2021). Affordable housing: IGM instruments can promote energy-efficient and environmentally friendly housing options for low-income individuals (Golubchikov & Badyina, 2012). Conservation and environmental initiatives: IGM instruments can provide funding for conservation efforts, reforestation projects, and other programmes that contribute to environmental well-being (Khouildi & Kassim, 2018).

Islamic green investment funds (IGIFs) instruments

IGIFs are financial tools created to integrate the principles of Islamic finance with sustainable and ecologically conscientious investments. Specifically, these funds encompass mutual funds and unit trust funds structured in alignment with Islamic financial principles and dedicated to upholding criteria related to environmental and social responsibility (Ari & Koc, 2021). Figure 14.4 illustrates IGIFs' instatements' structure.

Applicability of Islamic green investment funds

Islamic green investment funds (IGIFs) cater to a diverse range of stakeholders, encompassing those focused on Islamic finance, environmental and social responsibility, ethics, diversification, and long-term sustainability (Kamso, 2013). Regarding ethical and social responsibility, IGIFs appeal to investors seeking to align their financial choices with their moral and societal convictions (Ibrahim & Shirazi, 2020). These funds refrain from investing in industries that harm the environment and society. For Islamic investors, IGIFs are particularly pertinent, offering a means to invest in harmony with Shari'ah compliance principles while generating returns (Al-Roubaie & Sarea, 2019). In the realm of sustainability and green

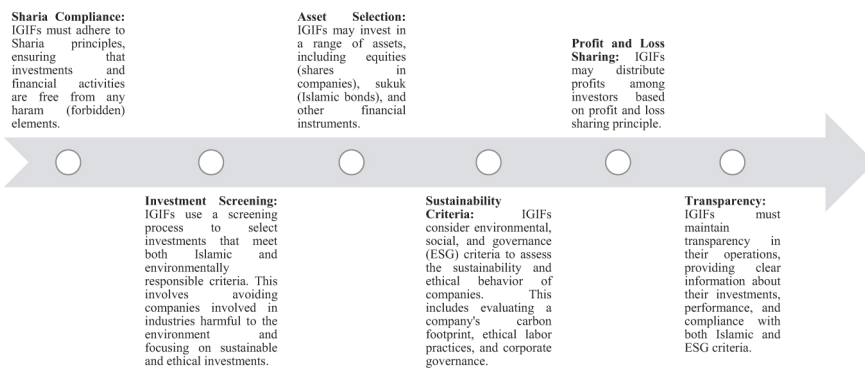

Figure 14.4 The diverse IGIFs instatements' structure.

Source: Authors compilation.

investment, IGIFs present an avenue for investors who aim to champion environmental sustainability and contribute to initiatives against climate change, while earning returns on their investments (Baker et al., 2022). Furthermore, IGIFs provide diversification opportunities within a portfolio, enabling investors to distribute risk across various industries and asset classes, while maintaining ethical and sustainable considerations (Al-Roubaie & Sarea, 2019). Given their often long-term investment structure, IGIFs are well suited for investors with a prolonged investment horizon and a dedication to sustainability (Taher et al., 2014). The adaptability and impact that IGIFs offer include long-term investing, ethical and social responsibility, diversification, sustainability and green investing, and are suitable for Shari'ah-compliant investors.

Conclusion

Climate change and environmental degradation present global challenges, which have prompted the emergence of green finance within the financial sector in response to these concerns. Presently, discussions around green finance are primarily dominated by Islamic green finance instruments like Sukuk, which are closely tied to Islamic financial tools. However, the potential exists to explore a range of other Islamic financial instruments to bolster the green finance industry. This study aimed to review the existing literature on Islamic green finance to uncover Islamic financial tools capable of safeguarding our environment and mitigating climate change risks. The research revealed a diverse array of green financial instruments within Islamic finance that actively contribute to environmental preservation and climate risk mitigation. Beyond Green Sukuk, Islamic financial institutions can utilize instruments such as Islamic green Waqf, Islamic green microfinance, and Islamic green investment funds to support environmentally friendly projects. Through the adoption of these instruments, decision makers can enable Islamic financial institutions to take an active role in fostering environmental preservation and mitigating climate risks, ultimately aligning financial endeavours with the broader objectives of sustainable development. Furthermore, future research can delve into Islamic social finance instruments such as Zakat and Sadaqat to enhance their structures in alignment with environmental preservation and community empowerment to fight climate change risks.

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15 Awqaf-led green finance

A technical know-how

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Introduction

The aftermath of a huge bump caused by the Covid-19 pandemic in the global economic landscape has not seemed to hinder the rising demands for green finance and its significance among financial stakeholders (Ngo et al., 2022). Green finance has a close link with sustainable development goals, or SDGs, that emphasise prioritising environment, economy, and social. The concept of green finance was introduced earlier on, in the 2000s (Shipalana & Chigwenya, 2021), as compared to the SDGs, which wee introduced by the United Nations in 2015 (United Nations, 2023). The emergence of green finance may be attributed to the increasing awareness of climate change and concerns regarding the environment in society. Its earlier initiatives can be traced back to the United Nations Environment Program (UNEP) and other international organisations that underscore the importance of financial institutions in supporting environmentally sustainable projects (Abdul Razak & Ali, 2023), and their respective governments (Srivastava et al., 2022). Among others, traceable green finance initiation can be seen from the introduction of Green Bond Principles in 2014 by the International Capital Market Association (ICMA) (Szabadkai, 2022) that gives rise to the importance of implementing changes in regulations, policies, and standards towards promoting green finance in practice.

In relation to climate change, it is reported by the Swiss Re Institute that

> the global economy could lose 10% of its total economic value due to climate change. The impact of climate change has been forecasted to be the hardest hit for Asian economies, with a 5.5% hit to GDP in the best-case scenario, and 26.5% hit in the worst-case scenario.
>
> (Marchant, 2021; Abdul Razak & Ali, 2023, p. 64)

This indicates the importance of having green finance initiatives and investments in the current time. From observations made by Jacobs (2017), Tang and Zhang (2018), and Abdul Razak and Ali (2023), green finance not only gives values to firms and companies both from financial and social aspects, but also attracts investors that want to contribute towards environmental protection initiatives or projects. Thus, such investments contribute to companies' growth and channel

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positive impacts towards their relevant community. Thus, as a matter of practice, green finance may include any financial products and services that support environmentally sustainable and socially responsible initiatives which aim at reducing carbon emissions, promoting renewable energy, conserving natural resources, protecting and sustaining the environment, and mitigating the effects of climate change. It is found that the relevant financial products and services which are suitable for green finance initiatives are not limited based on modern financial products per se, but may also be extended to cover philanthropic-based financial products such as Awqaf.

Awqaf (or Waqf, as it is called in its singular form) are frequently accepted as traditional Islamic philanthropic social-based mechanisms, the practices of which can be traced back to as early as the beginning of Islamic civilisation. As highlighted by Rashid (2021), the potentials of Awqaf are limitless in serving the community and should be looked at from a broader perspective. Its traditional practices should be used as examples for its future utilisation and not to confine it without any innovations or changes. As long as its legal requirements as prescribed by Shari'ah are fulfilled, Awqaf can be implemented to serve any necessary purpose which is beneficial. Thus, it is right to mention a smart observation on Awqaf (Sait & Lim, 2006, p. 173; also quoted by Rashid, 2021, p. 467) that observes:

> The increasing popularity of the waqf does not necessarily imply a nostalgic return to a traditional model. Modernization of the waqf can deliver a transparent and responsive institution with modern management structures, like microfinance and other initiatives. This may well be an opportunity to facilitate the development of indigenous models based on modern benchmarks and capable of responding to contemporary challenges.

Thus, the operation of Awqaf can be expanded by diversifying possible objectives that can be attained. Moreover, the earlier practices of Awqaf, which can still be traced nowadays, are found to have been successful and meet the objectives that match with the initiatives of green finance. They are also philanthropic in nature. For an example, Saidina Uthman Al-Affan, one of the Prophet's (PBUH) famous companions, bought a freshwater well which is located north-west of the Nabawi mosque in Madinah and made it a Waqf. After more than 1,400 years passed, the freshwater from his well is still in use and benefiting the residents of the Madinah, and they frequently use it to water trees and palms (AWQAF, 2023). Currently, the management of the well is under aegis of the Ministry of Islamic Affairs, Endowments, Call and Guidance of Saudi Arabia Government. Since 1953, it has been rented by the Ministry of Environment, Water and Agriculture to water nearby farms which meet the needs of agricultural products (AWQAF, 2023). This shows that Awqaf has relevant potentials that can be explored as financing mechanisms in supporting green finance initiatives.

The discussion presented here is based on qualitative and meta-analysis approaches, which are deemed suitable due to the scarcity of available literature and research relating to Awqaf-led green finance. Nevertheless, a collection

of newly emerging literature and research that appreciate both Awqaf and green finance or financing can be traced back to the year 2020. Many initiatives which are relevant to green finance may be found and are available in practice; however, they have yet to be reported accordingly. Thus, possible future research is warranted. Meanwhile, readings on Awqaf are made and available in their traditional style of discussion. Instead of considering Awqaf and green finance separately, it is necessary to evaluate the current scenario of Awqaf-led green finance.

Understanding Awqaf in modern practices

The word "Awqaf", or "Waqf" (in its singular form), does not have an exact term that can represent it in the English language. Originating from the Arabic term *waqa-fa*, Awqaf has been defined by scholars in various ways. In a literal sense, several Muslim scholars define it as: (i) confinement and prohibition (Fadilah, 2015); (ii) causing something to stop or stand still (Chowdhury et al., 2011); (iii) detention, holding, or keeping (Zakaria et al., 2012); (iv) running a charity (Mohd Zakaria & Zurina, 2013); (v) to stop, prevent, detain, or to keep in custody (Md. Saad et al., 2017); and (vi) restricting or forbidding the movement, exchange or transporting of something (Ahmad & Saifullah, 2012; Mohammad Suhaimi, 2020). In its technical sense, there are several well-known definitions of Awqaf which can be followed. These technical definitions are developed based on classical discussions on the application of Awqaf as derived from the main Islamic schools of legal thought. As listed by Mohammad Suhaimi (2020: 12–13), Awqaf in practice can be understood as:

> (iv) the voluntary relinquishing of the rights of an asset by its owner and the dedication of its usufruct to several beneficiaries as a charitable gift (Haron and Kassim, 2017); (v) the perpetual and voluntary charitable act which serves as a mechanism to strive for the main objectives of an Islamic economic system, namely equitable and just distribution of wealth (Sadeq, 2002); (vi) the dedication of a corpus of a property or financial assets in perpetuity for the cause of Allah the Almighty. The ownership of the property or asset is transferred to Allah the Almighty, but the benefits are dedicated to the poor, sick, marginalized segments of society, or any other virtuous causes. (Md. Saad et al., 2017)

From these technical definitions, it is obvious that the application of Awqaf involves certain kinds of financial assets with values where the involved right is released by its owner for the sake of a certain charitable purpose. According to Mohsin and Muneeza (2020), there is a consensus among Muslim jurists that Awqaf in their application should involve the confinement of an asset from ownership where its benefits or values or usufructs are dedicated to philanthropic objectives. Awqaf can be formed from either movable or immovable assets.

In creating Awqaf, there are five main pillars that need to be fulfilled (Mohsin & Muneeza, 2020): (i) the creator or founder of Awqaf (Waqif); (ii) the beneficiaries of Awqaf (al-Mauquf Alaih) – where they can be from the public (Waqf

Khayri) or the family (Waqf Dhurri), or a combination of the public and the family (al-Waqf al-Mushtarak); (iii) the trustee or manager of Awqaf (Mutawalli), who holds the responsibility for managing the Awqaf; (iv) the Awqaf asset; and (v) the supervisor of Awqaf (Nazir al-Awqaf), who is responsible for supervising the control of Awqaf from any mismanagement. Based on unanimous agreement from Muslim jurists, once Awqaf are made, they are confined to three main features. They are: (i) irrevocable, in the sense that the asset cannot be returned to its status quo; (ii) in perpetuity, which prevents Awqaf assets from any repossession, which ensures continuous support for Awqaf's charitable purpose; and (iii) inalienable, where Awqaf assets should continue to be utilised for the benefit of the community at large. In describing the importance of perpetuity in relation to sustainable development projects, Bakr et al. (2021: 37) analysed that:

> When one declares a property as a Waqf property, it is understood that the charity here is perpetual and should accrue benefits to the beneficiaries forever. For example, the benefits of mosques for worshiping Allah are perpetual. The perpetuity worldview also has implications for other dimensions of Waqf. It is embodied in the Shari'ah rulings the Waqf's nature, characteristics, and purpose. Other kinds of charities do not require similar rulings. They can be included in the current general Shari'ah laws. Perpetuity of Waqf also has implications for its management, which requires record keeping, governance structure, maintenance, and investment of the waqf assets for sustainability.

By its having such features and by consistent management of Awqaf, it is not impossible for Awqaf to be applied for a long period of time, such as can be seen from Waqf made by Saidina Uthman Al-Affan. Thus, this indicates that Awqaf can be utilised appropriately for short and long periods, especially by looking into the urgency to have more sustainable development projects to be implemented (Kachkar & Alfares, 2022), which is also crucial in preventing effects of climate change.

From a religious perspective, Awqaf are basically created to gain the pleasure of Allah, as the one and only God. This does not mean that the creation of Awqaf is exclusively for Muslims only. According to Mohsin and Muneeza (2020), non-Muslims can also create Awqaf by fulfilling all the requirements. Moreover, the purpose of such Awqaf creation must be considered as permissible according to Islamic law. Such understanding is developed based on a Hadith that was reported by Anas bin Malik and recorded in Sahih Muslim, where the Prophet (PBUH) told him,

> When a non-believer does good, he is made to taste its reward in this world. And so far as the believer is concerned, Allah stores (the reward) of his virtues for the Hereafter and provides him sustenance in accordance with his obedience to Him.
>
> (Sunnah, 2023)

Thus, non-Muslims can participate in the application of Awqaf, either as the creator of Awqaf or as beneficiaries. Moreover, the application of Awqaf is similar to the modern endowment as applicable under the Law of Trust. This similarity is not perceived as unique, since the operation of legal transplant under common law has historically happened and it brought Awqaf as a fundamental practice in establishing educational institutions (Makdisi, 1981). Based on current practices, many initiatives of Awqaf-led green finance are carried out with a hybrid between Awqaf and other relevant financing mechanisms, such as Sukuk and cash Waqf.

Awqaf-led green finance and its applications in selected countries

Championing the movement in implementing Awqaf-led green finance, Indonesia has recently emerged as a leader in utilising green Awqaf to finance development projects in an environmentally sustainable manner. Indonesia, with the largest Muslim population in the world, offers significant potentials for Awqaf initiatives. With a long history and a tradition of philanthropy through Awqaf, the Indonesian government has taken a bold step in upgrading the management and governance of their responsible authoritative body. In 2019, the Indonesian government launched the Indonesian Waqf Board (BWI), which is responsible for streamlining and facilitating Awqaf management. The BWI has been at the forefront in pioneering a green Awqaf programme. Through its practices, the BWI has consistent collaborations with local banks, companies, and communities. The BWI has been instrumental in financing green projects such as renewable energy, green buildings, organic farming, and reforestation through green Awqaf funds. The BWI's mission is to optimise the potentials of Awqaf to drive sustainable development in Indonesia. It has been found that annual cash Waqf received by the BWI has reached approximately up to USD 12 billion, while the total value of Awqaf assets in the form of lands is estimated to reach USD 134 billion (Mecca et al., 2023).

