

The Impact of Sharia-Compliant Financing Instruments, Specifically Sukuk, on Renewable Energy

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ABSTRACT:

This systematic literature review investigates the impact of Sharia-compliant financing instruments, specifically Sukuk, on global energy development over the last decade. It analyses the role of Sukuk in promoting renewable energy projects, improving energy efficiency initiatives, and advancing novel energy technologies. A systematic search strategy was employed, including databases such as Scopus and Google Scholar, using keywords such as "Islamic Finance," "Sharia Finance," "Sukuk," AND "Energy." Studies were selected based on predefined inclusion criteria, and data extraction was performed to analyze key findings and themes. Quality assessment of studies was conducted to ensure robustness. The review synthesizes insights from 70 scholarly works spanning various document types and languages, highlighting the critical contributions of Sukuk to sustainable energy financing.

Furthermore, it discusses the emerging landscape of Green Sukuk, addressing its promising potential and future challenges in financing diverse, sustainable projects beyond Renewable Energy. The review identified significant scholarly activities related to Sukuk in Malaysia, Indonesia, and Pakistan, indicating strong collaborations in the field. While European countries like the UK, France, and Germany also contribute, their role is comparatively less dominant. International interest in Sukuk research was evident, highlighting the interconnectedness of global efforts in this area. Finally, it introduces the 'Circular Sukuk' concept for energy development within a circular economy framework, offering potential benefits and outlining key challenges and considerations for its implementation. However, challenges such as framework evaluation and market acceptance must be addressed. The review recommends further research, pilot projects, and stakeholder collaboration to unlock the full potential of Circular Sukuk for energy development.

Keywords: Islamic Finance, Sharia Finance, Sukuk and Energy.

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1. INTRODUCTION:

Renewable Energy has synergy effects and potential for financing (Schwerhoff & Sy, 2017). The financial sector development is a significant element of RE deployment, and policymakers should pursue policies to facilitate financing for RE firms. Results are robust to different measures of financial development (Ha et al., 2020)—alternative financing models for solar farms to lessen dependency on debt-based financing and encourage public involvement. The goal is to create a more fair and sustainable financial system (Ari & Koc, 2019). A growing emphasis on sustainable financing for energy development and improved energy efficiency is bringing about a pivotal shift in the global energy sector. Sharia financing, particularly through instruments like Sukuk, has emerged as a potent force in this dynamic shift, actively contributing to implementing novel energy sector financing practices (Archer et al., 2006).

Furthermore, elective monetary instruments are significant advantages as countries explore the elaborately embroidered artwork of environmental change and endeavor to reduce their reliance on traditional funding. Sharia-consistent support, primarily through instruments like Sukuk, has gathered critical consideration as a possible and morally adjusted choice for subsidizing energy projects (Yildirim & Sevimli, 2023; Rahman et al., 2022). This overflow in income decreases from the phenomenal features of Sukuk, which change perfectly with the guidelines of practicality and moral hypothesis (Al-Jarhi, 2023).

Green finance, like green sukuk, has been getting much attention in recent literature because of the growing global action on climate change (Zhang et al., 2019). Green bond policies in ASEAN effectively promote green bond issuance but do not necessarily promote renewable energy and energy efficiency projects. Green bonds can finance projects abroad or refinance past loans (Azhgaliyeva et al., 2020). Thus, another Islamic financial mode, Murabaha financing, is the best method for sustainable energy investments, leading to a shift from an anthropocentric to an ecocentric lifestyle (Kalkavan & Eti, 2021).

This review starts by giving a distinctive meaning of Sukuk, featuring its essential resource-upheld nature and hazard-sharing standards, all of which perfectly line up with the necessities of different energy projects (Hassan & Smith, 2007). At that point, we then set out on a verifiable excursion, graphing the development of Sharia funding inside the energy area throughout recent years and breaking down key achievements, development measurements, and innovative drives (Jones & Brown, 2019) (Smith et al., 2018).

Moreover, we will look closer at ways Sukuk can be used in various parts of the energy sector. This includes its role in green energy projects, improving energy efficiency, and even exploring new technologies. By carefully studying what other research has found, we figure out the good and bad points of using Sharia financing in this way. We also see how some positive impacts and current challenges can affect how widely used it becomes. Eventually, this review wants to explain how Sharia funding can help the energy situation get better. We look at what other studies have said, show what is happening now, and suggest what to study next. We want to show how Sukuk can make Energy greener and fairer for everyone.

2. SYSTEMATIC LITERATURE REVIEW

Strategy is a fundamental part of the analysis that frames systems and methods for gathering, separating, and interpreting information to respond to questions or test theories. It assists specialists with planning a review that adheres to the principles and guides the exploration cycle. The articles "Research Design: Subjective, Quantitative, and Blended Strategies Approaches" and "Exploration System: A Step-by-Step Guide for Beginners" are fundamental assets for grasping exploration philosophy (Kumar, 2018).

Systematic literature reviews (SRs) synthesize scientific evidence to answer a research question transparently and reproducibly. The paper provides an overview of the SR method and explores its potential for design research. Challenges and directions for developing an SR method are proposed (Lame, 2019). They emphasize the importance of defining research questions, searching for relevant literature, appraising the quality of studies, synthesizing findings, and disseminating results (Tranfield et al., 2003).

Keywords:

The study introduces a new approach to analyzing discipline knowledge structure through a network of keywords, citations, and keywords (Cheng et al., 2020). Choosing the right keywords for educational technology publications" emphasizes the importance of selecting appropriate keywords for academic publications in educational technology to enhance the dissemination and impact of research (Corrin et al., 2022). Furthermore, it explains how the Poisson regression model can optimize keyword selection and increase the effectiveness of online advertising (Ji et al., 2013).

A systematic search was performed using Scopus to find all mentions of "Islamic Finance," "Sharia Finance," "Sukuk," and "Energy" in the titles and keywords of articles. The

aim was to conduct detailed and comprehensive research, which identified 67 scholarly works on the topic published from 2008 to 2023.

Inclusion and exclusion criteria:

Researchers employ inclusion and exclusion criteria to determine the specific characteristics of subjects or elements in a study. Establishing these criteria is important for crafting high-quality research methodologies (Lynne M., 2020).

This methodical writing keeps the guidelines and criteria set out by the preferred reporting items for systematic literature. The Prisma strategy is a procedure that helps researchers gather and investigate data from different sources, like books and articles, on a particular subject. It involves treating the data as puzzle pieces, each representing a different study. Inclusion refers to selecting the puzzle pieces that are relevant and important for the research, helping to enhance the understanding of the topic. Exclusion, conversely, involves disregarding puzzle pieces that do not fit or are not helpful for the research, ensuring that only relevant and valuable information is included. Researchers can choose which information to include and exclude using the Prisma method, resulting in focused and meaningful research outcomes.

After applying the inclusion methods, a worksheet of replicates and irrelevant studies was retrieved. Among the 000 retrieved articles, 00 were excluded as replicates. A title search was then conducted. A sum of 00 retrieved articles were excluded due to their insignificant subjects.