Recently, the Green Waqf Framework was launched in Indonesia through a collaboration between the United Nations Development Program (UNDP), BWI, the Waqf Centre for Indonesian Development and Studies, and the Green Waqf Organization (Kareem, 2022). The Green Waqf Framework is the first document of its kind that provides comprehensive coverage relating to Awqaf and climate change efforts, with the primary objective of acting as a globally recognised reference on Islamic financing originating from Indonesia. The said framework delineates the primary players involved in facilitating the efficacy of a Awqaf-led green finance programme and elucidates their respective responsibilities. Additionally, it highlights the pertinent issues that necessitate careful attention at each phase of the Awqaf-led green finance endeavour. The proposed framework outlines a series of four stages for the implementation of the initiative, which cover (i) the preconditional stage, which emphasises literacy; (ii) the consolidation stage, which aims to foster collaboration among stakeholders; (iii) the project development stage, which involves the actual implementation of the initiative; and (iv) the mainstreaming stage, which will occur as a result of the successful implementation

of the preceding stages (BWI, 2022). The framework does not provide a specific temporal sequence for the various stages.

The proposed Green Waqf Framework also suggests the establishment of a tamanu plantation on Waqf property for the purpose of a pilot project (Fikri & Andrean, 2023). This choice is based on the anticipated environmental advantages of such a plantation, as well as its potential to serve as a renewable energy source. The use of unrefined tamanu oil has the potential to serve as a viable substitute for diesel fuel derived from fossil fuels, without necessitating any alterations to an engine. Additionally, it will make a significant contribution towards the mitigation of deforestation (Gumansari et al., 2023). The pilot project as proposed under the Green Waqf Framework meets the needs towards achieving SDGs. These SDGs include SDG 7, which focuses on ensuring access to cheap and clean energy, and it also covers SDG 13, which aims to take urgent action to combat climate change and its impacts. The said framework has proposed a recommendation that the Indonesian government offer support for the implementation of the framework and its associated initiatives. To ensure the success of the Green Waqf Framework, it recommends that Awqaf authorities collaborate effectively execute experimental green Waqf initiatives (BWI, 2022).

The exemplary role of Indonesia in the field of Awqaf-led green finance may potentially serve as a model for other Muslim countries that aspire to leverage an Islamic philanthropic mechanism to foster sustainable and ecologically conscious development. Indonesia is actively undertaking substantial measures to advance environmental awareness and position itself as a frontrunner in sustainable Islamic financing through the allocation of Awqaf funds towards environmentally friendly industries. This effort is in accordance with their national objectives of mitigating carbon emissions and fostering sustainable development.

Catching up with the progressive steps that are being taken by Indonesia, the implementation of an Awqaf-led green finance programme both in Malaysia and Turkey is playing a crucial role in advancing sustainable development and tackling environmental issues. In Malaysia, the early trace of green finance can be associated with that country's establishment of Green Sukuk, which is also known as Islamic green bonds (Ali, 2018). Since its first issuance in Malaysia, in 2017, Green Sukuk has gained attention as a tool to finance climate change and in addressing the funding gaps in green financing. Green Sukuk allows investors to support environmentally friendly projects, while adhering to Islamic finance principles. It enables the financing of a wide range of projects, including solid waste management, sustainable land use, and biodiversity conservation (Liu & Lai, 2021). The introduction of Green Sukuk in Malaysia has been a significant milestone in promoting sustainable and responsible investment. Recently, the Securities Commission Malaysia (SCM) announced the issuance of Malaysia's first Green Sukuk under its Sustainable and Responsible Investment (SRI) Sukuk framework. This innovative channel aims to address global funding gaps in green financing (Liu & Lai, 2021). Unlike Indonesia, Awqaf-led green finance initiatives are carried out with the application of a hybrid form that combines Awqaf and Sukuk as the main instruments (Kamil et al., 2019). Even though the early start of this initiative can be

traced back to 2014 (SCM, 2014), it is believed that due to the existence of regulatory differences between states in Malaysia, it has contributed to the slow pace in generating more Awqaf-led green finance activities. The Islamic Fund and Wealth Management Blueprint, which was issued in 2017 by the SCM, recognised the potentials for Waqf development in contributing to social development, promoting the public welfare, and facilitating wealth distribution (Zainul, 2023). Moreover, the SCM introduced the Waqf-Featured Fund Framework in November 2020. This is a platform that aims to facilitate investments of Islamic funds that have attributes of Awqaf. So far, it has successfully collected RM 46.7 million (USD 10.27 million) in funds (Zainul, 2023).

In Turkey, Awqaf are not newly used as financing mechanisms in supporting social, environment, and economic related projects. As the centre of the Ottoman caliph previously, Turkey possesses among the oldest Awqaf in the world. In practice, Turkey receives influence from the European Union in its pursuit of strengthening green finance initiatives. According to the World Bank (2022), the financial industry in Turkey plays a crucial role in advancing the green agenda and enabling the provision of financial resources for projects connected to climate change. Nevertheless, it is imperative to recognise that climate change poses risks to both the stability of financial systems and the credibility of institutions. There are uncounted numbers of Awqaf in Turkey which are made to meet variety of purposes. It is said that three-quarters of land in Turkey belong to Awqaf (Nienhaus, 2018). Awqaf forests are among the unique existing assets that are available in this country (Ertem, 2019). Meanwhile, cash Waqf is utilised in funding social entrepreneurship enterprises, microfinances, and green-agricultural businesses (Azrak, 2022). The utilisation of Awqaf funds for financing these projects contributes to the objective of creating a greener future for the country. Malaysia and Turkey have recognised the potentials of Awqaf-led green finance initiatives to address environmental challenges and promote sustainable growth. Such initiatives serve as examples of utilising Awqaf for environmentally friendly development. Both countries aim to reduce carbon emissions and contribute to SDGs by directing Awqaf-led green finance initiatives towards their important sectors.

As highlighted by the United Nations (2021), there are many Awqaf assets that are still underutilised, especially Awqaf that are established in Muslim countries. It is reported that,

> the perpetual nature of Waqf and additions to it by generations made Awqaf a significant sector in many Muslim societies, with Waqf covering a significant part of cultivable land and properties in many countries. One source puts Awqaf to be 75 percent of land in today's Turkey, one-fifth in Egypt, one-seventh in Iran, one-half in Algeria, one-third in Tunisia, and one-third in Greece.

Records from the beginning of the twentieth century indicate that Palestine had 233 Waqf deeds with 890 properties, against 92 private ownership deeds containing 108 properties. The size of Waqf in Tunisia in 1944 was 482,292 hectares of land that could be developed commercially, 57,505 hectares of agricultural land, and

other plantations (United Nations, 2021). Thus, it is important to intensify the efforts towards having Awqaf-led green finance. Green finance initiatives are also growing in countries that are members of the Gulf Cooperation Council, notably the United Arab Emirates (UAE), and the Kingdom of Saudi Arabia (KSA).

The most recent initiative has been undertaken by the UAE Banks Federation (UBF) that emphasises the notable progress made by the country's financial industry in promoting and implementing sustainable banking solutions. The UBF, which also serves as the representative body for the banking sector in the UAE, provides alerts on the proactive involvement of banks in addressing climate change via their pledges to green finance and climate initiatives. The implementation of green finance systems and the creation of eco-oriented funds have emerged as effective strategies to achieve sustainability goals within this area. It has been found that major banks of the UAE have collected over AED 190 billion (USD 51.8 billion), for green financing involving various projects such as renewable energy, waste-to-energy, and green technology (Chandak, 2023). While the UAE is upscaling their initiatives for green finance, it has been reported by Islamic Sustainable Finance & Investment (2022) that Dubai just launched the first Waqf programme to support women and children with a collaboration between the Awqaf and Minors Affairs Foundation and the Dubai Foundation for Women and Children, which is valued at AED 30 million (USD 8.16 million). This Waqf programme was initiated under the direction of Sheikh Mohammed Rashid Al Maktoum, the ruler of Dubai. The objective of the said Waqf programme is to generate sustainable income for the care, rehabilitation, and protection of women and children (Islamic Sustainable Finance & Investment, 2022).

The Awqaf sector in the Kingdom of Saudi Arabia plays a vital role in supporting vulnerable groups, such as women, persons with disabilities, and orphans, in line with the SDG 10 for reducing inequality. The General Authority of Awqaf (GAA) was established in 2016 to regulate and oversee Awqaf activities, ensuring compliance with Shari'ah, financial transparency, and operational efficiency. Awqaf entities in the KSA support various sectors, such as philanthropic offices, charitable societies, foundations, universities, hospitals, and mosques, and actively work in areas such as providing basic needs and promoting public health. The coordination among different government agencies, including the General Authority of Awqaf, is crucial to developing a common policy framework for the role of the Awqaf sector, which will contribute significantly to the SDGs. Therefore, it is imperative to recognise the importance of the Awqaf sector and its potential to make a positive impact on society (United Nations, 2021). Awqaf play a significant role in the economy of Saudi Arabia by providing sustainable financing for various development goals, including poverty alleviation and employment creation. Several Awqaf foundations, such as the Sulaiman Al-Rajhi Foundation for Development Finance, the Almajdouie Foundation, and the Al-Ohali Foundation, offer microfinance to the poorer sections of the population, contributing to financial inclusion and economic empowerment.

The diversity of Awqaf in the Kingdom of Saudi Arabia, in terms of fields of work and impact approaches, allows for a comparison of different Awqaf purposes

and practices related to SDGs. This comparison can lead to more effective strategies for economic development. The establishment of the General Authority for Awqaf (GAA) has helped oversee, maintain, develop, and promote Awqaf in the KSA, ensuring their positive impact on the economy (United Nations, 2021). Awqaf in the KSA are practical for the purpose of green finance. However, they do not specifically call such Awqaf green Awqaf. From their practices, the majority of Awqaf are meeting the needs that are related to socio-economic development, and not focusing on the environment per se.

Impedimenting of Awqaf-led green finance

Awqaf have potentials to drive significant socio-economic growth. However, their progress is often impeded by various obstacles. These obstacles can be categorised as legal, administrative, financial, human capital and manpower, political, and other challenges. By addressing these obstacles, the full potentials of Awqaf can drive positive change in communities and countries. In ensuring the success of Awqaf-led green finance, the legal framework and regulations are important instruments that need to be looked at carefully. Certain countries have long-standing legal frameworks for Awqaf management, which is sometimes tied to authoritative bodies that are operated traditionally. When these authoritative bodies are not open to change in applying innovations of Awqaf with a combination of green finance, it may be less beneficial in supporting sustainable development-oriented or carbon emissions-based projects. Due to the existence of legal constraints under the Awqaf regulations, references are made to other relevant laws in allowing the application of such hybrid forms of Awqaf. Most common hybrid forms of Awqaf are green Waqf Sukuk, green cash Waqf, green Waqf microfinance, Waqf for trees or forests and so on. Additionally, the current state of Awqaf governance is concerning due to the lack of proper legislation and laws. This has resulted in many unregistered properties, as well as cases of the illegal acquisition or occupation of Awqaf assets. Moreover, the registration system for Awqaf is weak in many countries, which has led to disputes that take an excessive amount of time to resolve in courts. Awqaf governance needs to be improved in terms of addressing these issues and implementing effective measures to ensure the proper management and protection of Awqaf properties.

Awqaf institutions also face significant administrative challenges that hinder their effectiveness. Centralised and inefficient management, coupled with limited autonomy at the local level, can pose obstacles to the successful administration of Awqaf. Simultaneously, Awqaf institutions require necessary funds and capital to support their management. The shortage of funding resources not only makes it difficult to maintain their current Awqaf assets, but also impedes their ability to expand and grow. To maximise the potential of Awqaf and their relevant institutions, it is crucial to address the issue of human capital. Many Mutawallis, who are responsible for the administration of Awqaf, are not equipped with the necessary education on Awqaf, and nor do they possess the skills or expertise to manage Awqaf. This shortage of qualified personnel hinders the effective management of Awqaf

assets. Therefore, investing in the education and training of Mutawallis is essential to ensure the professional and efficient management of Awqaf properties.

The existence of political interference in the appointment of Awqaf administrators disrupts their integrity and transparency in conducting supervision of Awqaf, which in turn raises concerns about the misuse of power in relation to Awqaf properties. It is important to ensure that the appointment of Awqaf administrators is free from political influence, to maintain the integrity of the administration and prevent any potential misuse of power. Awqaf institutions also face the challenge of not fully utilising their assets for strategic economic purposes, which leads to low productivity. Moreover, the lack of public awareness, advisory boards, information systems, and modern governance practices has resulted in a general lack of trust and confidence in Awqaf institutions. By addressing these issues and implementing effective solutions, Awqaf institutions can unlock their full potential and contribute significantly to the economy.

It is imperative to tackle the principal–agent problem head-on. This issue arises when Awqaf administrators fail to prioritise the best interests of the Awqaf beneficiaries. Thus, a multifaceted approach is required. Firstly, it is crucial to implement enhanced laws that provide clear guidelines and regulations for Awqaf administration. These laws should outline the responsibilities and obligations of Awqaf administrators, as well as establish mechanisms for accountability and transparency. Secondly, it is essential to improve governance within the Awqaf sector. This can be achieved by establishing independent oversight bodies that monitor the activities of Awqaf administrators and ensure compliance with regulations. Additionally, promoting transparency in financial reporting and decision-making processes will help build trust and confidence among Awqaf beneficiaries and the wider community. Lastly, it is vital to ensure that the qualifications of Mutawallis are up to the mark. This can be achieved through rigorous training programmes and certification processes that equip them with the necessary skills and knowledge to effectively manage Awqaf assets. By implementing these measures, the interests of the beneficiaries can be upheld.

Conclusion

This chapter provides a comprehensive introduction to the concept of Awqaf-led green finance and emphasises their growing significance at a global scale, particularly in response to climate change. It highlights the immense potential of Awqaf as financing mechanisms that align perfectly with the objectives of green finance, owing to their charitable nature and perpetual impact. While traditionally utilised for funding religious and social causes, it is argued that the expansion and innovation of Awqaf applications are important to maintain in order to establish environmentally sustainable projects. The chapter also sheds light on emerging examples of Awqaf-led green finance initiatives in countries such as Indonesia, Malaysia, Turkey, and certain selected countries from the Gulf region. Thus, it is possible to foster synergies between the philanthropy-based Awqaf and green finance. To facilitate the use of Awqaf for green finance, it is crucial

to conduct additional research on their applicability across various countries and contexts. Conceptual studies on aligning Awqaf governance with green finance principles, as well as empirical studies on existing projects would provide valuable insights. Governments could play a pivotal role by implementing policy reforms such as tax incentives, streamlined regulations, and initiatives aimed at enhancing Awqaf management capacity to support Awqaf-led green finance. Financial institutions also can develop specialised financial products for green Awqaf, such as Green Sukuk, to expand financing channels and attract a diverse range of investors.

Moreover, to effectively manage green finance projects, it is essential to enhance Awqaf institutions it terms of their governance, transparency, and technical expertise. By adopting industry best practices, Awqaf institutions can establish strong credibility in this emerging field. Collaboration between Awqaf institutions, environmental organisations, sustainability experts, and community groups can be instrumental in designing impactful green Awqaf projects. Additionally, awareness campaigns that promote green Awqaf among Muslim philanthropists, businesses, and the wider public can play a pivotal role in driving greater adoption and support. In advancing Awqaf-led green finance initiatives, it is essential to consider the following strategies:

- Dedicated green Awqaf funds should be established at national and regional levels to pool assets for larger-scale environmental projects. This will attract more donors and enable professional fund management, and result in a greater impact.
- Green objectives should be integrated into existing Awqaf governance frameworks, asset management guidelines, and Shari'ah compliance standards. This will promote green utilisation of Awqaf assets, resulting in a more sustainable future.
- Training programmes should be offered to build expertise in green finance and sustainability for Awqaf management personnels, Shari'ah advisors, and Mutawallis. This will improve the quality of green Awqaf projects and ensure their success.
- Technology such as blockchain, digital databases, and online platforms should be leveraged to enhance transparency, accountability, and public engagement with green Awqaf initiatives. This will increase trust and participation in green Awqaf projects.
- Research and innovation should be encouraged to develop new green Awqaf models, like renewable energy Awqaf, eco-tourism Awqaf, green Awqaf-linked microfinance, and so on. This will widen the scope of Awqaf-led green finance and provide more opportunities for sustainable development.
- Partnerships between Awqaf institutions, environmental non-governmental organisations, social enterprises, sustainability experts, and community organisations should be fostered to design and execute green Awqaf projects. This will create a network of support for green initiatives and ensure success.

- Awareness should be spread through conferences, campaigns, and dedicated media to showcase successful green Awqaf projects. This will motivate and establish green Awqaf creation and promote a culture of sustainability.
- Young people should be engaged by promoting green Awqaf in educational institutions and through youth campaigns. This will secure future generations of green-conscious Awqaf donors and managers, and ensure the continuation of their participation in sustaining Awqaf.
- Supportive government policies should be advocated, such as tax rebates, streamlined regulations, and preferential access to land to facilitate green Awqaf projects. This will accelerate green Awqaf adoption and promote sustainable development at a larger scale.

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16 Empowering green Waqf for an effective climate-resilient Malaysia

Let's investigate

Mohd Zaidi Md Zabri

Introduction

In the face of escalating global environmental challenges, nations worldwide are grappling with the urgent need for sustainable solutions. Malaysia, renowned for its lush rainforests, diverse ecosystems, and dynamic economy, finds itself at a crucial juncture, addressing the multifaceted impacts of climate change.

The unveiling of the Ekonomi MADANI (MADANI Economy) framework on 27 July 2023 by the prime minister of Malaysia, Dato' Seri Anwar Ibrahim, marks a significant step in this direction (Prime Minister's Office of Malaysia, 2023). This ambitious plan aims not just to restore Malaysia's economic stature but also to position itself as a leader in eco-conscious economic development within the region.

Climate change presents a complex array of challenges that manifest in various forms across different geographies. For Malaysia, these challenges are particularly pronounced given its geographical and climatic conditions. The nation faces a rising frequency of extreme weather events, including floods, heatwaves, and irregular monsoons, which pose severe threats to its socio-economic stability (Firdaus et al., 2020; Rasiah et al., 2017). The vulnerability of Malaysia's coastal communities to rising sea levels, coupled with the threat to its rich biodiversity, underscores the urgency of adopting resilient and sustainable practices.

The MADANI Economy framework is a direct response to these challenges, aiming to "raise the ceiling" of Malaysia's economic achievements while simultaneously "raising the floor" to improve the living standards of its people (Prime Minister's Office of Malaysia, 2023). At the heart of this plan is a commitment to revamp the country's economic structure through seven priority areas. Notably, two areas garner emphasis: becoming the "Leader of the Global Islamic Economy" and promoting "Green Growth for Climate Resilience." This dual focus signifies an innovative approach, intertwining economic development with environmental stewardship, an alignment deeply rooted in Islamic teachings.

Islamic finance, a significant component of Malaysia's economy, has emerged as a global leader in the sector, with the Islamic banking sector commanding an impressive 44.64% stake in total financing (RM757.50 billion) (Bank Negara Malaysia, 2023). The prime minister's repeated calls for Islamic financial entities to adopt sustainable and impactful initiatives reflects a broader vision where financial

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mechanisms are leveraged to support ecological sustainability. In addition, this directive also aligns seamlessly with the National Energy Transition Roadmap (NETR), emphasizing the need for a synergistic approach to economic growth and environmental conservation (Ministry of Economy, 2023).

The principles of environmental protection and sustainable resource use are deeply embedded in Islamic teachings. The Qur'an, in Surah Al-Fajr (verses 11–14), emphasizes stewardship of the earth and the prudent use of its resources. Similarly, the Prophet Muhammad (PBUH) traditions emphasize the need for eco-friendly practices. This is exemplified in a significant Hadith about water conservation: "Do not waste water, even if you are on a running river" (Sunan Ibn Maja, Hadith 425). Such teachings are the cornerstone of the Islamic perspective on ecological sustainability and play a crucial role in shaping Malaysia's environmental policies and green initiatives.

An overview of Waqf

Against this backdrop, the concept of Waqf emerges as a potent instrument for ecological resilience. Waqf, an Islamic philanthropic tradition, involves dedicating assets for the public good. Historically, it has played a crucial role in societal development within Islamic societies. The concept of Waqf, an Islamic philanthropic tradition, has a rich and varied history that spans several centuries. Originating from the Arabic word meaning "to prevent" or "to restrain," the institution of Waqf represents a unique form of charitable endowment. It entails dedicating a portion of one's wealth or property in perpetuity for the public welfare, with the stipulation that the original asset is preserved while its benefits are continuously utilized for charitable purposes.

The foundation of Waqf is deeply embedded in Islamic teachings and jurisprudence (Kuran, 2001). The Prophet Muhammad (PBUH) himself is reported to have encouraged the act of endowment, which set a precedent for future generations. For instance, one of the earliest instances of Waqf was the donation of a date palm garden by the Prophet (PBUH) to support his family and charity. This act was not just a mere charitable deed but also an innovative way of ensuring sustainable welfare.

Over the centuries, Waqf evolved to become a key institution in Muslim societies. It was used to fund a wide range of public utilities, including mosques, schools, hospitals, and even infrastructure like bridges and water wells (Joseph, 2014). The concept was remarkably adaptable, allowing communities to address various social and economic needs over time.

In the contemporary context, the adaptation of Waqf to environmental objectives – termed green Waqf – offers a unique model for sustainable development. Green Waqf initiatives, such as those focusing on forest, water, and solar energy conservation, exemplify the fusion of Islamic philanthropy with environmental sustainability.

Case studies of green Waqf projects in Malaysia

Malaysia, in its endeavour to combat climate change and promote sustainable development, has witnessed the emergence of green Waqf projects that synergize Islamic financial principles with ecological responsibility. Two notable case studies – the solar Waqf initiative at the Permatang Tok Mahat Mosque and the water Waqf project by Yayasan Waqaf Malaysia – exemplify this innovative approach.

The Permatang Tok Mahat Mosque in Nibong Tebal, Penang, stands as a pioneering example of the solar Waqf initiative. This project involved the installation of solar panels on the mosque's rooftop, a move that not only reduced the mosque's carbon footprint but also resulted in significant cost savings.

The project entailed a strategic partnership between the mosque committee and green technology firms. A 12-kW solar panel system, costing approximately RM 50,000, was installed. The initiative was funded through donations from the mosque's congregation and external sponsors, demonstrating a community-driven approach to sustainable development (Isa, 2022).

The installation has yielded monthly savings of around RM 500 in electricity costs for the mosque. Beyond monetary benefits, the project has raised awareness about renewable energy among the mosque's attendees and the wider community. The mosque has become a symbol of how religious practices can be harmoniously aligned with environmental stewardship.

Another exemplary green Waqf initiative is the water Waqf project undertaken by Yayasan Waqaf Malaysia in collaboration with the Ministry of Natural Resources, Environment and Climate Change. This project aimed at addressing water scarcity and improving water supply systems in rural areas (Yayasan Waqaf Malaysia, 2021). The project focused on channel ling Waqf funds worth RM375,306 into various aspects of water supply management. This included providing for the maintenance and restoration of rural water supply systems, supporting well-pumping operations, and investing in infrastructure to ensure reliable water access in underserved communities. The initiative has been instrumental in providing sustainable water solutions to rural communities, directly impacting their quality of life. It has also served as a model for utilizing Islamic philanthropy for tangible community benefits, reinforcing the role of Waqf in modern societal development.

These case studies illustrate the broader implications of green Waqf initiatives in Malaysia. They demonstrate how Islamic financial instruments can be effectively utilized to address environmental issues while also providing social and economic benefits. The solar Waqf initiative showcases the potential for religious institutions to lead by example in adopting sustainable practices. It highlights how green technology can be integrated into the fabric of religious life, promoting a culture of environmental consciousness among the faithful.

The water Waqf project, in contrast, emphasizes the role of Islamic philanthropy in providing essential services to underserved communities. It illustrates how Waqf can be a powerful tool in addressing critical infrastructure needs, particularly in areas neglected by conventional development models.

These initiatives are not just isolated projects but part of a larger movement towards integrating environmental sustainability into the core of Islamic financial and philanthropic practices. They reflect a growing awareness within the Malaysian Islamic community of the urgent need to address environmental challenges through innovative, faith-based solutions.

Islamic economic principles and environmental stewardship

The theoretical framework of green Waqf in Malaysia is deeply rooted in Islamic economic principles and the concept of environmental stewardship as espoused in Islam. This integration offers a robust foundation for understanding and advocating the use of green Waqf as a tool for sustainable development and climate resilience.

Islamic economics, distinct in its consideration of ethical and moral dimensions, provides a comprehensive approach to economic development. It emphasizes the balance between material needs and spiritual well-being, advocating for socio-economic justice, equitable distribution of wealth, and the prohibition of usury (Riba). At its core, Islamic economics promotes the concept of stewardship (Khalifah) and trust (Amanah), placing responsibility on individuals and communities to manage resources judiciously and ethically (Kamali, 2016).

In the context of green Waqf, these principles translate into a commitment to sustainable and environmentally conscious investments. The Islamic banking sector in Malaysia, holding a significant portion of the country's total financing, showcases the potential for aligning financial practices with ethical guidelines. By incorporating Islamic financial principles into environmental projects, green Waqf becomes not only a religiously inspired act but also an economically viable and ethical investment.

Environmental stewardship in Islam: a moral obligation

Islamic teachings provide a rich resource for environmental ethics. The Qur'an and Hadith (sayings of Prophet Muhammad PBUH) emphasize the importance of protecting the environment and using resources wisely. Surah Al-Fajr (verses 11–14) underscores the need for environmental protection as a divine responsibility, while numerous Hadith discuss conservation, sustainable use of resources, and the prohibition of waste (Israf) (Kamali, 2012).

This environmental consciousness is integral to the Islamic world view. Humans are seen as stewards (Khalifah) of the Earth, entrusted by Allah SWT to safeguard and nurture the planet. This stewardship entails a balanced use of resources, ensuring that the needs of current and future generations are met without compromising the ecological balance.

In practical terms, this stewardship is manifest in initiatives like the solar Waqf projects in Malaysian mosques, where the adoption of sustainable technology illustrates the application of Islamic environmental ethics. Such initiatives demonstrate the feasibility of integrating religious principles with modern environmental solutions, leading to practical and impactful outcomes.

Green Waqf emerges as a catalytic instrument within this framework, embodying the principles of Islamic economics and environmental stewardship. As a form of sustainable Islamic philanthropy, green Waqf involves dedicating assets or funds towards environmentally beneficial projects, such as renewable energy, water conservation, and sustainable agriculture. This approach is exemplified by modern initiatives like the water Waqf projects, which channel Waqf funds into essential infrastructure development, addressing critical needs while adhering to Islamic principles of charity and communal welfare. These projects not only provide immediate benefits in terms of resource availability and quality of life improvements but also contribute to long-term environmental sustainability.

Alignment with global Sustainable Development Goals (SDGs)

Green Waqf is in harmony with the worldwide pursuit of sustainable development. This concept particularly aligns with the Sustainable Development Goals (SDGs) set by the United Nations, notably those focusing on ensuring access to clean water and sanitation (SDG 6), providing affordable and clean energy (SDG 7), and taking measures for climate action (SDG 13). Through its support for these objectives, green Waqf places Islamic finance and philanthropy at the forefront of international discussions on sustainability.

Policy and implementation challenges of green Waqf in Malaysia

Policy landscape

The Malaysian government's initiative, exemplified by the MADANI Economy framework, underscores the commitment to integrating Islamic financial principles with environmental sustainability. However, the implementation of green Waqf faces several policy-related challenges. Despite the Islamic banking sector's robust presence, accounting for 44.5% of total financing, and the Islamic capital market's significant 64.3% stake in the Malaysian capital market, specific policy frameworks for green Waqf are still nascent.

Currently, Malaysian Waqf policies primarily focus on traditional religious and charitable purposes (Pitchay et al., 2014), with limited emphasis on environmental sustainability. This gap hinders the full potential of green Waqf in contributing to climate resilience. Therefore, there is a pressing need for policy reforms that specifically address green Waqf, outlining clear guidelines for its establishment, management, and utilization in environmental projects.

Legal framework and governance

A major challenge is the lack of a comprehensive legal framework that governs green Waqf. Existing Waqf laws vary across states in Malaysia, leading to inconsistencies in how Waqf is managed and regulated. For green Waqf to thrive, a unified legal framework is essential. This framework should encompass guidelines

on the creation of green Waqf, its governance, and the distribution of benefits derived from such endowments.

Moreover, governance issues often arise due to the decentralized nature of Waqf administration in Malaysia. Each state's Islamic Religious Council (SIRCs) manages Waqf properties, leading to varied levels of efficiency and effectiveness. Streamlining governance and ensuring transparency and accountability in the management of green Waqf are imperative for gaining public trust and attracting investments.

Financial challenges

Financing green Waqf projects presents another significant challenge. The initial capital outlay for environmental projects, such as solar panel installations or water conservation systems, can be substantial. Traditional Waqf funds, primarily used for religious and social welfare purposes, might be inadequate for these capital-intensive projects.

To overcome this, innovative financing models need to be explored. Public-private partnerships (PPPs), and green Islamic bonds (Sukuk) could be viable options. For instance, the success of solar Waqf at the Permatang Tok Mahat Mosque, where the installation led to substantial savings, demonstrates the financial viability of such projects. Replicating this model on a larger scale requires a concerted effort to attract investors and develop tailored financial products that align with the principles of green Waqf.

Societal and cultural barriers

Social and cultural barriers contribute to the challenges in applying green Waqf. Therefore, it is essential to increase public awareness and comprehension of green Waqf among the general population and potential contributors. Although Islam strongly advocates for environmental care, as shown in Surah Al-Fajr and the teachings of the Prophet Muhammad (PBUH), the idea of incorporating these principles into tangible environmental efforts via Waqf remains relatively unfamiliar to many.

Educational campaigns and community engagement programmes are crucial in overcoming these barriers. By highlighting successful examples, like the Rummah Well, an over 1,400-year-old Waqf addressing water scarcity in Medina, and modern initiatives like the joint water Waqf project by Yayasan Waqaf Malaysia, the public can be encouraged to support and participate in green Waqf ventures.

Regulatory and bureaucratic hurdles

Regulatory and bureaucratic hurdles often impede the swift implementation of green Waqf projects. The process of approving and executing Waqf-based initiatives can be lengthy and complex, involving multiple stakeholders and regulatory bodies.

Streamlining these processes and ensuring a more efficient bureaucratic system can significantly aid in the timely execution of green Waqf projects.

Data and transparency

Lack of data and transparency in the management of Waqf funds and projects is another challenge. Accurate and accessible data on the performance and impact of green Waqf projects are essential for ongoing assessment and improvement. Implementing robust monitoring and reporting mechanisms will not only enhance transparency but also build confidence among donors and investors.