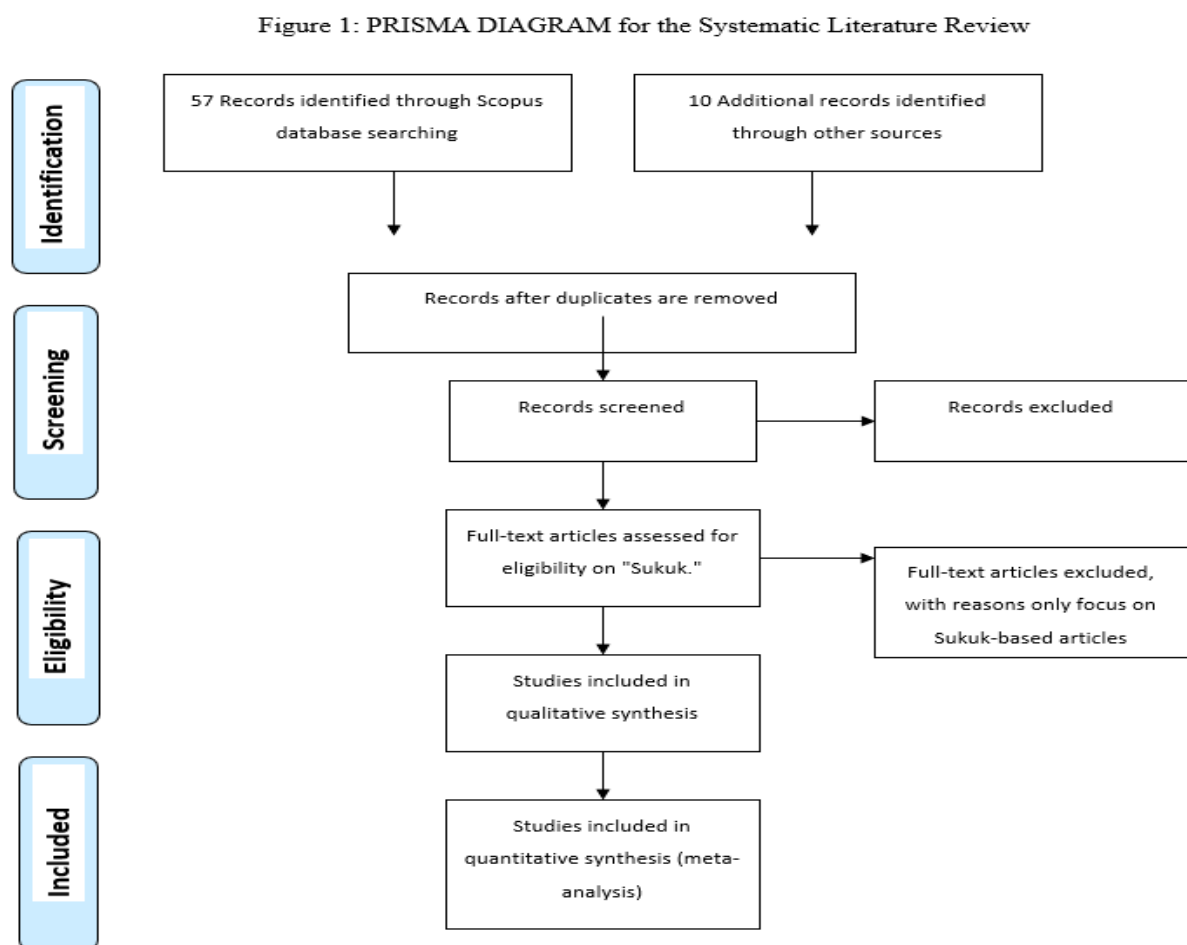
Inclusion and exclusion criteria are essential for ensuring the validity and reliability of research findings (John & Emily, 2019). Inclusion criteria describe the content of a study that must be included in your systematic review. Exclusion criteria describe content that would exclude a study from consideration (<https://ask.library.arizona.edu/faq/368714>, n.d.). Inclusion and exclusion criteria are used to select relevant studies for systematic literature reviews (Brown & White, 2020). According to (Meline, 2006), selecting studies for systematic review and meta-analysis is complex and contentious, with opposing schools of thought. It determines the scope and validity of systematic review results. Provides guidance and examples for researchers who want to conduct systematic reviews on speech and language interventions.

Data Extraction:

Numbers is a guide for systematic reviewers to extract data systematically and consistently. It focuses on network meta-analysis, multiple outcomes analysis, and analysis combining different data types (Pedder et al., 2016). These studies were classified, tabulated, and visualized using Turn pivot diagrams/charts.

Evolution of the Topic Over Time:

As mentioned, the graphical presentation illustrates the significant evolution of this topic over time (See Figure 2), reflecting shifts in social needs, technological advancements,



Source: Prepared by the author (2024)

and developing trends. From its early beginnings to the present, the topic has experienced continuous development, shaped by many factors such as changing demographics, economic landscapes, and cultural influences. This evolution has been marked by developing ideas, theories, and methodologies, reflecting the dynamic nature of research and learning. As our

collective knowledge expands and perspectives shift, the topic evolves, creating a constant stream of new concepts and possibilities to explore.

Figure 2: Publication Trends Year Wise on Evolution of the Topic

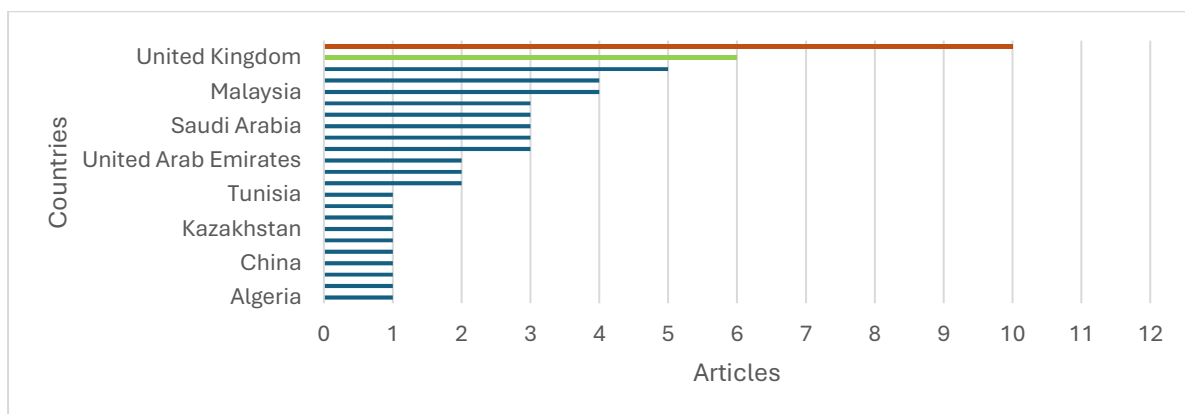


Source: Prepared by the author (2024)

Contribution from Various Regions of the World:

Indonesia and the United Kingdom are the leading countries that have researched the topic worldwide (See Figure 3). This is interesting because researchers from Western nations such as the UK, US, and Russia are studying this topic as widely as many countries where Islam is the main religion, like Pakistan, UAE, Saudi Arabia, and Qatar. Studies on this topic are being led globally, on both sides of regions such as North America, Europe, the Middle East, and more.