Environmental impact assessment

Lastly, the environmental impact of green Waqf projects must be carefully assessed and monitored. While these projects aim to contribute to environmental sustainability, ensuring that they do not inadvertently because ecological harm is crucial. Rigorous environmental impact assessments (EIAs) should be mandated for all green Waqf projects, accompanied by regular monitoring to ensure their sustainability.

Implementation challenges

On the implementation front, the successful execution of green Waqf projects requires robust management and technical expertise. Many Waqf administrators may lack the necessary skills and knowledge to manage environmentally focused projects effectively. This includes the technical know-how related to sustainable technologies, project management, and impact assessment.

Capacity building is critical in this regard. Training programmes and workshops for Waqf administrators, focusing on sustainable project management, environmental conservation principles, and impact assessment methodologies, are vital. Additionally, collaborations with environmental NGOs, academic institutions, and international organizations can provide the expertise and support needed for successful project implementation.

Coordination and collaboration

Effective coordination between various governmental and non-governmental entities is crucial for the success of green Waqf projects. Currently, there is a lack of synergy between different stakeholders, including Waqf boards, Islamic financial institutions, environmental agencies, and community organizations. This often leads to duplication of efforts or misalignment of goals.

Establishing a centralized coordination mechanism, possibly under the aegis of the MADANI Economic Plan, could enhance collaboration and ensure that efforts are synergistic and aligned with national environmental and economic objectives.

This body could serve as a platform for sharing best practices, coordinating initiatives, and mobilizing resources effectively.

Future directions

To overcome these challenges, Malaysia requires a multifaceted approach that involves legal reform, financial innovation, societal engagement, capacity building, and enhanced coordination. By addressing these policy and implementation challenges, the country can unlock the full potential of green Waqf as a tool for environmental sustainability and economic development.

Strategic recommendations for policy and implementation

- Policy Development and Support: The Malaysian government should consider developing specific policies that facilitate the creation and management of green Waqf projects. This would involve simplifying legal procedures for Waqf registration, ensuring tax incentives for donors, and providing government land for green Waqf initiatives.
- Collaboration with Private Sector: Public-private partnerships can be a catalyst for the growth of green Waqf projects. Encouraging collaboration between Islamic financial institutions and environmental organizations can result in innovative projects with broad-reaching impacts.
- Awareness and Education Programs: To garner community support, there must be an emphasis on awareness and education. Campaigns and workshops that highlight the religious and environmental significance of green Waqf can encourage more community members to participate in these initiatives.
- Leveraging Technology: Technology can play a pivotal role in optimizing green Waqf projects. Implementing technological solutions like smart water management systems, solar-powered infrastructures, and digital platforms for Waqf management can enhance efficiency and impact.
- Research and Development: Investing in research and development is essential to explore new avenues for green Waqf. This could include studies on sustainable agricultural practices, renewable energy technologies, and environmental conservation methods that can be funded through Waqf.

Expanding the scope of green Waqf

Looking ahead, the scope of green Waqf can be broadened to address a wider range of environmental challenges. For instance:

- Climate-Resilient Infrastructure: Green Waqf can fund the development of climate-resilient infrastructure like flood barriers, stormwater management systems, and erosion control structures. These initiatives are particularly crucial in flood-prone areas and can significantly mitigate the impacts of extreme weather events.

- Urban Green Spaces: Establishing green spaces in urban areas through Waqf can contribute to enhancing urban biodiversity, reducing heat island effects, and improving air quality. Community parks, rooftop gardens, and green corridors can be developed as part of urban green Waqf initiatives.
- Conservation Projects: Green Waqf can also be channelled into conservation projects, such as protecting endangered species, preserving natural habitats, and maintaining biodiversity hotspots. This aligns with the Islamic principle of being custodians of the Earth and its creatures.
- Sustainable Agricultural Practices: Investing in sustainable agriculture through green Waqf can help achieve food security while preserving natural resources. This could involve funding organic farming, agroforestry, and water-efficient irrigation systems.
- Renewable Energy Projects: The success of solar Waqf projects can be replicated in other renewable energy ventures such as wind, biomass, and hydroelectric power. These projects not only provide clean energy but also serve as a sustainable income source for Waqf.

Role of community and religious leaders

Community and religious leaders play a vital role in advocating and implementing green Waqf projects. By promoting the concept of green Waqf in sermons and community gatherings, they can inspire more individuals and organizations to contribute. Additionally, religious leaders can guide the faithful on how green Waqf aligns with Islamic teachings on environmental preservation.

Monitoring and evaluation

To ensure the long-term success of green Waqf projects, a robust monitoring and evaluation system is crucial. Regular assessment of the impact and sustainability of these projects can provide valuable insights for improvement and replication in other regions.

The future of green Waqf in Malaysia is intertwined with the nation's pursuit of a climate-resilient future. The strategic recommendations outlined offer a road map for integrating green Waqf into Malaysia's environmental sustainability efforts. By harnessing the principles of Islamic finance and environmental stewardship, green Waqf stands as a testament to Malaysia's commitment to sustainable development and ecological preservation. As these initiatives gain momentum, they hold the promise of a greener, more sustainable future, resonating with the Islamic ethos of mercy and stewardship towards all creations.

Conclusion

Green Waqf not only aligns with the SDGs but also embodies the Islamic ethos of stewardship and communal welfare. Green Waqf initiatives, by harnessing renewable resources and promoting environmental conservation, offer a sustainable and

ethical model of development. They illustrate the transformative power of combining religious teachings with modern ecological needs, creating a unique blend of faith-driven motivation and practical environmental action.

Furthermore, green Waqf's role extends beyond environmental benefits. It fosters social cohesion by engaging communities in shared goals, and supports economic development through sustainable projects that create jobs and stimulate local economies. It also serves as an educational platform, raising awareness about environmental issues and Islamic environmental ethics, thus inspiring future generations to adopt sustainable practices.

By integrating traditional Waqf principles with contemporary environmental concerns, Malaysia is pioneering a path towards a more sustainable and equitable future. Green Waqf, thus, stands as a testament to the potential of faith-based initiatives in addressing global challenges, offering valuable lessons for other countries looking to harmonize religious values with environmental stewardship. This approach not only addresses immediate ecological challenges but also contributes to a legacy of a healthier, more sustainable planet for future generations.

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Routledge

17 Green Sukuk

Issues, challenges and the way forward

Siti Saffa' and Syed Marwan

Introduction

In the past two decades, climate change has emerged as a significant global challenge, with carbon emissions escalating rapidly and driving up temperatures worldwide (World Bank, 2020). Addressing this issue has become paramount, necessitating concerted efforts towards climate-friendly development. To address this issue, we must seize every opportunity to achieve climate-friendly development by increasing investments in clean energy and efficient infrastructure. Capital market instruments such as green bonds, Green Sukuk, and Sustainable and Responsible Investment (SRI) Sukuk can be used to achieve this goal. Amid economic uncertainties, environmental crises, and societal demands, investors are recognising the potential of their investments to support humanity and protect the environment (Rahman et al., 2020).

Green Sukuk, a Shari'ah-compliant financial instrument, represents investments in renewable energy and environmental assets, adhering to green principles similar to conventional green bonds (El Amri et al., 2021). According to Obaidullah (2018) and Abdullah and Nayan (2020), this instrument addresses Shari'ah concerns regarding environmental protection, integrating moral, ethical, social, and economic considerations. It embodies principles of inclusion, risk sharing, and asset ownership, aligning with sustainable development goals (El Amri et al., 2021).

In addition to being a Shari'ah-compliant green bond, Green Sukuk stands out as a noteworthy and indispensable financial instrument with the potential to fulfil a significant portion of the global demand for both green and Islamic financing (Rahim & Mohamad 2018; Alam et al., 2016). According to the World Bank (2020), a crucial distinction between Green Sukuk and green bonds lies in their financing structure, which is also the fundamental difference between Sukuk and conventional bonds. Consequently, the development of Green Sukuk holds immense importance in narrowing the divide between conventional and Islamic finance. This innovative financial product has universal applicability, making it a cutting-edge solution with global relevance. The present study delves into the nuanced complexities of Green Sukuk, shedding light on its pivotal role in harmonising Islamic finance with global sustainability needs.

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Problem statement

The performance of the global Green Sukuk market falls short of anticipated levels, prompting a critical examination of the underlying challenges. According to Rahman et al. (2020), the capacity to offer fixed income cash flows through Sukuk is a highly significant factor in persuading SRI investors. The dilemma arises from the need to craft a structured Sukuk adhering to Shari'ah principles while generating cash flows akin to traditional interest-based instruments. Maintaining this balance is crucial to meet the liquidity expectations of SRI investors, posing a significant challenge to Green Sukuk issuance. Therefore, meeting investors' liquidity expectations is a challenge with this structure. The evidence suggests that the existing drivers influencing Green Sukuk issuance act as impediments to its growth (Rahman et al., 2020). This observation raises pertinent questions about the obstacles hindering the optimal utilisation of Green Sukuk, indicating potential challenges that have restrained its potential development. Addressing these challenges is important to unlock the true potential of Green Sukuk as a sustainable financial instrument and foster its adoption in the global financial landscape.

Research significance

The significance of this research is underscored by the insights provided by Sekreter (2017), which highlight crucial areas for future exploration. Focusing on green risk management, cross-cultural studies, green governance, and financial challenges in developing nations in the context of changing environmental conditions is essential. However, a noticeable gap exists in the systematic exploration of Green Sukuk, a vital component in sustainable finance.

The primary objective of this study is to delve into this unexplored territory through a systematic literature review (SLR). By doing so, this research aims to fill the gaps identified in the existing body of knowledge. Initial evaluations reveal a scarcity of comprehensive research articles examining Green Sukuk in a systematic manner. Consequently, this research assumes significance by addressing these limitations. By meticulously analysing the available literature, it intends to provide a comprehensive overview of Green Sukuk, shedding light on its complexities, challenges, and potential solutions. In this way, the research aims to contribute to the academic discourse, enriching the understanding of Green Sukuk and its role in global sustainable finance. This study's findings are anticipated to inform policymakers, practitioners, and researchers, aiding in the formulation of informed strategies for the development and proliferation of Green Sukuk on a global scale.

Research question and objective

This research aims to identify the issues and challenges of implementing Green Sukuk. A systematic evaluation of the literature on Green Sukuk is conducted to achieve the study's goal. The key research question is: what are the issues and challenges of implementing Green Sukuk?

Research methodology

Preferred Reporting Items for Systematic Reviews and Meta-Analysis

In this study, a meticulous review protocol was devised, encompassing well-defined inclusion and exclusion criteria, a robust search strategy, rigorous data extraction methods, and comprehensive data analysis techniques. The systematic review on Green Sukuk was conducted in adherence to the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis" (PRISMA) guidelines. PRISMA, a systematic review approach, ensures methodical and transparent techniques for selecting, evaluating, and synthesising relevant research data from studies included in the review. This method is widely acknowledged for its rigorousness and credibility in identifying and consolidating research on specific topics, as evidenced by the works of Stechemesser and Guenther (2012).

A comprehensive literature search was conducted to identify pertinent Green Sukuk papers. The search was conducted systematically, encompassing a thorough analysis of Green Sukuk research articles from both the Scopus database and Google Scholar. The research scope spanned a five-year period, specifically from 2018 to 2022. It is important to note that the study focused on scrutinising papers published within this time frame, encompassing the latest research developments in the field of Green Sukuk. By adopting this meticulous approach, the study ensured a thorough exploration of the most recent and relevant scholarly contributions, enriching the quality and depth of the literature review.

Research questions, databases, and appropriate research terms

In this section, the research questions that underpin this study were formulated: "What are the challenges and issues associated with the issuance of Green Sukuk in Malaysia?" The research process involved employing the PRISMA Statement method to conduct a systematic query across selected bibliometric databases. A protocol was meticulously developed to outline the analysis methodology and the criteria for inclusion.

The search was conducted on the esteemed bibliographic platforms Scopus and Google Scholar, using the specific term "Green Sukuk" in titles, abstracts, and keywords. This deliberate choice aimed to encompass articles related to Green Sukuk, even those not explicitly labelled as such in their titles or abstracts. To manage the gathered data effectively, relevant information such as titles, abstracts, keywords, authors' details, affiliations, journal names, and publication years were meticulously collated into a Microsoft Excel spreadsheet. The spreadsheet was tailored to include specific data points essential for the research analysis.

A meticulous screening process was initiated, wherein an independent reviewer evaluated the titles and abstracts of the records to identify those directly related to Green Sukuk. The screening process was focused on academic essays, conference papers, and proceedings. Stringent filtering criteria were employed to ensure the inclusion of scholarly contributions exclusively. To execute the database

search efficiently, a strategic combination of keywords, namely "Green Sukuk," "challenges," and "problems," was utilised. The investigation prioritised relevant publication titles, abstracts, and keywords designated by the authors. It is noteworthy that the selection of these keywords was rigorously tested through a pre-simulation assessment, ensuring the thorough incorporation of all pertinent literature existing within the databases. This rigorous approach guarantees a comprehensive exploration of the current scholarly landscape concerning Green Sukuk challenges and issues.

Sample screening criteria

In the initial database search, (n =347) academic records were identified, comprising (n = 325) articles from Google Scholar and (n = 22) papers from Scopus. Subsequent to the elimination of duplications, which accounted for (n = 18) articles, the refined database stood at (n = 329) records. To ensure a high-quality research sample on Green Sukuk, an additional filtration process was employed. Each abstract was meticulously reviewed, and pertinent studies were tallied, while others were discarded.

During this process, (n = 226) articles were excluded due to their non-English language, thereby limiting the review to English publications. Furthermore, only articles directly addressing the challenges of implementing Green Sukuk from 2018 to 2022 were retained. Publications that did not align with these specific criteria or were not available in full-text formats, such as books, were excluded. Moreover, studies lacking a primary focus on the challenges associated with the implementation of Green Sukuk were also eliminated. Following the application of these stringent criteria, a total of (n = 41) empirical studies from both Google Scholar and Scopus constituted the final sample, as illustrated in Figure 17.1. This careful curation ensures the inclusion of only the most pertinent and focused research materials, providing a robust foundation for the systematic literature review.

Summary of results

This analytical approach is divided into three phases: issuance, allocation, and reporting. These phases align with the conventional approach followed in various issuance procedures of green bonds (Fitrah & Soemitra, 2022). The purpose of categorising the analysis into these phases is to facilitate a systematic exploration of the challenges and issues pertinent to Green Sukuk at each stage of its life cycle. Tables 17.1–17.3 summarise the results of the study.

In Table 17.1, the study presents a concise overview of the analytical framework, specifically focusing on the Issuance Phase. It categorises the challenges into five types: institutional, market, political, economic, and legal. It also provides sub-challenges and issues for each type, as well as examples of literature that discuss them. The first type of challenge is institutional. The sub-challenges are lack of green taxonomy standards among issuers and lack of awareness and information on Green Sukuk. These challenges affect the credibility and transparency of

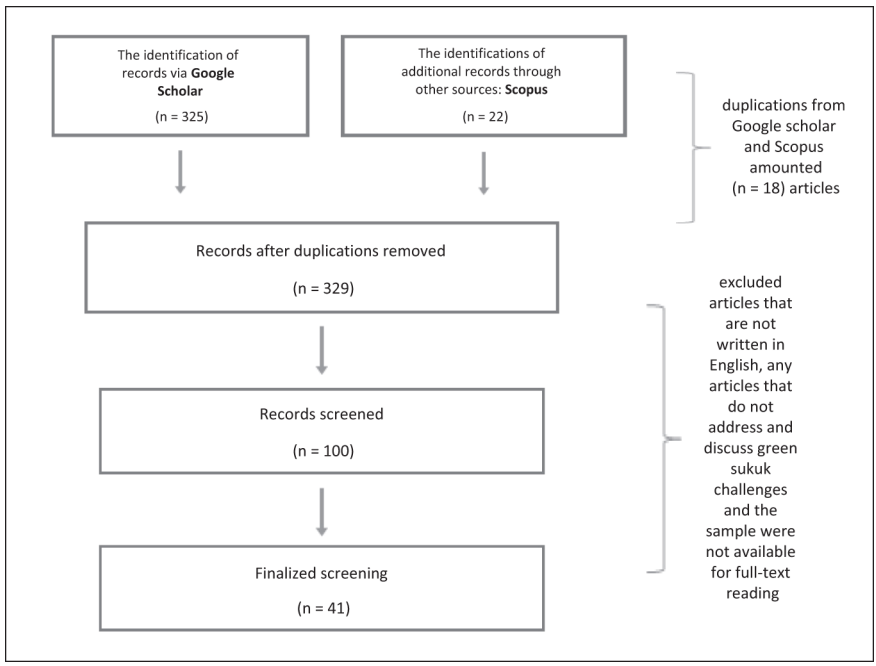

Figure 17.1 The study analysed and identified "challenges and issues of Green Sukuk" via a comprehensive study. The findings or outcomes, the problems, and issues of Green Sukuk discussion were then identified.

Table 17.1 Summary of the analytical framework (Issuance Phase)

Phase	*Types of Issues & Challenges*	*Sub-Challenges and Issues*	*Examples*	*Literature*
	Institutional	Green Taxonomy	Lack of green taxonomy standards among issuers	Keshminder et al., 2022; Fitrah & Soemitra, 2022;
		Green Project Identification	inability to distinguish respectively green and non-green assets for underlying assets; Difficulty to choose the appropriate project	Keshminder et al., 2022; Rapi et al., 2021

Table 17.1 (Continued)

Phase	*Types of Issues & Challenges*	*Sub-Challenges and Issues*	*Examples*	*Literature*
	Market	Cost of Issuance	The complex and costly transaction required to become green label certified	Aassouli et al., 2018; Keshminder et.al., 2022; Fitrah & Soemitra, 2022; Rapi et al., 2021
		The Minimum of Issuance Size	Green Sukuk's small market share; secondary market for Green Sukuk is small and limited	Richardson, 2019; Paltrinieri et al., 2023; Tabassum et al., 2019; Sasongko & Sakti, 2020; Rahman et al., 2020; Keshminder et al., 2022; Azhgaliyeva et al., 2020; Fitrah & Soemitra, 2022
		The awareness and information on Green Sukuk	Green Sukuk awareness is low and information is still scarce and new	Aassouli et al., 2018; Hassan et al., 2019; Tabassum et al., 2019; Keshminder et al., 2019; Razali et al., 2019; Aydın & Darici, 2019; Rahman et al., 2020; Abdullah & Nayan, 2020; Abubakar & Handayani, 2020; Al Ansari & Alanzarouti, 2020; Azhgaliyeva et al., 2020; Yasin, 2021; Roslen et al., 2021; Keshminder et al., 2022; Suwanan et al., 2021; Fitrah & Soemitra, 2022; Ozili, 2022
		Greenwashing	Green Sukuk's ability to adequately reflect "green" principles is debatable and remains questionable.	Tabassum et al., 2019; Abdullah & Keshminder, 2020; Liu & Lai, 2021; El Amri et al., 2021
	Political	Political Instability	Political instability increases the chances of policy changes.	Fitrah & Soemitra, 2022; Ozili, 2022

(*Continued*)

Table 17.1 (Continued)

Phase	*Types of Issues & Challenges*	*Sub-Challenges and Issues*	*Examples*	*Literature*
	Economic	Financial Incentives	Financial incentives are lacking.	Lawal & Imam, 2016; Keshminder et al., 2022; Fitrah & Soemitra, 2022; Ozili, 2022
	Legal	Shari'ah and legal issues, sukuk	"Fatwā Shopping"	Shakil, 2021; El Amri et al., 2021; Uluyol, 2021
	Other	Cultures and Policies	Difficult standardization due to different cultures and policies of various countries	

Green Sukuk issuance and limit the potential investors and issuers. The second type is market. The sub-challenges are small market share and high cost of issuance of Green Sukuk. These challenges reduce the attractiveness and competitiveness of Green Sukuk compared to other financing instruments and create barriers for market development and expansion. The third type is political. The sub-challenges are political instability and lack of financial incentives. These challenges increase the uncertainty and risk of Green Sukuk issuance and discourage the participation of both the public and the private sector. The fourth type is economic. The sub-challenge is greenwashing. This challenge refers to the practice of misleading or exaggerating the environmental benefits of Green Sukuk projects. This challenge undermines the trust and confidence of investors and stakeholders in Green Sukuk. The fifth type is legal. The sub-challenges are Shari'ah and legal issues, such as sukuk "Fatwā shopping" and different cultures and policies of various countries. These challenges create complexity and inconsistency in the regulatory framework and standardisation of Green Sukuk issuance.

Subsequently, Table 17.2 provides a summary of the analytical framework applicable to the Allocation Phase, shedding light on the intricacies of resource allocation in Green Sukuk initiatives. It categorises the challenges into three types: institutional, technology, and other. It also provides sub-challenges and issues for each type, as well as examples of literature that discuss them. The first type of challenge is institutional. The sub-challenge is the quality of governance. This challenge affects the ability to track and evaluate the proceeds of Green Sukuk due to a lack of expertise. The second type is technology. The sub-challenge is

Table 17.2 Summary of the analytical framework (Allocation Phase)

Phase	*Types of Issues and Challenges*	*Sub-Challenges and Issues*	*Examples*	*Literature*
	Institutional	The Quality of Governance	Inability to track and evaluate the proceeds due to a lack of expertise.	Banga, 2019; Hariyani & Kusuma, 2020; Fitrah & Soemitra, 2022
	Technology	Low-Carbon Technologies	Some low-carbon initiatives rely on modern technologies, some of which are more expensive and are still under development Socially responsible investing Sukuk ventures have a high-risk profile	Rahman et al., 2020; Fitrah & Soemitra, 2022
	Other	Structure of Green Projects	The complexity of structure of Green Sukuk and the high-risk profile that increases the risk to invest in the Green Sukuk	Tabassum et al., 2019; Rahman et al., 2020. El Amri et al., 2021; Rapi et al., 2021

low-carbon technologies. This challenge refers to the dependence of some Green Sukuk projects on modern technologies that are expensive and under development. This increases the risk profile of socially responsible investment Sukuk projects. The third type is other. The sub-challenge is the structure of green projects. This challenge relates to the complexity of the structure of Green Sukuk and the high-risk profile that increases the risk to invest in Green Sukuk.

Additionally, Table 17.3 outlines the analytical framework associated with the Reporting Phase, encapsulating the vital aspects concerning disclosure and reporting procedures. It categorises the challenges into three types: institutional, legal, and other. It also provides sub-challenges and issues for each type, as well as examples of literature that discuss them. The first type of challenge is institutional. The sub-challenge is the ministry coordination. This challenge affects the difficulty in working with other ministries during the report's preparation. The second type is legal. The sub-challenge is the harmonisation of regulation. This challenge refers to the absence of consistency in the regulatory framework for Green Sukuk. The third type is other. The sub-challenge is the cost of review. This challenge relates to the incremental expense of hiring an external reviewer and auditor for Green Sukuk.

Table 17.3 Summary of the analytical framework (Reporting Phase)

Phase	*Types of Issues and Challenges*	*Sub-Challenges and Issues*	*Examples*	*Literature*
	Institutional	Ministry coordination	The difficulty in working with other ministries during the report's preparation	Abubakar & Handayani, 2020; Fitrah & Soemitra, 2022
	Legal	Harmonisation of Regulation	The absence of consistency in the regulatory framework	Fitrah & Soemitra, 2022; Alghfeli et al., 2022;
	Other	Cost of Review	The incremental expense of hiring an external reviewer and auditor	Keshminder et al., 2022; Fitrah & Soemitra, 2022

Conclusion

In conclusion, the review analysed over 329 articles linked to Green Sukuk and its challenges. The systematic literature review showed that almost all screened articles discussed Islamic finance in general, and only 41 focused on Green Sukuk. The challenges of Green Sukuk found within 41 articles were discussed in this chapter and are listed as such: i) limited green taxonomy, ii) Green Sukuk awareness is low, iii) the small market share of the Green Sukuk, iv) green financing and liquidity constraints, v) greenwashing, vi) Sukuk: Shari'ah and legal issues, vii) the high-risk feature of socially responsible investment Sukuk projects, as well as the complexity of the Green Sukuk structure, viii) high cost of issuing Green Sukuk, ix) the lack of financial incentives, x) the governance quality of Green Sukuk/coordination between ministries and lack of support from the government, xi) difficult standardisation due to different cultures and policies of various countries, and xii) barriers for financing renewable energy. From all the articles found initially, most of them broadly discuss the challenges of Islamic finance without emphasising the challenges of the Green Sukuk. This indicates an understudied area of research in Green Sukuk application which should be explored further. Hence, the study recommends that future research focus on Green Sukuk and its applications. This extends the body of knowledge in this area and informs relevant authorities on setting up interventions needed for Green Sukuk to move forward.

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18 Green Sukuk and its challenges faced by public universities in Malaysia

An empirical study

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Introduction

Over the past several years, Green Sukuk has evolved as one of the Islamic capital market instruments that can be used to finance initiatives which aim to promote climate-friendly practices for a sustainable environment (Keshminder et al., 2021). Not only has the rapid rise of Green Sukuk around the world attracted the curiosity of investors, but it has also sparked an interest in academic research (see, for example, Zain & Muhamad Sori, 2020; Abdullah & Keshminder, 2020; Rahman et al., 2020). Consequently, there is a growing interest in exploring various elements of Green Sukuk, such as the drivers, opportunities, and problems (Keshminder et al., 2021; Noordin et al., 2018). The ecology framework was utilized by Liu and Lai (2021) in their investigation of the development of Green Sukuk. The framework was utilized to analyse the complementary and conflicting objectives and motives that were present during the process of market formation for the sector. Based on the findings of the study, it was determined that the goals of green finance and Sukuk development in Malaysia have not been fully accomplished, taking into consideration the fact that climate change difficulties and problems are still common. Despite this, it is considered that such a development has been able to open the way for other activities to be carried out in the future, such as legislation, standards, and instruments. According to Maurer (2010), Sukuk is a type of Islamic bond that is primarily issued as an alternative financial instrument for the purpose of obtaining funds which is in accordance with Shari'ah.

Background of the study

With the intention of promoting sustainable development goals, the climate change agenda, and socially responsible financing and investment, the Securities Commission of Malaysia (SC) launched the Sustainable and Responsible Investment (SRI) Sukuk framework in 2014. The framework was meant to be made available to investors in 2014, and as a result, Malaysia implemented a Green SRI Sukuk in 2017 (Piratti & Cattelan, 2020). Thus, the concept of Islamic green finance is relatively new, particularly since a Malaysian solar photovoltaic company issued the world's first Green Sukuk only in 2017. According to Klein and Weill (2016) and

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Noordin et al. (2018), Malaysia has become the largest Sukuk issuer in the world. This is because Malaysia is an Islamic nation, which has led to a huge increase in the demand for Islamic financial instruments. With a market share of 39.2%, Malaysia continues to lead the Sukuk market. Saudi Arabia comes in second with a market share of 20.4%, followed by Indonesia with a market share of 17.5%. The majority of Sukuk issuances are related to the concepts of SRIs (Qoyum et al., 2021; Owais & Mustafa, 2018).

Malaysia's first Green Sukuk was issued in July 2017 to finance the development of large-scale solar photovoltaic power facilities in Kudat, Sabah (Piratti & Cattelan, 2020). Subsequently, in October 2017, Quantum Solar Park Malaysia Sdn. Bhd. issued a Green SRI Sukuk with a total value of RM 1 billion to finance the building of three solar power plants with a capacity of 50 megawatts each in the states of Kedah, Melaka, and Terengganu. Then, in December 2017, PNB Merdeka Ventures Sdn. Bhd. issued an unrated Green SRI Sukuk with a maximum value of RM 2 billion under the Sukuk programme. The purpose of this Sukuk was to finance an 83-storesy office space that was a part of the Merdeka PNB118 skyscraper project in Kuala Lumpur, Malaysia. For financing a solar photovoltaic project in Perak with a capacity of 49 megawatts, Sinar Kamiri Sdn. Bhd. was granted permission to issue RM 245 million Green Sukuk in January 2018. In April 2018, UiTM Solar Power Sdn. Bhd. (USPSB) issued a Green SRI Sukuk with a total value of RM 240 million to finance the construction and operation of a utility solar power plant in Pahang with a capacity of 50 megawatts (MW) (Bernama, 2018).

The deployment of Green Sukuk in public universities is an example of a forward-thinking method to finance projects that are environmentally friendly for academic institutions. Within the context of their roles as centres of teaching and research, public universities are increasingly acknowledging the significance of incorporating environmentally responsible practices into their operations (Ali et al., 2019). Green Sukuk, which is an Islamic financial instrument, provides these organizations with a one-of-a-kind opportunity to raise funding for projects that are in accordance with Shari'ah principles as well as environmental sustainability objectives (Keshminder et al., 2022).

Green Sukuk is a form of financing that can be used by public universities to support a wide range of environmentally conscious initiatives that are being implemented on their campuses. Installing renewable energy systems, constructing energy-efficient infrastructure, developing waste management solutions, and constructing environmentally friendly structures are all examples of projects that could fall under this category. The enhancement of the overall sustainability of the university's operations and facilities is the primary focus of this endeavour (Leh et al., 2017).

Green Sukuk provides public universities with the opportunity to participate in ecologically responsible programmes without compromising their adherence to Islamic financing standards. This is one of the most significant advantages of Green Sukuk. These financial instruments are compliant with Shari'ah law, which means that they do not contain aspects such as interest (Riba) and ensure that ethical investment procedures are followed. Because of this, Green Sukuk is an

appealing choice for Islamic financial institutions and investors who are looking for alternatives to manage their investments in a socially responsible manner (Keshminder et al., 2022).

Further, the adoption of Green Sukuk in public universities goes beyond the financial reasons that are often considered. Students can learn about sustainable practices, environmental management, and the incorporation of ethical finance principles into real-world enterprises through the educational possibilities that are provided by these initiatives. The initiatives that are supported by Green Sukuk have the potential to function as living laboratories, exposing environmentally friendly technologies and practices to the community of the university (Ali et al., 2019).

The implementation of Green Sukuk in public universities is not without its difficulties, despite its great potential. University stakeholders have a limited awareness and knowledge of this financial instrument, which is why educational activities are required. It is possible that several regulatory frameworks pertaining to Islamic finance and environmental requirements will need to be managed. Additionally, there may be issues regarding the financial feasibility of these projects as well as the perception of risk that relates to them (Leh et al., 2017).

In general, the implementation of Green Sukuk in public universities demonstrates the institutions' dedication to sustainability by bringing financial plans into alignment with environmental responsibility. Green Sukuk is emerging as a potent instrument for financing projects that contribute to both academic achievement and ecological stewardship. This is because universities are becoming more aware of the role played in crafting a more sustainable future.

However, despite the benefits of these Green Sukuk, public universities are faced with many challenges related to the integration of Green Sukuk for financing environmentally sustainable initiatives. Thus, the aim of this chapter is to discuss these challenges and obstacles that hinder the issuance of Green Sukuk in public universities.

Literature review

The term "Sukuk" originates from the Arabic word *Sakk*, which can be translated as "certificate." Based on the definition provided by the Accounting and Auditing Organization for International Financial Institutions (AAOIFI, 2012), it is defined as "certificates of equal value representing undivided shares (in ownership of) tangible assets, usufruct, and services or (in ownership of) the assets of specific projects or special investment activities."