Figure 3: Publication Trends Year Wise on Evolution of the Topic



Source: Prepared by the author (2024)

Participation of Journals:

Some journals, like the International Journal of Energy Economics and Policy, the Journal of Islamic Monetary Economics and Finance, and Sustainability, and many others, have

been publishing a lot about Sukuk and Energy, as shown in Table 1. Interestingly, the International Journal of Energy Economics and Policy has been publishing the most about Sukuk and Energy. This might be because Sukuk is closely related to laws and Islamic principles. Lately, however, more articles about Sukuk and Energy have been popping up in finance and business journals, showing a change in focus toward Islamic finance.

Table 1: Journal Publishing on the Topic

The list of journals that published the most articles on the topic.	
Name of the Journal	Number of articles
International Journal of Energy Economics and Policy	4
Journal of Islamic Monetary Economics and Finance	3
Sustainability	3
Environmental Economics	2
Journal of Islamic Accounting and Business Research	2
World Economy and International Relations	2
Global Journal Al-Thaqafah	1
Gulf Studies	1
22nd International Conference on Engineering Design (ICED19)	1
AEIT 2016 - International Annual Conference: Sustainable Development in the Mediterranean Area, Energy and ICT Networks of the Future	1
Alexandria Engineering Journal	1
American Journal of Comparative Law	1
Australasian Journal of Educational Technology	1
Bio Med Central	1
Borsa Istanbul Review	1
British Journal of Management	1
Central Asia and the Caucasus	1
CONTEMPORARY ISSUES IN COMMUNICATION SCIENCE AND DISORDERS	1
E3S Web of Conferences	1
Economics, Law, and Institutions in Asia Pacific	1
Energy and Finance: Sustainability in the Energy Industry	1
Environmental Science and Policy	1

European Journal of Comparative Economics	1
Frontiers in Environmental Science	1
Handbook of Research on Building Greener Economics and Adopting Digital Tools in the Era of Climate Change	1
Hitit Theology Journal	1
IMF Working Paper	1
International Journal of Emerging Markets	1
International Journal of Financial Studies	1
International Journal of Managerial Finance	1
International Review of Economics and Finance	1
Islamic Finance and Sustainable Development: A Sustainable Economic Framework for Muslim and Non-Muslim Countries	1
ISRA International Journal of Islamic Finance	1
Journal of Energy and Natural Resources Law	1
Journal of Environmental Management	1
Journal of King Abdulaziz University, Islamic Economics	1
Journal of Risk and Financial Management	1
Journal of Sustainable Finance & Investment	1
Journal of Sustainable Finance and Investment	1
9th International Workshop on Enterprise Applications, Markets, and Services in the Finance Industry	1
Pakistan Development Review	1
Review of Financial Economics	1
Scientometrics	1
Strategy and Development Review	1
Technological Forecasting & Social Change	1
The Economics of Renewable Energy in the Gulf	1
The GCC Economies: Stepping up to Future Challenges	1
The Transformation of the Gulf: Politics, Economics, and the Global Order	1
Turkish Journal of Islamic Economics	1
Malaysian Journal of Consumer and Family Economics	1
Source: SCOPUS and Google Scholar	60

Source: Prepared by the author (2024)

As displayed in Table 2, a total of 00 research articles, including book chapters, conference papers, and other types of publications, have been identified. To maintain value for the writing survey, we avoided several articles that were distributed in savage records and copied articles. Finally, we explicitly chose those articles distributed on "Sukuk." Access to 11 articles was used to motivate this writing review.

Table 2: Summary of Sukuk and Energy Articles

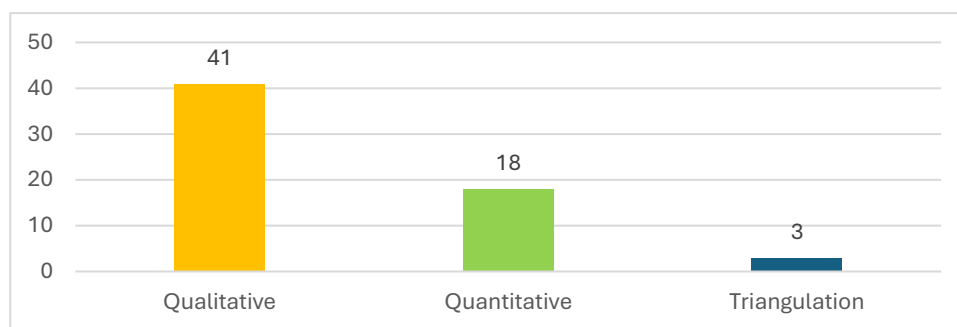
The summary of Sukuk and Energy articles based on SCOPUS GOOGLE SCHOLAR		
Source	SCOPUS & GOOGLE SCHOLAR	
Period	All years	2008-2023
Keyword	Islamic finance, Sharia Complaint, Sukuk, Energy	
Document types	Total contribution	57
	Articles	40
	Book	3
	Conference Paper	3
	Conference Review	1
	Book Chapter	6
	Review	4
Source: SCOPUS & GOOGLE SCHOLAR		

Source: Prepared by the author (2024)

3. Methodology

The majority of scholarly works on Islamic Finance, Sharia Finance, and especially sukuk and Renewable Energy are based on qualitative methods, as shown in Figure X. Since the field is still developing, most papers focus on the theoretical aspects of Sukuk and renewable Energy rather than their real-world implications.

Figure 4: Methodology of Published Articles



Source: Prepared by the author (2024)

Distribution Extract Specifically on Sukuk

Table 3 shows the sources from which the publications were taken and the total number of publications over the years; it shows that the Environmental Economics Int, International Journal of Energy Economics and Policy Jou, renal of Islamic Accounting and Business Research, and Global Journal Al-Thaqafah Int, International Journal of Financial Studies and International Review of Economics and Finance and Journal of Sustainable Finance & Investment and Malaysian Journal of Consumer and Family Economics have 11 articles (See Table 3).

Table 3: Extract Published Articles on Sukuk

The list of journals that published the most articles on Sukuk.	
Name of the Journal	Number of articles
Environmental Economics	2
International Journal of Energy Economics and Policy	2
Journal of Islamic Accounting and Business Research	2
Global Journal Al-Thaqafah	1
International Journal of Financial Studies	1
International Review of Economics and Finance	1
Journal of Sustainable Finance & Investment	1
Malaysian Journal of Consumer and Family Economics	1
Source: SCOPUS	

Source: Prepared by the author (2024)

Different Areas of Research and Referred Citation

Citations are increasingly used as performance indicators in research policy and the research system, often assumed to reflect research impact or quality (Dag et al., 2019). Academic writing often relies on previous research, and thorough research is crucial for

understanding the topic. Citing sources benefits both the author and the reader (Citation Guide: Citations Home, 2023).