The Green Sukuk has evolved as a dynamic financial product that combines the principles of Islamic finance with the goals of sustainable development. Sukuk are Islamic debt instruments that have retained their position as the second-largest contributor to the Islamic Financial Services Industry (IFSI) and a significant growth driver in the IFSI (Yang, 2022). Sukuk are also known as Islamic bonds. According to Liu and Lai (2021), Green Sukuk is generated when a Sukuk combines its Islamic financing character with an eco-friendly goal that aspires to assist initiatives which are environmentally and climate friendly. According to Keshminder et al. (2019),

the difficulties that pertain to the financing of clean energy sources have been the focal point of attention as environmental consciousness and the demand for clean energy have both increased.

There are several differences between bonds and Sukuk that are noteworthy (Godlewski et al., 2013). For Sukuk, this means that the funds received are only utilized for Halal (Shari'ah permissible) business activities (Godlewski et al., 2013), and that the revenue that is accessible to Sukuk holders is drawn entirely from the revenues created by the Sukuk asset itself (Zulkhibri, 2015; Ali et al., 2019). Another requirement is that Sukuk must be compliant with Shari'ah. In addition, for Sukuk to be in accordance with Shari'ah, it must be devoid of the three key prohibitions: Riba (usury), Gharar (speculation), and Maysir (gambling) (Akhter, 2015; Qizam et al., 2020).

As opposed to being a financial instrument with a fixed income, a Sukuk is designed to be an instrument that allows for the sharing of both profits and risks (Yang, 2022). Both the lender and the borrower are responsible for the risks and have a share of the gains. The risk associated with Sukuk is generally considered lower than that of regular bonds. Experimental research carried out by Nasir and Farooq (2017) provided evidence in favour of this assumption. Their research examines the similarities and differences between the risks associated with conventional bonds and Sukuk in Pakistan. They used a sample of 15 Sukuk and 30 term finance certificates that were issued in Pakistan. The results of this research show that Sukuk is a more stable and less hazardous financial instrument than conventional bonds. Nonetheless, the issuer does not guarantee the return or the profits that are generated from the underlying assets as the Sukuk return is not guaranteed. This aspect of cash flow uncertainty, according to Ali et al. (2019), nonetheless contributes to higher risk on Sukuk compared to conventional bonds.

The issuing of Green Sukuk is distinct from the issuance of ordinary Sukuk in that it operates under a more stringent governance and disclosure requirement. A "greenness" evaluation must be carried out by a third party, and an issuer is required to follow the recommendation. For a project to be considered environmentally friendly, the issuer is required to publish all pertinent information, which includes the issuer's high-level goals, strategies, policies, and procedures. Completing challenging tasks such as social effect studies, environmental studies, reporting, and queries is required to be eligible for a Green certification prior to its issuance (Abdullah and Keshminder, 2020). The issuers claim that this process is not only detrimental to their project planning but also time-consuming, expensive, and disorganized.

Within the realm of public universities, the literature emphasizes the potential advantages and obstacles linked to the implementation of Green Sukuk. Al-Tamimi and Hassan (2019) explore the importance of integrating Islamic finance with sustainable development, highlighting the capacity of Green Sukuk to support eco-friendly initiatives in educational establishments. Abdullah and Nayan (2020) shared the same view and highlight the significance of Green Sukuk in promoting sustainability within the education sector.

Nevertheless, Rahman et al. (2022) examine the regulatory intricacies associated with the implementation of Green Sukuk in Malaysia, highlighting the apparent hurdles. The authors emphasize the necessity of establishing a clear and comprehensive legal structure to streamline the issuance of Green Sukuk in public universities. Additionally, Ahmad and Albaity (2018) examine the financial feasibility and profitability of Green Sukuk, offering valuable insights into addressing issues concerning long-term sustainability.

Ismail and Ismail (2020) highlight the significance of multidisciplinary research endeavours in comprehending the effects of Green Sukuk projects in educational institutions, with a particular emphasis on the role of the academic community. This is in accordance with the suggestions made by Alwi (2022), who advocates for educational initiatives aimed at increasing knowledge and understanding among individuals involved in universities.

Ultimately, the existing body of research on Green Sukuk in public institutions highlights the need for adopting a well-rounded strategy that incorporates principles of Islamic finance, sustainability objectives, and regulatory frameworks. The findings from these studies enhance our understanding of the difficulties and advantages involved in implementing Green Sukuk in the specific setting of educational institutions.

Methodology

This study utilizes the qualitative methodology advocated by Yin (2018). The qualitative approach was considered suitable due to its capacity to uncover underlying concerns and provide a more profound comprehension of the issuing of Green Sukuk (Levy, 2006). In Yin's (2018) classification, three distinct categories of case studies were identified: exploratory, descriptive, and explanatory. To accomplish the goals of this study, we collected primary qualitative data by conducting in-depth semi-structured interviews. The semi-structured interview is a method of gathering data when the interviewer is not obligated to ask structured questions. The interviewer is intended to use open-ended questions that promote dialogue with the respondents, rather than asking straight questions and receiving simple replies (Adams, 2015). The interview includes four key informants, specifically the chief executive officer, project director, and two executives. The main informants possess expertise in Green Sukuk and the functioning of solar plants within the subsidiary company of the public university (SCPU).

The research protocol for this study was formulated and aligned with the study's purpose to guarantee the implementation of all essential measures to prevent errors and uphold ethical conduct. The saturation point is a crucial element in qualitative research as it dictates the requisite number of key informants to gather enough data. This is because according to the rule, if the level of data or information is adequate to achieve the research purpose, a single key informant can be enough for a study (Merriam & Tisdell 2016).

Thematic analysis is employed to interpret the findings from the interviews. Creswell (2002) outlined a six-stage process for conducting thematic

analysis: becoming acquainted with the data, creating initial codes, searching for themes, reviewing themes, defining and labelling themes, and producing a report. The analysis of this study commences by examining the interview transcripts to identify the themes pertaining to motivational factors and impediments, as directed by the semi-structured interviews. The data for this study were validated through careful examination of the written materials, and the written texts were accurately transcribed with great attention to detail. However, in line with the objective of the study, only the challenges and obstacles faced by the subsidiary company of the public university (SCPU) were extracted from the interview.

The study expands upon the traditional scope by utilizing a comprehensive methodology to thoroughly analyse the current literature on the challenges and obstacles encountered by public universities in the implementation of Green Sukuk. It aims to thoroughly explore the complex dynamics and specific obstacles that public universities face as they strive for sustainability. The research intends to provide detailed insights into the complications of adopting Green Sukuk in public universities by closely examining the experiences of these institutions. This methodological modification improves the depth and significance of the study, enabling a more nuanced comprehension of the complex problems involved in aligning Islamic finance principles with environmental sustainability goals in the public higher education sector.

Findings and discussion

There are several obstacles to overcome in putting Green Sukuk into practice in public universities to finance environmentally sustainable projects. One of the most significant challenges is that university stakeholders, such as administrators, staff, students, and potential investors, have a limited awareness and comprehension of Green Sukuk. It is necessary to educate all these parties involved on its benefits and procedures. Additionally, the regulatory and legal structure locations may not be entirely supportive of Green Sukuk or well established for it; hence, to facilitate the process, it is necessary to collaborate with regulatory organizations. The intricacy of the structure of Green Sukuk presents yet another obstacle, as it requires it to comply with Shari'ah law as well as environmental norms. This necessitates competence in Islamic finance as well as environmental management. Green Sukuk may be perceived by investors and stakeholders as carrying additional risks in comparison to conventional financial instruments. These risks may be associated with uncertainty in the implementation of the project or concerns regarding the university's ability to deliver on sustainability goals. Additionally, there is a concern regarding the financial viability of the institution, as universities are required to demonstrate the economic feasibility of the sponsored projects to attract investors and assure the economic survival of the institution. Further, as a result of opposition from the local population, technological risks connected with the implementation of Green technology, and obstacles in project management, such as delays and cost overruns, the successful execution of Green Sukuk initiatives is further complicated. Maintaining consistent monitoring and reporting

on the environmental impact of projects that have been funded can be a logistical challenge, necessitating the implementation of robust systems for the gathering and analysis of data. In conclusion, achieving market acceptance for Green Sukuk may prove to be a difficult task, particularly in financial markets that have a limited familiarity with Islamic finance principles or feel cynicism regarding these principles. To overcome these problems, a concerted effort that emphasizes transparency, effective communication, and project management is required. This effort should involve universities, regulatory authorities, investors, and the wider community.

From the interview, it was revealed that the subsidiary company of the public university (SCPU) faces difficulties in terms of the delivery of the project. This is because they do not have a clear understanding of the precise location of the East Coast Rail Link (ECRL), as the ECRL route was realigned with major changes made during the project, and as the result, the SCPU is having trouble installing the solar panels. Further, the ERCL did not provide the SCPU with specific information regarding the entry and exit coordinates of the ECRL corridor related to its location. Following the delay that ECRL experienced in confirming the decision, the SCPU had a difficult time determining the precise site where the solar panels should be replaced. Finally, for solar panel installation, the SCPU was informed that the land measured around 40 meters in circumference and several hundred meters in length. Consequently, it is necessary for both parties to make certain that the solar photovoltaic (PV) farm and the ECRL railway design can coexist without causing any disruption to the projects. The resolution of these issues took close to four months to complete. Consequently, the company is forced to shoulder all costs related to the delay in the delivery of the project. This includes the liquidated damages that were imposed by Tenaga Nasional Berhad (a national power producing company), which experienced losses because of the delay in the ECRL project process.

Given that it was a university-based business, it encountered challenges while attempting to secure funding for its initial venture. Since this was their very first solar project and the SCPU profile was lacking nearly entirely, they did not have a very good profile at the time. In a similar vein, the problem was successfully resolved by means of the issuing of Green SRI Sukuk in the year 2018, which, to a certain extent, made it possible for the project to be carried out successfully. A combination of factors, including the experiences and background profiles of the board of management, the potential profit of the solar industry supported by the assets of the parent company, and the influence of the country's direction towards cleaner energy and climate change, were combined to create a recipe for investors' confidence and subscription for the Sukuk issuance.

On the other hand, according to Islamic Finance News (2022), the Sukuk, which had been rated AA-IS (stable outlook) in 2018 by MARC, the rating agency, was amended to a negative outlook in early 2022. This was because the plant had to be shut down due to the unforeseen damage that occurred to its gas-insulated switchgear and power transformer. After being shut down for seven months, beginning in November 2011, the solar plant was scheduled to resume operations only in June

2022. Despite the plant restarting its operations, the rating agency continued to maintain a pessimistic outlook. This is because there was a lack of clarity on the insurance payout and the level of compensation that the United States Postal Service would receive in the event that the claim was validated and granted (MARC, 2022).

The final obstacle is the weather. The quantity of sunshine that is received is the primary factor that determines the efficiency of the solar photovoltaic system. The amount of sun rays that will be received by solar photovoltaic systems is difficult to forecast because the weather changes. In addition, the solar power plant is situated on the east coast, which means that it can be affected by monsoons that bring with them tremendous rainfall, violent currents, and unexpected monsoon storms which originate from the South China Sea. The amount of energy that can be stored for later use would be complex for computation because of these various influencing factors.

Conclusion

As a conclusion, the study highlights the complex array of difficulties encountered by public universities in Malaysia when contemplating the adoption of Green Sukuk for sustainable projects. The obstacles identified, which include the lack of knowledge among university stakeholders, the difficulties in organizing the Sukuk-issuing exercises and the problems associated with financial feasibility, regulatory frameworks, and risk perceptions, collectively highlight the complex nature of combining Islamic finance principles with environmental sustainability agendas. To achieve success in implementing Green Sukuk initiatives in public institutions, it is therefore crucial to thoroughly address these problems. For the promotion of awareness and comprehension, it is crucial to have educational programmes that are effective, regulatory frameworks which are explicit, and techniques that involve multiple disciplines. Furthermore, it is essential to have clear and open project management, strong monitoring and reporting systems, and active involvement of the community to guarantee the effective execution of Green Sukuk projects. Conquering these challenges will not only establish sustainable financial practices in public institutions but also make a substantial contribution to Malaysia's overall environmental and educational goals. To fully realize the potential of Green Sukuk in the higher education sector, it is crucial to adopt a strategic and coordinated strategy to address these difficulties.

The current study proposes several suggestions that might be considered to improve the successful implementation of Green Sukuk in Malaysian public universities. Primarily, it is imperative to implement specialized educational initiatives and awareness drives to acquaint university administration, staff, and students with the fundamental concepts and advantages of Green Sukuk. The cooperation between academic institutions and regulatory organizations can simplify the regulatory framework, offering precise instructions for the issuance and use of Green Sukuk in the university setting. Furthermore, universities should give greater importance to the advancement of multidisciplinary research efforts that

combine Islamic finance and environmental sustainability, establishing a strong academic basis for Green Sukuk projects. Financial players, such as investors and Islamic financial institutions, should actively engage in capacity-building activities to comprehend the distinct potential offered by Green Sukuk. By implementing these suggestions, Malaysian public universities can overcome current obstacles and establish themselves as leaders in sustainable finance methods, making a substantial contribution to the country's overall environmental and educational goals.

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19 Ethical crowdfunding-led Islamic green finance

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Introduction

Crowdfunding, an innovative method of financing through online platforms, has revolutionized fundraising for projects by connecting entrepreneurs with a vast network of potential investors. This approach, driven by the power of collective contributions, has gained substantial traction, particularly among start-ups and small businesses seeking alternatives to traditional fundraising methods (Hartmann et al., 2019). In recent years, the intersection of crowdfunding and green finance has emerged as a dynamic force within financial innovation. Crowdfunding, with its decentralized nature, has evolved into a potent instrument for mobilizing financial resources across diverse sectors. Simultaneously, the rise of green finance, dedicated to channelling capital towards environmentally responsible initiatives, has added a layer of significance to this synergy (Kim et al., 2021). Utilizing the collective strength of the public, crowdfunding within the realm of green finance holds the capacity to narrow the disparity between the existing financial resources and the escalating need for funding sustainable projects. This research aims to explore the symbiotic relationship between crowdfunding and green finance, discussing the nuanced interaction when financial enhancing inclusivity converges with environmental stewardship. As global concerns over climate change and resource reduction intensify, there is a growing recognition of the pivotal role that alternative financing mechanisms can play in fostering sustainable development. Against this backdrop, the amalgamation of crowdfunding and green finance emerges as a promising avenue for stimulating transformative initiatives that address pressing environmental challenges, while promoting financial inclusion into sustainable endeavours (Valdés & Guerrero, 2023).

To comprehend this integration, we delve into the foundational principles underpinning crowdfunding and green finance independently. Through an in-depth examination of theoretical frameworks, a systematic literature review, and pertinent case studies, we aim to elucidate the synergies and challenges inherent in the amalgamation of these two financial paradigms. This research enhances the scholarly discourse on sustainable finance by providing interdisciplinary insights. It establishes a comprehensive foundation for understanding how crowdfunding,

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as a means of financial inclusivity, directs resources towards environmentally conscientious objectives, propelling the discourse on green finance into a new era.