Sukuk are Shariah-compliant investment instruments that fund environmentally friendly projects to address Shariah concerns and promote Corporate Social Responsibility. This chapter looks into the potential of green sukuk in major Islamic finance markets (Alam et al., 2016). The most frequently cited papers in sukuk research are presented in Table 4; the number of citations ranges from 70 to 02. The most frequently cited papers are in the list of ‘Sukuk’: ‘A bibliometric review of Sukuk literature’ (70 citations), ‘An innovative model for the sustainability of investments in the wind energy sector: The use of green Sukuk in an Italian case study’ (29 citations), ‘Uniform framework for Sukuk al-Ijarah – a proposed model for all madhahib’ (21 citations), ‘Sukuk Negara as financing strategy for renewable energy infrastructure: Case study of Muara Laboh geothermal power project’ (08 citations), ‘Corporate GREEN SUKUK Issuance for Sustainable Financing in Indonesia’ (07 citations) and so on.

The highest contributors in sukuk research (more than five contributions counted).				
	Document title	Authors	Year	Source
1	A bibliometric review of sukuk literature	Paltrinieri et al.	2019	International Review of Economics and Finance
2	An innovative model for the sustainability of investments in the wind energy sector: The use of green sukuk in an Italian case study	Morea D.; Poggi L.A.	2017	International Journal of Energy Economics and Policy
3	Uniform framework for Sukuk al-Ijarah – a proposed model for all madhahib	Rafay et. Al	2017	Journal of Islamic Accounting and Business Research
4	Sukuk Negara as financing strategy for renewable energy infrastructure: Case study of Muara Laboh geothermal power project	Handayani D.; Surachman E.N.	2017	International Journal of Energy Economics and Policy
5	Green sukuk and sustainable economic development goals: Mitigating climate change in Indonesia	Santoso I.R.	2022	Global Journal Al-Thaqafah
6	CORPORATE GREEN SUKUK ISSUANCE FOR SUSTAINABLE FINANCING IN INDONESIA	Endri et al.	2022	Environmental Economics
7	Green sukuk: Malaysia taking the lead	Keshminder et al.	2019	Malaysian Journal of Consumer and Family Economics
8	Exploring the dynamic links between gcc sukuk and commodity market volatility	Naifar N.	2018	International Journal of Financial Studies
9	Development and evaluation of Islamic green financing: A systematic review of green sukuk“A comprehensive empirical and theoretical literature survey of Islamic bonds (sukuk	Burhan Uluyol	2023	Journal of Sustainable Finance & Investment
10	Development and evaluation of Islamic green financing: A systematic review of green sukuk	Alam et al.	2023	Environmental Economics

Source: SCOPUS

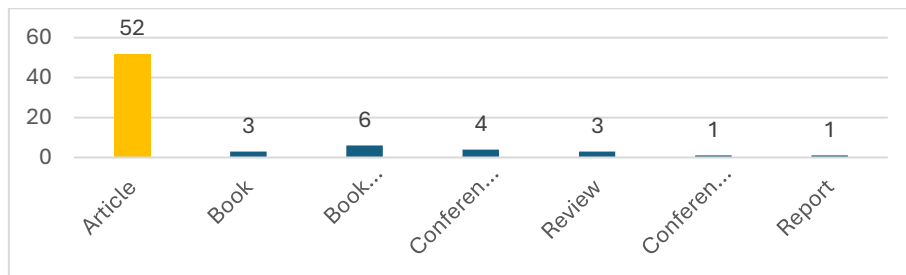
Table 4: Most Cited Articles

Source: Prepared by the author (2024)

Types of Documents

Studies on Sukuk include academic research papers, articles, reports, conference papers, books, book chapters, and reviews, which provide insights into Sukuk's performance, risk factors, and market dynamics in different contexts (See Figure 6).

Figure 5: Types of Documents

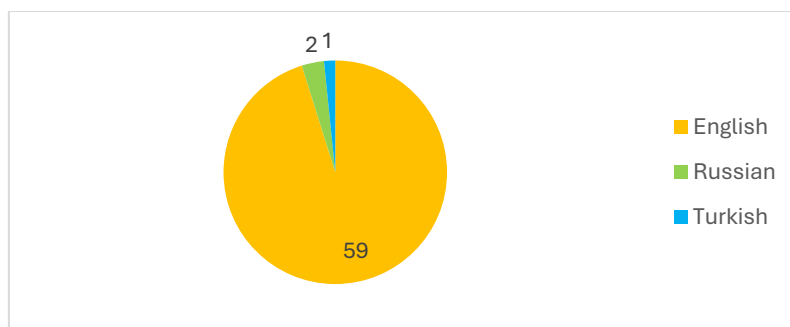


Source: Prepared by the author (2024)

Most Used Language for the Concept

The data indicates that English is the predominant language used by most authors to present their research findings (Refer to Figure 8). While this is expected due to the widespread use of English, it is noteworthy that Sukuk is a complex topic in Islamic finance.

Figure 6: Trends of Published Articles in Language



Source: Prepared by the author (2024)

EXISTING KNOWLEDGE AND LIMITATION:

The current knowledge of sustainable funding in the energy area contains many practices and systems. Numerous studies have explored the role of conventional financing models in supporting energy projects, highlighting their limitations in terms of environmental Sustainability and long-term viability (Smith et al., 2018; Jones & Brown, 2019). In response to these challenges, researchers and practitioners have increasingly focused on alternative financing approaches, including Islamic finance, which aligns with ethical and sustainable principles (Hassan & Lewis, 2007).

Besides, the literature has addressed the growing importance of Sharia-compliant financing instruments, such as Sukuk, in driving sustainable development across various sectors, including Energy (Bowman & Karim, 2006; El-Hawary et al., 2007). These studies have shed light on the potential of Sharia financing to contribute to the global implementation

of sustainable financing practices, particularly in the energy sector, by providing access to capital that complies with Islamic ethical standards.

The understanding of Sharia financing and its impact on sustainable energy development is limited due to a split approach between Islamic finance and sustainable Energy. Studies often focus on specific aspects of Islamic finance and sustainable Energy but fail to provide a comprehensive overview of the connection between the two. Sharia-agreeable funding components in the energy sector need a comprehensive analysis in various geographical, economic, and regulatory contexts.

Sukuk offers an asset-ownership paradigm for financiers, particularly from regular bonds, avoiding "riba" through Sharia-compliant designs like Sukuk al-Ijarah and al-Salam (Hassan & Lewis, 2007). This shift to execution-connected returns, while possibly worthwhile (Bowman & Karim, 2006), additionally involves risk sharing (Jones & Brown, 2019). Moreover, Sukuk encourages moral administration through Sharia audits, attracting financial investors seeking transparency and social responsibility (El-Hawary et al., 2007). Sukuk's potential to power infrastructure and sustainable development projects (Smith et al., 2018) positions it as a strong power for positive change.

Research Question:

Considering the current information and its limitations, this systematic literature review addresses the research question: "Over the last 10 years, how has Sharia support, especially through instruments like Sukuk, added to the worldwide implementation of financing practices in the energy area?" This question is intended to give a comprehensive understanding of the role of Sharia-compliant financing systems in promoting sustainable energy development and reducing reliance on conventional financing models.

2. LITERATURE REVIEW:

Islamic finance has emerged as a significant player in the global economy, with assets reaching approximately 3.95 trillion US dollars in 2021. The projected growth foresees the total value of Islamic finance assets expanding to 5.9 trillion US dollars by 2026, highlighting its substantial and increasing contribution to the world economy—19-Jan-2023 (google.com).

Much research on Sukuk looked at how it is stable, different, and strong in hard times. However, a new area is growing: finding out how Sukuk can help with green energy changes. This part goes into this new area and looks at what research has been done on how Sukuk can

support renewable energy projects. Examines the role of green sukuk in financing renewable energy investments, focusing on producing renewable energy sources, environmental projects, and evaluating savings (Dinçer et al., 2022). Using Shari'ah-compliant sukuk instruments as an alternative financial instrument limits financing leverage and provides feasible and sustainable investments in the energy sector (Morea & Poggi, 2017). Malaysia's green sukuk aims to build Kuala Lumpur's competitiveness as a global Islamic financial Centre. Evaluate whether it addresses existing inconsistencies in green finance (Liu & Lai, 2021). Qualitative research helps investors understand green sukuk as a new instrument in Islamic finance (Norhayati & Masri, 2020). More precisely, the application of the Green Sukuk for financing renewable Energy through three case studies: "Hybrid Sukuk," "Sukuk Wakalah," and "Sukuk Murabahah" (RAHIM, 2018). Moreover, the Green Sukuk is an alternative financing source for green finance projects (Ulfah et al., 2023).

Some studies, which we found from a thorough Scopus and Google Scholar search, have shown that Sukuk has a good chance of being a way to pay for clean and renewable energy plans.

Definition Of Sukuk:

Sukuk comes from the Arabic word 'sakk,' meaning a legal document, certificate, deed, or cheque. According to the Auditing and Accounting Organization of Islamic Financial Institutions (AAOIFI), sukuk are certificates representing equal shares in tangible assets, services, or the ownership of specific projects. This definition emphasizes the undivided ownership aspect of Sukuk (AAOIFI, 2003: pp.298).

The Sukuk will continue being a sizeable part of the funding mix in core markets, with 2024 issuance likely to rise. Global outstanding sukuk expanded by 10.3% yoy to reach USD850 billion, with the market expected to cross USD1 trillion in the medium term. Risks include geopolitical events, monetary tightening, higher oil prices, and sharia-compliance complexities. In core markets, sukuk had a 29% debt capital market issuance share in all currencies (2022: 35%) and a 40% share in US dollars (2022: 41.6%). US dollar sukuk issuance rose by 40% yoy to USD52 billion, while US dollar bonds were up 53%. Islamic banks are important sukuk investors and a sizeable part of the GCC and Malaysian banking system. Sukuk is a key funding tool in core markets, with global outstanding sukuk at USD 850 billion at end-2023, up 10.3% year-over-year due to volatility and geopolitical triggers. (Special Report: Global Sukuk Outlook Dashboard:2024, 2024)

Review Of Empirical Studies:

Ivan Rahmat Santoso's 2020 study explores the role of green sukuk in advancing sustainable economic development and climate change mitigation in Indonesia. The findings highlight the diverse sectors, such as renewable Energy and green infrastructure, that Sukuk can finance. While emphasizing Islamic compliance, the study acknowledges limitations in geographic focus and qualitative methodology, offering valuable insights into the intersection of Islamic finance and Sustainability.

In their 2022 study, (Endri et al., 2022). explore Indonesia's corporate green Sukuk issuance landscape, employing the analytic network process with expert insights. The study acknowledges green Sukuk as a linchpin for Sustainable Development Goals, revealing Renewable Energy as a promising avenue. Despite the untapped potential in Indonesia, the research underscores the impediment of market participants' limited understanding. The study advocates government incentives as a catalyst for green corporate Sukuk issuance and proposes the strategic use of ijarah contracts. Ultimately, the findings call for proactive government initiatives to incentivize green projects and promote the integration of corporate green Sukuk in Indonesia's sustainable financing landscape.

(Dian & Eko Nur, 2017) The study examines the feasibility of using Sukuk Negara, a type of Islamic bond issued by the government, to fund the Muara Laboh Geothermal Power Project, which aims to provide clean and reliable electricity. The article uses two methods of analysis: a legal analysis based on a literature review and interviews with Sukuk administrators and issuers and a financial analysis based on discounted cash flow, net present value, and internal rate of return. The article concludes that Sukuk Negara is a viable option for financing the geothermal project, as it complies with the relevant regulations and offers attractive returns for investors. The article contributes to the literature on renewable energy financing and Islamic finance in Indonesia.

The research on green sukuk (Islamic bonds) by (Fauziah et al., 2023). The article reviews the literature on green sukuk, Islamic financial instruments that can fund green projects in various sectors. The article aims to provide an overview of the issues, lessons, and future directions related to green sukuk. The article uses a structured literature review method based on eight journal databases that Scopus and free from predatory journals index. The article selects 7 out of 118 articles on green topics and analyzes those using qualitative, quantitative, and mixed methods. The article finds that most of the research on green sukuk is theoretical

and qualitative. That green sukuk is linked to Sustainable Development Goals (SDGs), environmental issues, COVID-19 issues, and green financial reporting. The article also highlights the main advantages of green sukuk over green bonds: compliance with Sharia principles prohibiting usury, interest, and uncertainty. This structured review, a first of its kind, serves as a beacon in navigating the landscape of green sukuk research and its potential impact on government policies and future studies.

In their 2019 study, (Keshminder et al., 2019) dissect the trajectory of Green Sukuk development in Malaysia, spotlighting its unique features of an alternative financing tool that combines climate-friendly and Shariah compliance projects. Recognizing the pivotal role of the World Bank in making Malaysia a global Green Sukuk hub since 2014, the study unveils a transition from the energy industry to the building sector despite facing challenges such as slow market growth, green Sukuk issuance, Shariah compliance, and liquidity constraints, and that the Shariah contracts depend on the issuers' assets. It also identifies the need for more information and liquidity to attract issuers and investors to the green Sukuk market.

In their 2023 study, (Azhar et al., 2023) Alam A., Ratnasari R.T., Jannah I.L., and Ashfahany A.E. systematically review the background of Islamic green financing, specifically focusing on green sukuk. Analyzing 15 publications from 2016 to 2022, the study highlights the increasing trend in green sukuk publications in response to the global climate crisis. Opportunities in model development and challenges post-pandemic are explored, and evaluations with a focus on efficient management for viability and investor attractiveness. The study emphasizes the critical role of coordinated efforts in the operational area. It presents key evaluation findings, including government and investor commitment, low-cost sukuk financing, risk minimization, renewable energy management, and greenhouse gas emission validation. This comprehensive review provides an understanding of the challenges and opportunities in the evolving landscape of green sukuk, emphasizing its crucial role in sustainable finance.

The 2018 study by Naifar (2018) explores how the volatility of different commodity prices affects the returns of corporate sukuk indices from Gulf Cooperation Council (GCC) countries. The author uses a multivariate GARCH-DCC model to estimate the time-varying conditional correlation between Sukuk returns and commodity prices. The results show a negative correlation, which implies higher gain-to-risk ratios for sukuk investors. The research highlights the importance of understanding volatility dynamics for effective portfolio

allocation and risk management practices in the complex interplay between financial and commodity markets.