Green finance in nutshell

The term "green finance" encompasses a spectrum of financial products, services, and investments designed to promote environmental sustainability and facilitate the transition to a low-carbon economy (Bhattacharyya, 2022). This paradigm involves various financial instruments such as loans, insurance, equity, derivatives, and investment funds, all aimed at redirecting financial resources towards projects and initiatives with positive environmental impacts (Agirman & Osman, 2019). In this context, crowdfunding emerges as a pivotal element within green finance, offering an alternative and inclusive financing mechanism to achieve its overarching goals (Hartmann et al., 2019). Crowdfunding in the realm of green finance assumes a vital role by fostering the engagement of both individuals and organizations in advancing environmental sustainability. It provides a direct avenue for contributors to support projects aligning with their values, thereby contributing positively to the environment (Motylska-Kuzma, 2018). Moreover, this form of crowdfunding instils a sense of ownership and empowerment among participants, transforming them into active stakeholders in the transition towards a more environmentally conscious economy (Wasiuzzaman et al., 2021). By participating in crowdfunding within the green finance sphere, individuals and organizations can actively contribute to the development and implementation of innovative green technologies and projects (Lipusch et al., 2020). This approach serves as an effective and accessible means of financing early-stage renewable energy development and supporting innovative green technology start-ups. The platform provides a conduit for individuals to invest in projects poised to make a significant positive impact on the environment. Furthermore, the integration of blockchain technology into crowdfunding within the green finance domain has the potential to enhance both effectiveness and transparency (Baber, 2020). Leveraging blockchain technology, crowdfunding platforms can establish trust and transparency through the full traceability of funds and transactions (Hawlitschek et al., 2018). This heightened transparency not only attracts more participants but also instils confidence in the crowdfunding process, leading to increased funding for environmental projects. Overall, crowdfunding within the realm of green finance combines the forces of collective action and financial innovation to bolster environmentally friendly projects and initiatives. This approach has the transformative potential to transform the resource funding for environmentally sustainable projects by directly involving individuals passionate about eco-friendly sustainability.

Role of crowdfunding in advancing green finance

Crowdfunding has several key benefits that make it an effective tool for supporting green finance. Primarily, crowdfunding serves as a channel for both individuals and entities to directly contribute to projects promoting environmental sustainability.

This not only fosters a more inclusive and democratized financing paradigm but also empowers individuals to actively engage in boosting the shift towards a sustainable future (Testa et al., 2019). Moreover, the integration of crowdfunding with blockchain technology ensures comprehensive traceability of transactions, thereby enhancing transparency and accountability in fund utilization. This feature is pivotal in fostering trust among potential investors and donors, who can scrutinize the allocation of funds and assess the consequential impact. Secondly, crowdfunding-led green finance plays an essential role in mitigating the funding gap prevalent in countries with limited institutional support for environmental sustainability (Green et al., 2015). In such contexts, crowdfunding emerges as a catalyst, providing financial support to green projects that may encounter barriers in accessing conventional funding sources. This mechanism facilitates the progression of projects that might otherwise stagnate due to financial constraints. Additionally, crowdfunding-led green finance serves as a stimulant for innovation within the green sector. By affording early-stage green technology start-ups a platform to secure funding, crowdfunding actively fosters innovation and the creation of novel solutions to address environmental challenges (Baber, 2020). By mobilizing resources directly from individuals, crowdfunding-led green finance emerges as a dynamic force driving environmentally sustainable projects forward, especially those that face limitations in obtaining support from traditional funding sources like government grants or venture capital.

Advantages of crowdfunding in green finance

There are several advantages of using crowdfunding for green finance. First, crowdfunding allows for a wider pool of potential investors. This increases the chances of successfully raising the necessary funds for green projects. Second, crowdfunding can help validate the market demand for green products and services (Jung & Lee, 2022). This validation can be a key factor in attracting further investment and support from traditional financial institutions. Third, crowdfunding allows for direct engagement and participation from individuals who share a passion for environmental sustainability. This can create a sense of ownership and community around green projects, as individuals feel more connected to the cause and invested in its success (Wasiuzzaman et al., 2021). Overall, crowdfunding led-green finance has the potential to play a significant role in driving the transition towards a sustainable future. By providing a decentralized and transparent platform for funding, crowdfunding in green finance can overcome barriers that often prevent environmentally sustainable projects from accessing traditional sources of capital (Adhami et al., 2020). Crowdfunding led-green finance has the potential to facilitate widespread access and diversify the funding landscape for green projects. This can lead to a greater variety of innovative and impactful projects being funded, ultimately contributing to the overall goal of achieving environmental sustainability. Previous research demonstrates that lack of financial resources is one of the major barriers to launching sustainable projects (Agirman & Osman, 2019; Kordela, 2023). Crowdfunding can help bridge this gap by providing an alternative funding

mechanism that leverages the collective power of individuals who are passionate about environmental issues. In conclusion, crowdfunding led-green finance is a promising solution for funding environmentally sustainable projects. It helps overcome the financial constraints that prevent green entrepreneurs from accessing external resources necessary for project development, particularly in countries with less environmentally oriented institutions. Crowdfunding on blockchain may help projects by streamlining and democratizing their funding needs with full traceability. Crowdfunding on blockchain can also provide added security and transparency, making it an attractive option for both project creators and investors. Using crowdfunding as a platform for green finance, particularly on blockchain, opens new avenues for funding environmentally sustainable projects.

Challenges in crowdfunding for green finance

While crowdfunding-driven green finance offers myriad opportunities, it is not devoid of challenges that necessitate attention. These challenges encompass legal and regulatory issues, difficulties in achieving large-scale impact, concerns related to trust and credibility, and gaps in public knowledge and awareness. One of the primary challenges facing crowdfunding in the context of green finance is the lack of clear and uniform regulatory frameworks (Singh, 2022). As the intersection between financial innovation and environmental sustainability evolves, regulators are grappling with defining appropriate guidelines (Wehnert & Beckmann, 2023). Differing regulations across jurisdictions pose a barrier to the widespread adoption of crowdfunding for green projects. Besides challenges in achieving large-scale impact, while crowdfunding platforms have proven successful in financing smaller green projects, scalability remains a significant challenge (Bergset, 2018). Larger and more ambitious initiatives often require substantial funding, and the current crowdfunding landscape may struggle to attract the necessary capital (Lipusch et al., 2020). This section delves into the limitations of crowdfunding when it comes to financing large-scale green projects, addressing the challenges related to fundraising targets, project timelines, and the need for diversified funding sources. Exploring potential solutions and strategies to enhance the scalability of crowdfunding in green finance is crucial for overcoming this hurdle. Another challenge is building trust and credibility in the crowdfunding platform (Valdés & Guerrero, 2023). This can be overcome by implementing transparency measures such as providing clear and detailed project information, conducting due diligence on project creators, and establishing a system for verifying the authenticity of projects and their impact. Moreover, public knowledge and awareness, a critical yet often overlooked challenge in crowdfunding for green finance, lies in the level of awareness and education among potential investors and the general public (Wasiuzzaman et al., 2021). Many individuals may not fully grasp the impact of their financial contributions to green projects or the potential return on investment. This section analyses the importance of increasing awareness about the benefits of crowdfunding for green initiatives, emphasizing the role of educational campaigns in fostering a more informed and environmentally conscious investor base. By

addressing this challenge, crowdfunding platforms can tap into a broader audience, thereby expanding their reach and impact in the realm of green finance.

In navigating the challenges within crowdfunding for green finance, it becomes evident that overcoming these obstacles requires a concerted effort from regulators, crowdfunding platforms, and the wider public. Addressing regulatory uncertainties, enhancing large-scale impact, and fostering awareness are pivotal steps towards unlocking the full potential of crowdfunding as a catalyst for green finance. By actively engaging with these challenges, stakeholders can contribute to the evolution of crowdfunding in green finance, creating a more resilient and adaptive system that effectively channels funds towards projects with lasting environmental benefits.

Case studies of successful crowdfunding in green finance

This section aims to highlight instances where the collective power of the crowd has catalysed impactful environmental initiatives. Whether it be community-driven renewable energy projects, or sustainable agriculture endeavours, these success stories offer tangible evidence of how crowdfunding can transcend traditional financial structures and empower communities to spearhead projects aligned with environmental sustainability. One notable case study of successful crowdfunding in green finance is the Solar Roadways project. Solar Roadways, a project aimed at developing solar panels that can be installed on roadways to generate electricity, raised over USD 2.2 million through a crowdfunding campaign on Indiegogo (Gallemore et al., 2019). This campaign attracted thousands of backers who were passionate about renewable energy and saw the potential of Solar Roadways to revolutionize the way electricity is generated. Another successful example is the Elio Motors crowdfunding campaign. Elio Motors, a start-up that aimed to produce an affordable and fuel-efficient three-wheeled car, raised USD 17 million through a crowdfunding campaign on StartEngine (Cordova et al., 2015). The campaign resonated with environmentally conscious individuals who were eager to support the development of a more sustainable transportation option. These case studies highlighted the power of crowdfunding-led green finance in marshalling resources and generating support for innovative green projects. This can create a sense of ownership and empowerment among individuals, as they become active participants in the transition towards a more sustainable future.

The future of crowdfunding in green finance

The future of crowdfunding in green finance looks promising as it offers a unique and effective way to mobilize resources for innovative and sustainable projects. By harnessing the power of social media and online networking, crowdfunding platforms can reach a wide audience and tap into the growing demand for eco-friendly solutions (Wasiuzzaman et al., 2021). This can create a sense of ownership and empowerment among individuals, as they become active participants in the transition towards a more sustainable future. In addition, the integration

of blockchain technology in crowdfunding platforms can enhance transparency, accountability, and security in the distribution of funds (Wehnert & Beckmann, 2023). This can significantly reduce the risk of misappropriation and increase confidence among potential backers and investors. Overall, crowdfunding led-green finance has the potential to transform the landscape of green finance by streamlining and ensuring widespread participation in the process, attracting a diverse range of sponsors and investors, and mobilizing more capital for sustainable projects (Kim et al., 2021). With the increasing recognition of the importance of environmental sustainability and the urgent need for green initiatives, crowdfunding led-green finance is poised to play a significant role in promoting a sustainable society and accelerating the transition towards a greener future. It is evident that crowdfunding, especially when combined with blockchain technology, has the potential to develop green finance and accelerate the transition towards a more sustainable future (Baber, 2020). Further, by fostering a supportive ecosystem, embracing technological advancements, and promoting awareness, the collaborative efforts of investors, project creators, and regulatory bodies can shape a future where crowdfunding becomes a linchpin in financing the transition to an economy geared towards greater sustainability and environmental awareness.

Conclusion

The processes involved in this research have provided a comprehensive understanding of the symbiotic relationship between crowdfunding and green finance, shedding light on the numerous ways in which crowdfunding serves as a catalyst for sustainable and environmentally conscious initiatives. The research commenced with an insightful introduction, setting the stage for an in-depth analysis of green finance and the growing significance of crowdfunding towards the green finance domain. Through a meticulous overview of green finance, this research established a foundational understanding of its principles, emphasizing the need for innovative financial mechanisms to address environmental challenges. In this context, crowdfunding emerges as a dynamic and participatory approach that aligns with the ethos of green finance.

The discussion further delved into the multifaceted role of crowdfunding in advancing green finance, elucidating how it enables widespread access to the process of funding environmentally friendly projects. The advantages of crowdfunding in this context were elucidated, emphasizing its ability to enhance inclusivity, promote community engagement, and drive grassroots initiatives that might otherwise struggle to secure traditional funding. Nevertheless, this research also acknowledged the challenges inherent in crowdfunding for green finance. Issues such as regulatory uncertainties, information asymmetry, and project scalability pose hurdles that necessitate thoughtful consideration and strategic solutions. By highlighting these challenges, the potential for crowdfunding to contribute significantly to the green finance landscape can be maximized. The inclusion of case studies showcasing successful crowdfunding campaigns in green finance provided concrete examples

of how this funding model has proven effective in diverse contexts. These real-world illustrations serve as valuable insights for practitioners, policymakers, and researchers seeking to leverage crowdfunding as a means of catalysing environmentally sustainable projects. Looking ahead, the future of crowdfunding in green finance appears promising, with ongoing technological advancements, regulatory frameworks, and increased awareness of environmental issues. As the world collectively strives towards a more sustainable future, crowdfunding is poised to play a progressively crucial role in mobilizing resources and empowering communities to actively participate in the transition towards green finance. In brief, the synergy between crowdfunding and green finance offers a potent combination that has the potential to reshape the landscape of sustainable development. As we navigate the complexities of environmental challenges, the collaborative and decentralized nature of crowdfunding holds the promise of transforming aspirations into tangible, positive impacts.

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Part VI

Risk management of Islamic green finance

20 Risk factors in Islamic green finance and a corporate solution

Fahd Mohammed Obad Al-Shaghdari, Ashurov Sharofiddin and Habeebullah Zakariyah

Introduction

The past few years have witnessed a discernible increase in the popularity of Islamic financing, which can be attributed to the growing inclination to align financial practices with ethical and ecological values. The domain of green finance has been significantly influenced by Islamic finance, as evidenced by the works of Musari (2021) and Syarifuddin (2023). The term "green finance" pertains to financial endeavours that provide assistance for projects and efforts that are environmentally friendly and promote sustainability (Kunhibava et al., 2018). Recently, there has been a notable transformation in the global financial environment, characterised by a substantial adoption of sustainable and responsible investment practises. Islamic green financing (IGF) has developed as a significant phenomenon within the realm of new trends, as it integrates the concepts of Islamic finance with environmentally sustainable activities (Sekreter, 2017; Malini, 2021). The integration of Islamic financial principles with efforts to prevent climate change and promote environmental sustainability is not only consistent with the ethical foundations of Islamic finance, but also responds to the urgent global imperative.

Islamic finance is a financial system that is based on the principles of Shari'ah, which is the Islamic law. It places a strong emphasis on ethical and socially responsible investing. According to Sofyan et al. (2019), the ethical principles underlying Islamic finance make it a suitable ally for green finance, which focuses on directing investments towards ecologically sustainable initiatives and technology. The perception of elevated risks associated with green-related projects is frequently brought up by investors, policymakers, and industry participants as a contributing cause to the sluggish expansion of green industries in developing nations, among them Malaysia (Kunhibava et al., 2018; Musari, 2021). Hence, it is crucial to identify and assess these risk factors comprehensively in order for industry stakeholders to effectively address them through the implementation of suitable risk management and mitigation strategies. Moreover, it should be noted that the field of IGF is still in its infancy, as evidenced by the relatively small quantity of research conducted thus far (Musari, 2021; Debrah et al., 2023). The investigation of risk concerns associated with the Islamic green finance industry is crucial as it continues to gain momentum in the financial landscape. Islamic finance principles

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offer a robust ethical foundation; nevertheless, they also present unique risks that diverge from those found in traditional financial systems, such as Shari'ah non-compliant risk.

The main contribution of this research is in the expansion of knowledge, as it encompasses a comprehensive literature evaluation and bibliometric analysis that specifically examines risk variables within the realm of IGF. The current study seeks to address this research gap. Additionally, the research offers comprehensive insights into green financing and the associated project risks, thereby equipping practitioners, investors, policymakers, and academicians with a wide in-depth knowledge. This knowledge can be utilized to effectively implement risk management and mitigation strategies, ensuring long-term viability and adherence to sustainability standards of green projects. Furthermore, this study identifies significant avenues for future research by conducting a comprehensive evaluation of existing material.

The rest of this study is organised as follows: The following section briefly discusses the previous literature related to the topic. Section 3 is dedicated to the research methodology, encompassing several components such as research design, sample selection, data collection, and data analysis methodologies. Section 4 presents a comprehensive exposition of the findings derived from the bibliometric analysis. Section 5 provides a concise summary and delineates the limitation of the present research, as well as suggests potential avenues for future research.