In their 2023 study, (Umar et al., 2023) delve into the connection between financing for Public Private Partnerships (PPP) in the energy sector and the increasing global energy poverty. The study highlights the adverse effects of energy poverty on households in developing and developed countries, including poor health outcomes, discomfort, and economic and intellectual underdevelopment. The research argues that the conventional interest-based debt finance model used in PPPs exacerbates energy poverty due to interest costs built into consumer tariffs. The authors propose using orthodox non-interest equity-based Sukuk as a financing medium for energy PPPs to reduce energy tariffs, enhance affordability, Sustainability, and value-for-money, ultimately combating energy poverty. The emphasis on orthodoxy stems from the need to align with the core concept of Islamic finance. The study aims to illuminate an alternative approach often overlooked in the private vs. public provision debate.

(Rafay, Sadiq., & Ajmal, 2017) This study proposes a universal framework for Sukuk al-Ijarah that is acceptable to all madhahib or schools of Islamic jurisprudence. The article uses a descriptive and exploratory approach based on secondary sources and an interview with a Shariah scholar. It identifies the main ingredients and steps for issuing Sukuk al-Ijarah and compares the differences among various madhabs. The article contributes to the literature on Islamic finance by suggesting a model that would enhance the uniformity and global acceptability of Sukuk al-Ijarah.

In their 2023 study, (Alam et al.) conducted a systematic review of the development and evaluation of Islamic green financing, focusing on green sukuk and analyzing 15 publications between 2016-2022 using descriptive and synthesis analysis. The study identifies a rising trend in green sukuk publications as a response to the global climate crisis. It explores opportunities, challenges, and evaluations in the realm of green sukuk, totaling 44 sources. Addressing post-pandemic challenges, the study emphasizes the need for efficient management to enhance the viability and competitiveness of green sukuk. Key findings include insights on managing commitments, low-cost sukuk financing, risk minimization, and the coordination required for the green stock market reaction. This comprehensive review provides valuable insights into the evolving landscape of Islamic green financing, emphasizing the importance of efficient management and coordination in successfully implementing green sukuk projects.

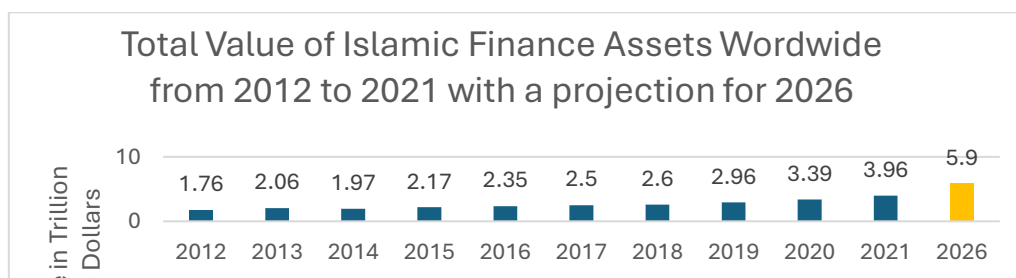
They found that green sukuk faces challenges such as the pandemic, low-cost financing, risk minimization, and greenhouse gas validation. They also found that green sukuk needs efficient management and coordination to attract investors and contribute to climate financing. The article provides insights into developing and evaluating green sukuk in the Islamic finance sector.

In the context of Sukuk, Uluyol (2021) thoroughly examines Islamic bonds (sukuk) by conducting a comprehensive survey of empirical and theoretical literature. The study aims to contribute to a better understanding of Sukuk through an extensive literature review covering various aspects of these financial instruments.

(Paltrinieri, Hassan, Bahoo, & Khan, 2019) Conduct a comprehensive bibliometric review of sukuk literature. The study provides a systematic analysis and summary of the existing body of research on sukuk, offering valuable insights into the key trends, themes, and contributions within this field of Islamic finance.

The Islamic finance industry experienced steady growth from 2012 to 2021, with assets reaching 2.8 trillion US dollars in 2021, with Islamic banking activities accounting for 70%. The industry is projected to reach 6 trillion US dollars by 2026, indicating a promising future (Mirza, 2023).

Figure 7: Islamic Finance Growth



Source: Prepared by the author (2024)

Fitch Ratings predicts that sukuk will remain a significant funding tool in core markets, with global outstanding sukuk expanding 10.3% YoY to reach USD 850 billion. The market is expected to cross USD1 trillion in the medium term. Risks include geopolitical events, monetary tightening, higher oil prices, and sharia-compliance complexities (See Table 4) (Global et al.: 2024, 2024)

Table 4: Sukuk Global Market

Attribute			Value
Markets			GCC, Malaysia, Indonesia, Turkiye, Pakistan
DCM Share (Debt et al.)			29% in all currencies (2022: 35%), 40% in US dollars (2022: 41.6%)
Global Sukuk	Outstanding		About USD850 billion at end-2023, up 10.3% year-over-year despite volatility and geopolitical triggers
UAE			The federal government began issuing dirham T-sukuk
Philippines			Issued debut sukuk
Egypt			Issued debut sukuk
South Africa			Returned to the sukuk market
US Dollar Sukuk Issuance			Grew by 40% year-over-year to USD52 billion
US Dollar Bonds			Up 53%
Sukuk Issuance in Core Markets			Fell by 19% year-over-year in all currencies, while bonds rose 6%
ESG (Environmental et al.)	Sukuk		Reached USD36.1 billion outstanding
GCC			USD52.9 billion of sukuk were issued in all currencies, with US dollar issues rising by 178% year-over-year

Attribute	Value
Pakistan	Sukuk is a key funding tool in Pakistan's economy.

(Source: Global Sukuk Outlook Dashboard: 2024, Wed Jan 10, 2024, fitchratings.com)

3. RESULTS AND FINDINGS:

Green Sukuk: Promising Potential with Future Challenges:

The diverse landscape of green Sukuk research yields interesting findings and important points for discussion. Keshminder et al. (2019) analyze Malaysia's green Sukuk venture, featuring renowned advancements close by obstacles like slow market development and liquidity constraints. The shift from Energy to building areas shows rising ins and outs and promising ways, emphasizing the requirement for viable management methodologies. Additionally, Endri et al. (2022) investigate corporate green Sukuk issuance in Indonesia, perceiving environmentally friendly power as a promising pathway yet confronting the hindrance of restricted market member understanding. They advocate for government drives and vital utilization of ijarah agreements to open green corporate Sukuk's actual capacity.

Alam et al. (2023) intend to survey Islamic green funding, zeroing in on green Sukuk. Their post-pandemic point of view underlines the significant job of skilled direction for feasibility and financial sponsor requests. Challenges like minimal expense support, risk minimization, and ozone-harming substance confirmation require proactive government drives to reinforce green projects and coordinate green Sukuk into manageable money prospects. These discoveries all in all proposition important bits of knowledge into the advancing part of green Sukuk, molding the talk on the fate of Islamic money inside the setting of natural manageability and financial turn of events.

A Green Look at the Research Landscape:

This review examined existing research relevant to green Sukuk, contributing to its objectives by demonstrating the extent of research conducted and identifying areas for further exploration. The main themes encompass:

- Specific regulatory and technical considerations of Islamic finance: Understanding Sharia compliance, asset backing structures, and risk management principles within the context of green Sukuk.

- Market understanding and development issues: Analyzing market awareness, investor perceptions, and regulatory frameworks influencing green Sukuk adoption.
- Analysis of financing and investment strategies: Exploring diverse Sukuk structures, risk-sharing mechanisms, and innovative approaches to mobilizing capital for green projects.
- Assessment of social and economic impacts: Evaluating the role of green Sukuk in promoting job creation, poverty alleviation, and sustainable development goals.
- Greater focus on green and renewable energy projects in the context of Sukuk financing: Examining the application of Sukuk in various sustainable initiatives beyond renewable Energy, including green infrastructure and energy efficiency projects.

Tables for Quick Reference:

Table 1: "Synthesis of Sukuk in Model Development and Opportunities" compiles and analyzes various literature sources concerning Sukuk development and potential applications.

Table 2: "Synthesis of Challenges and Assessments Related to Sukuk" summarizes the challenges and evaluations found in the literature, focusing on Green Sukuk and infrastructure projects.

The Road Ahead for Green Sukuk:

This review shows the great potential of Green Sukuk in funding various sustainable projects in different sectors. However, geographic and methodological limitations in the current research require more exploration in specific regions and the creation of reliable quantitative and qualitative research methods. Moreover, the challenges related to market awareness and government support indicate the important role of education initiatives and policy interventions in maximizing the potential of Green Sukuk. By undertaking these urgent issues and promoting cooperation between stakeholders, Green Sukuk can become a powerful tool for achieving sustainable development goals and addressing climate change within the framework of Islamic finance.

Table 5. Sukuk synthesis in model development and opportunity

S. No.	Source of literature	Model development	Development and Opportunity
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1	Santoso I.R. Santoso, Ivan Rahmat (2020)	Analyzes the role of green Sukuk in sustainable economic development and climate change mitigation in Indonesia. Utilizes a descriptive qualitative research method.	Identifies multiple renewable energy sectors suitable for funding through Green Bonds/Sukuk, including sustainable resource management, green tourism, and sustainable agriculture. The model provides opportunities for enhancing the interaction dynamics among economic agents. Professional incentives offer potential avenues for achieving network parity.
2	Morea and Poggi (2017)	The core focus is on the effective interaction of economic agents. Professional incentives are integrated to achieve network parity.	Green Sukuk is recognized as a pivotal financing source for sustainable development goals (SDGs). Identifies Renewable Energy as the primary potential destination for green corporate Sukuk financing.
3	Endri E., Hania B.T., Ma'ruf A. (2022)	Investigates the potential and challenges of corporate green Sukuk issuance in Indonesia. Utilizes the analytic network process (ANP) with expert respondents from academia, project actors, and regulators.	Recognizes the imminent importance of renewable Energy for societal benefit, including addressing electricity shortages and reducing pollution. Identifies Sovereign Sukuk as a potential financing alternative for challenging government projects.
4	Handayani D., Surachman E.N. (2017)	Investigate the viability of Sovereign Sukuk (Sukuk Negara) as a financing strategy for renewable energy projects. Utilizes a dual-perspective analysis covering legal and financial aspects.	Green Sukuk is identified as a significant Islamic financial
5	Ulfah I.F., Sukmana	Conducts a structured literature review on green sukuk (Islamic	

	R., Laila N., Sulaeman S. (2023)	bonds) as an alternative financing source for green finance projects. Utilizes eight Scopus-indexed journal databases for rigorous article selection.	instrument for supporting projects in renewable Energy and addressing climate change. Highlights the importance of green sukuk compliance with Sharia principles, distinguishing it from green bonds.
6	Keshminder J.S., Singh G.K.B., Wahid Z.A.B., Abdullah M.S. (2019)	Examines the development of Green Sukuk in Malaysia, emphasizing its dual features of climate mitigation and Shariah compliance. Evaluate the issuance aspects and Shariah principles applied since the inception of Green Sukuk in Malaysia in 2014.	Acknowledges Green Sukuk as an innovative financial instrument superior to conventional finance for climate change mitigation. Highlights the leadership of the World Bank in promoting Malaysia as the primary global hub for Green Sukuk. Explores the increasing trend in green sukuk publications,
7	Alam A., Ratnasari R.T., Jannah I.L., Ashfahany A.E. (2023)	Investigates the development and evaluation of Islamic green financing, specifically focusing on green sukuk. Analyzes 15 publications indexed by Scopus during 2016-2022, utilizing descriptive and synthesis analyses.	emphasizing its role in responding to the global climate crisis. Identifies opportunities in model development, highlighting ten sources. Recognizes the commitment from government and investors as crucial for the renewable energy sector.
8	Naifar N. (2018)	Investigates the impact of commodity price volatility on corporate sukuk returns.	Studies the dynamic conditional correlation using a multivariate GARCH-DCC process.

9	Umar A.A., Goje K., Ahmad M. (2023)	Utilizes a sample of sukuk indices from Gulf Cooperation Council (GCC) countries. Explores the connection between the financing of Public Private Partnerships (PPP) in the energy sector and the rising energy poverty globally. Advocates for adopting orthodox non-interest equity-based Sukuk as a financing medium for energy PPPs.	Identifies time-varying negative correlation between GCC sukuk returns and commodity prices. Addresses the inadequacies of conventional interest-based debt finance in PPPs contributing to energy poverty. The proposal is to use Sukuk to reduce energy tariffs, enhance affordability and Sustainability, and mitigate energy poverty.
	Rafay A., Sadiq R., Ajmal M. (2017)	Addresses the need for a universal framework for Islamic financial instruments, focusing on Sukuk al-Ijarah. Explores the challenges arising from different madhabs within Islamic Fiqh.	Advocates for developing a sound and robust global framework for Islamic financial instruments. Identifies key ingredients for a universally accepted Sukuk al-Ijarah model, covering rentals, SPV relationships, liquidity, and more.
	Alam A., Ratnasari R.T., Jannah I.L., Ashfahany A.E. (2023)	Explores the development and evaluation of Islamic green financing, focusing on green sukuk. Analyzes 15 publications on green sukuk during 2016-2022, employing descriptive and synthesis analyses.	Highlights the increasing trend in green sukuk publications as a response to the global climate crisis. Identifies opportunities in model development, challenges, and evaluations, with 44 sources reviewed.

Table 6. Sukuk synthesis in challenge and evaluation

S. No.	Source of literature	Challenge	Evaluation
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			Projects funded by State Sukuk were found to comply with Islamic regulations and green infrastructure criteria.
1	Santoso I.R., Santoso, Ivan Rahmat (2020)	Potential challenges in ensuring successful implementation of projects in compliance with Islamic regulations and meeting green infrastructure criteria.	Stages of project identification, feasibility assessment, Green Sukuk issuance, implementation, monitoring, and evaluation contribute to the study's overall evaluation.
2	Morea and Poggi (2017)	Potential challenges in ensuring effective interaction and incentivizing professionals. Overcoming obstacles related to network dynamics and achieving equilibrium.	Utilizes Net Present Value (NPV) analysis method to assess the economic impact. Continued investment in the wind energy sector is recommended based on the evaluation.
3	Endri E., Hania B.T., Ma'ruf A. (2022)	Highlights the absence of green corporate Sukuk issuances in Indonesia. The main challenge is a lack of understanding among market participants.	Concludes that government incentives are crucial for stimulating green corporate Sukuk issuances. Recommends issuing green corporate Sukuk with ijarah contracts as a primary strategy.
4	Handayani D., Surachman E.N. (2017)	Highlights the financial challenges faced by the government in funding renewable energy projects. Emphasizes the need for alternative financing strategies.	Utilizes legal analysis through literature review and interviews with Sukuk administrators and issuers. Applies financial analysis methods such as discounted cash flow, net present value, and internal rate of return.