Literature review

Green financing

Green financing refers to financial options that support sustainability efforts by providing funding for initiatives aimed at addressing climate change, global warming, emissions, and other aspects associated with sustainability (Cai & Guo, 2021). In addition, the concept of green finance has been described by Sekreter (2017) as the provision of financial resources for investments that support the development and implementation of renewable energy sources, sustainable development initiatives, and environmental products or policies. On the other hand, IGF pertains to financial instruments and investments that conform to the principles of Islamic finance while concurrently advocating for environmentally friendly practices (Malini, 2021; Syarifuddin, 2023). The integration of ethical and Shari'ah-compliant financial transactions, rooted in the principles of Islamic finance, combines with the objectives of promoting environmental sustainability (Wilson, 1997; Kunhibava et al., 2018). Like green finance, Islamic finance, endeavours to foster and augment sustainable development by upholding the values of equity, equality, and ethical behaviour. The shared characteristics are firmly grounded in the fundamental principles of the Maqasid al-Shari'ah, which explicitly emphasise the necessity of safeguarding Maal (property), and Nasl (progeny), as illustrative examples. Considerable advancements have been achieved in promoting environmental sustainability based on the agenda of the Paris Agreement. The Paris Agreement,

an international treaty implemented in 2015, has garnered gradual endorsements from 194 states and the European Union. It is founded upon a shared global objective to address climate change by ensuring that the increase in global temperature this century remains significantly below 2℃ above pre-industrial levels. Furthermore, the agreement aims to undertake additional endeavours to restrict the temperature rise to 1.5℃. The Paris Agreement establishes a standard for nations to implement measures aimed at combating climate change. Numerous scholarly investigations have examined a range of obstacles and gaps in the facilitation of green financing, as well as solutions to surmount these barriers and provide compensation to investors involved in environmentally friendly projects (Zhang et al., 2019; Akomea-Frimpong et al., 2022). Most of these studies have emphasised concerns pertaining to land acquisition, project feasibility, low profitability, inadequate market prospects, elevated project expenses, and insufficient knowledge. Furthermore, Daszyńska et al. (2023) assert in their research that green investments are encumbered by substantial financial risk stemming from the ambiguity around anticipated outcomes and challenges in securing funding.

Furthermore, several scholarly investigations have explored the various elements that impede the facilitation of financial growth. Notably, Rahman et al. (2022) and Daszyńska et al. (2023) have specifically focused on the identification of the financing gap pertaining to green sustainable projects. Moreover, this research has put forth recommendations and proposed solutions aimed at mitigating and bridging these gaps. Klasen et al. (2022) argue that a significant obstacle lies in the allocation of financial resources from both public and private entities towards initiatives that promote sustainability. Several risk mitigation techniques were proposed, including the integration of private funding with government and United Nations backing, as well as the establishment of a triparty agreement among multiple parties to ensure the acquisition of financial resources. Additionally, Taghizadeh and Yoshino (2019) advocated for the implementation of comprehensive tax rebate policies and the allocation of a greater portion of tax revenues to private funders, such as banks and financial corporations, to enhance the rate of return on green projects. The participants also engaged in discussions on credit guarantee schemes aimed at mitigating credit risk and facilitating financing for green projects, benefiting both investors and lenders involved in such initiatives. Moreover, there is a lack of literature that has examined the significance and consequences of green funding in relation to the efficacy of sustainable investment endeavours (Flammer, 2020; Zhang et al., 2023).

Risk in Islamic green finance

Risk in Islamic green finance involves evaluating and managing various factors that can affect the success and viability of green projects and investments. These risk factors are crucial to ensure the long-term sustainability and profitability of IGF initiatives. One of the key risk factors in IGF is environmental risk. Environmental risk is the potential for adverse environmental impacts from green finance activities (Bhatnagar & Sharma, 2022; Li et al., 2022). This includes climate change, rising

emissions from conventional energy resources, global warming, and pollution control (Cai, & Guo, 2021; Li et al., 2022). These environmental risk factors can pose significant challenges to IGF initiatives. In addition to environmental risk, Shari'ah non-compliance risk is another risk factor in IGF, which refers to the risk that IGF projects or investments do not adhere to Shari'ah principles and guidelines (Musari, 2021; Syarifuddin, 2023). The complexity arises while attempting to maintain compliance with Shari'ah principles while simultaneously conforming to environmental rules. Failure to adhere to the rules of Islamic finance, which include the prohibition of Riba (interest) and the avoidance of Haram (forbidden) activities, might provide a substantial risk.

Moreover, regulatory risk is another important risk factor in the context of IGF. Regulatory risk refers to the potential changes in regulations and policies that can impact the viability and profitability of IGF projects (Malik et al., 2018; Farooq & Selim, 2020). These changes can include new environmental regulations, tax incentives, or government support for green initiatives. Financial institutions and investors must stay updated on evolving regulatory frameworks to ensure compliance and minimize potential risks. Furthermore, market risk is another factor to consider in IGF. Market risk in IGF refers to the potential for fluctuations in market conditions that can impact the value of its green investments and projects (Sofyan et al., 2019; Olanrewaju et al., 2020). Green finance refers to investments and financial instruments that prioritise ecologically friendly initiatives, industries, or practices. Although assets and projects may prioritise sustainability and the environment, they remain susceptible to market risk factors that might impact their returns and valuations. Basically, there are numerous important elements of market risk in an IGF setting, including the risk of interest rate, the risk of liquidity, and currency exchange risk. Lastly, credit risk is the potential for borrowers to default on their obligations (Schoenmaker, 2017; Capasso et al., 2020). In IGF, credit risk plays a significant role as it pertains to the financing of green projects. Green projects often involve higher costs and longer payback periods than conventional projects, which increases the likelihood of default by borrowers. Accordingly, it is crucial to address these factors to manage and mitigate risk in IGF effectively.

Research methodology

The present study uses bibliometric analysis to accomplish its objectives. Bibliometric analysis is a commonly employed and well-acknowledged method in academic research (Bhatnagar & Sharma, 2022; Debrah et al., 2023). The utilisation of this approach facilitates the establishment of an impartial structure for conducting a literature review, with a specific emphasis on the conceptual analysis of a particular field of knowledge. The present study leveraged the Scopus database to obtain metadata for bibliometric research purposes. Scopus serves as an extensive collection of metadata derived from the scholarly literature that is essential for the objective of conducting bibliometric analysis (Ye et al., 2020; Donthu et al., 2021). It offers extensive coverage of pertinent research and is widely regarded as the most comprehensive citation and abstract database for research papers. Its

coverage surpasses that of the Web of Science database (Fahim & Mahadi, 2022; Mohanty et la., 2023). Additionally, the utilisation of the Dimensions.ai database was employed to ensure an ample sample size for the analysis, as it is recognised as one of the extensively employed databases among academics (Liang et al., 2022). The literature search was conducted by utilising the subfields "article title," "abstract," and "keywords" to identify relevant articles related to the research topic. This approach, which involved searching for keywords, titles, and abstracts, was employed to minimise potential bias from researchers and ensure comprehensive coverage.

The keywords used to execute the bibliometric analysis were "Islamic Green Finance" OR "Green Sukuk" OR "Green Finance" AND "Risk" in the title, abstract, and keywords sections. Furthermore, the scope of the search was further constrained to encompass solely scholarly articles, book chapters, and conference papers. Moreover, the choice of English as the language of publication is made to ensure a broader and more consistent perspective, given its predominant usage in social science papers (Fahim & Mahadi, 2022). Consequently, a total of 590 documents were obtained as samples. The obtained samples from the period of 2010–2023 were analysed using R-Studio software. The evaluation procedure and data extraction were carried out on September 30, 2023. The procedures are succinctly summarised and visually represented in Figure 20.1.

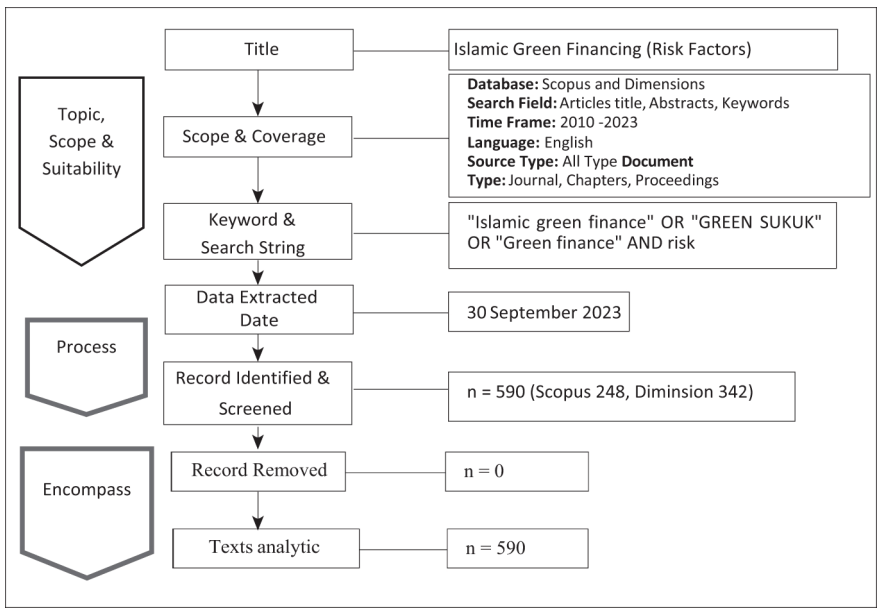

Figure 20.1 Schematic of the research methodology.

Bibliometric analysis

Findings and discussion

The following Table 20.1 elucidates the origins and classifications of papers obtained from the Scopus and Dimensions.ai databases utilising the keywords "Islamic green finance" OR "Green Sukuk" OR "Green finance" AND "Risk". A total of 590 papers were analysed, and these documents were categorised into three distinct types: articles published in academic journals, chapters in edited collections, and conference proceedings.

Based on a classification of document type, the primary sources of documents related to the topic of this research were articles in journals (76.21% from the Scopus database and 80.99% from the Dimensions.ai database), followed by proceedings, also known as conference papers (16.13% from the Scopus database and 9.94% from the Dimensions.ai database). Finally, documents classified as chapters in a book were the lowest types, contributing to the types of documents (7.66% from the Scopus database and 9.06% from the Dimensions.ai database).

Next, the potential risks associated with IGF were identified through an in-depth analysis of the existing literature spanning from 2010 to 2023. From 2010 to October 2023, there was a consistent rise in the number of publications focusing on the topic of IGF and risk. This upward trend in research indicates that IGF has emerged as a prominent area of investigation in recent years. The study, conducted on a sample of 590 papers obtained from the Scopus database and the Dimensions.ai database, identified a variety of risks related to green finance in general and IGF. Through applying the word cloud analysis technique, the analysis elucidates the distinct risk categories pertaining to IGF. Those risks can be categorised into six distinct classifications, namely: environmental risk, regulatory risk, geopolitical risk, credit provision risk, pandemic risk, and spillover effect risk. First, the identification of environmental risk was identified via several indicators that were then presented in the word cloud output. The indicators representing environmental risk encompass environmental pollution, climate change, carbon emissions, and renewable energy. The second risk that was detected is regulatory risk, which was

Table 20.1 Database sources analysis

Database	*Types of Documents*	*Total*	*Percentage*
Scopus	Articles	189	76.21%
	Chapters in Books	19	7.66%
	Proceedings	40	16.13
Total		**248**	**100%**
Dimensions.ai	Articles	277	80.99%
	Chapters in Books	31	9.06
	Proceedings	34	9.94
Total		**342**	**100%**

discerned through several terms such as environmental policy, environmental economics, energy policy, and fiscal policy.

Third is geopolitical risk, a risk pertains to the possibility of political, social, or economic elements in various nations or regions influencing the stability of a worldwide or regional landscape, as well as the activities and investments of multinational companies and other organisations (Caldara & Iacoviello, 2022; Li, 2023). The threats stem from interaction and discord among nations, governing bodies, and diverse geopolitical institutions. Geopolitical risk encompasses several manifestations and yields an assortment of effects, encompassing economic disturbances, security vulnerabilities, and variations in global political relations. Fourth is credit provision risk: the term "credit provision risk" in the context of Islamic financial institutions pertains to the possibility that customers of these institutions may fail to fulfil their financial commitments by not returning their funding or debts (Qard) in accordance with the agreed-upon terms (Musari, 2021; Syarifuddin, 2023). The potential risks associated with this situation can result in substantial financial implications to the fund providers, encompassing both the loss of the original amount lent and the foregone profits revenue. Fifth is pandemic risk: pandemics have the potential to exert diverse effects on Islamic green finance activities, encompassing an influence on both the demand for green finance products and the execution of green projects. Finally, the analysis indicated a new type of risk called spillover effect risk; this risk pertains to the possibility of negative outcomes or disturbances in a particular domain, nation, industry, or market propagating and affecting other interconnected or associated domains, nations, industries, or markets (Wang et al., 2016). The occurrence of spillover effect hazards can be attributed to a range of occurrences, including but not limited to financial crises, natural disasters, geopolitical wars, shifts across government regulations, and worldwide economic downturns. The presence of this risk was revealed in the findings of several indicators, such as financial markets, stock markets, financial systems, risk management, and the impact of environmental economics.

Word cloud outcomes (Scopus database) and word cloud outcomes (Dimensions.ai database)

Summary of Findings for Both (Scopus and Dimensions.ai databases)

No	*Risk Cluster*	*Risk Indicators*	*Scopus*	*Dimensions.ai*	*Scopus and Dimensions.ai*
1	**Environmental Risk**	(Environmental Pullulation, Climate Change, Carbon Emission, Renewable Energy)	✓	✓	✓

No	*Risk Cluster*	*Risk Indicators*	*Scopus*	*Dimensions.ai*	*Scopus and Dimensions.ai*
2	**Regulatory Risk**	(Environmental Policy, Environmental Economics, Energy Policy, Fiscal Policy)	✓	✓	✓
3	**Geopolitical Risk**	Economic and Social Effects Risk	✓		
4	**Credit Provision Risk**	(Costs)	✓		
5	**Pandemics (**Covid-19, Sars-Cov-2)	Declining of Investment	✓	✓	✓
6	**Spillover Effect Risk**	(Financial Markets, stock market, financial system), Risk Management, Environmental Economics effect	✓		

Conclusion

The present study aims to conduct a bibliometric analysis to explore the risk factors associated with Islamic green finance and provide directions for potential future research. Islamic green finance encompasses many risk factors and endeavours associated with preserving the environment, mitigating climate change, and adapting to its impacts. The research findings offer significant implications for policymakers, governments, investors, and market players. For illustration, political stability within a nation is a crucial factor in fostering a conducive economic environment and cultivating competitive market mechanisms. Moreover, it is worth noting that governments have the capacity to implement a range of strategies aimed at fostering Islamic green finance and a green economy. These strategies may involve legislative reforms and the active participation of local authorities, both of which play a crucial role in facilitating the transformation of the financial system and the expansion of Islamic green financing. In addition, concerning the measurement and mitigation of risk, it is imperative for Islamic financial

institutions engaged in Islamic green finance to prioritise the meticulous evaluation of risk associated with their investment ventures that are supported by green financing. This necessitates the implementation of a highly efficient risk assessment process. This research aims to offer qualitative insights into the risk considerations linked to Islamic green finance as an initial endeavour. Nevertheless, this analysis is constrained by its reliance on only two indexing databases, namely Scopus and Dimensions.ai. Furthermore, the process of selecting keywords relies on heuristic trials, which suggests that researchers may overlook crucial keywords, thereby impacting the sample size. To conduct a comprehensive literature assessment, future studies may employ a combination of new databases, such as Web of Science and Google Scholar. Moreover, additional keywords can be included in the context of Islamic green finance to enhance the scope of this emerging topic and measure its development.

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