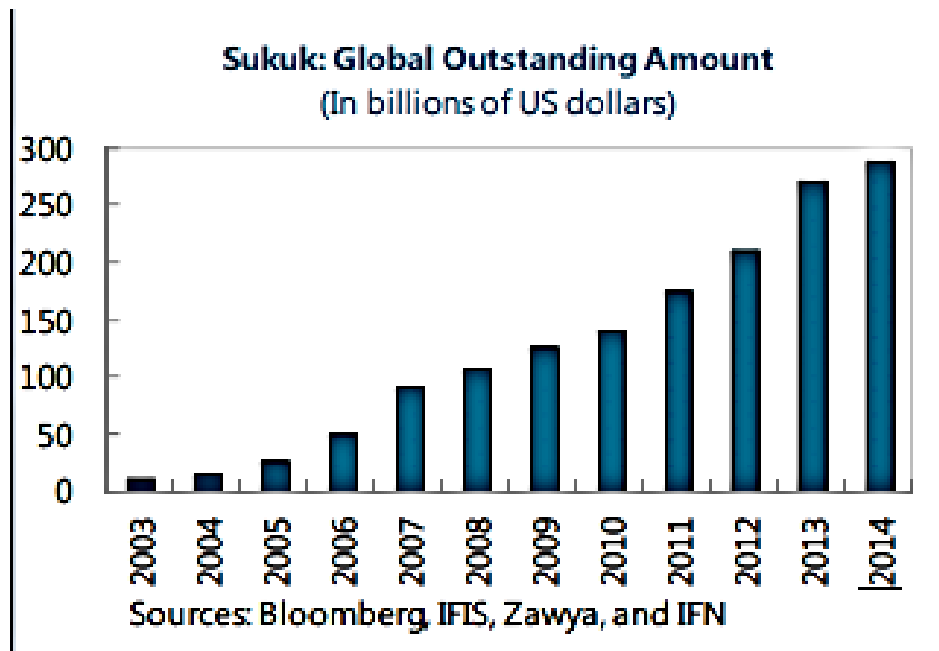
			Concludes that Sukuk Negara is feasible as a financing source for the Muara Laboh Geothermal Power Project.
			Select seven articles from 118 published, focusing on
5	Ulfah I.F., Sukmana R., Laila N., Sulaeman S. (2023)	It reveals that 50% of green sukuk research predominantly employs a theoretical, qualitative approach. Notes the limited use of quantitative or empirical approaches in current literature.	Sustainable Development Goals (SDGs) and environmental issues. It emphasizes the advantages of green sukuk, particularly its adherence to Sharia principles and its avoidance of usury, interest, and uncertainty.
6	Keshminder J.S., Singh G.K.B., Wahid Z.A.B., Abdullah M.S. (2019)	Observe slow development in the Green Sukuk market. Notes liquidity constraints as a hindrance to investor access. Identifies a shift from the energy industry to the building industry.	Concludes that the Green Sukuk market, while growing slowly, faces liquidity challenges. It emphasizes the importance of providing information on performance, challenges, risks, and opportunities to boost government efforts to increase Green Sukuk issuance.
7	Alam A., Ratnasari R.T., Jannah I.L., Ashfahany A.E. (2023)	Notes challenges post-pandemic, particularly in dealing with the sukuk market. Addresses the need for efficient management to enhance viability, competitiveness, and investor attractiveness.	Concludes that green sukuk requires efficient management to thrive, emphasizing the importance of coordinated efforts in the operational area. Identifies key evaluation findings, including managing government and investor commitment, providing low-cost

			sukuk financing, and minimizing risk.
			Emphasizes the challenges and opportunities in green sukuk projects, including expanding green funding, global climate financing, managing renewable Energy, and validating greenhouse gas emissions.
			Empirical results reveal a negative conditional correlation, implying higher gain-to-risk ratios.
8	Naifar N. (2018)	Addresses the complexities of volatility and dynamic co-movements in financial and commodity markets.	Emphasizes the importance of understanding volatility for portfolio allocation and risk management practices.
			Advocates for a shift from the highly leveraged interest-based financing model to orthodox non-interest equity-based Sukuk.
9	Umar A.A., Goje K., Ahmad M. (2023)	Highlights the poor performance of Public Private Partnerships (PPP) in utility services. Acknowledges the need to move beyond the private vs. public provision debate to explore alternative financing approaches.	Emphasizes the potential of Sukuk to reduce energy tariffs and improve affordability, Sustainability, and value-for-money.
10	Rafay A., Sadiq R., Ajmal M. (2017)	Acknowledges the existence of different madhabs within Islamic Fiqh as a barrier to creating a uniform global framework. Explores the complexities of developing a standardized Sukuk	Systematically review Sukuk, which is issued by various madhabs, to identify commonalities and differences. The findings are presented in tables, summarizing essential

		al-Ijarah model acceptable to all madhabs.	ingredients for global Sukuk al-Ijarah security.
			Presents findings on managing government and investors' commitment to the renewable energy sector.
11	Alam A., Ratnasari R.T., Jannah I.L., Ashfahany A.E. (2023)	Addresses the challenges in the sukuk market post-pandemic. Discusses the need for efficient management to make green sukuk more viable and competitive.	Discusses efforts to provide low-cost sukuk financing and risk minimization. Explores challenges and opportunities in green sukuk projects, emphasizing coordination in the green stock market reaction.

4. CONCLUSION & RECOMMENDATION:

The IMF Working Paper WP/15/120 comprehensively examines Islamic finance and the Sukuk market. The first sukuk was issued in 1990 by a Malaysian company, and it took until 1996 for another firm to raise financing via a sukuk. In the past 10 years, the sukuk market has grown rapidly from \$10 billion outstanding in 2003 to \$270 billion outstanding in 2013. In the open primary sukuk market, sovereign issuers dominate with a 56 percent share compared to only 27 percent for nonfinancial corporate issuers. The sectoral distribution of corporate sukuk is relatively diverse, with the financial services sector leading corporate sukuk origination with a share of 14 percent. Malaysia, Qatar, Saudi Arabia, and the United Arab Emirates account for 90 percent of the value issued. Marked-up buyback (murâbaah) and lease-based (ijrah) sukuk still dominate the market, with the murâbaah-based sukuk accounting for 40 percent of total gross issuance. Musharakah contracts have grown strongly in recent years. The rapid growth of Islamic banking assets and sukuk has led to the opening up of the business (Hussain et al., 2015).



Therefore, this review highlights the multidimensional potential of Green Sukuk beyond its established role in renewable Energy, showcasing its ability to drive diverse, sustainable projects like green infrastructure and energy efficiency initiatives. It paves the way for a more comprehensive understanding of this impactful instrument by highlighting research gaps in specific regions and methodologies. Additionally, this review sheds light on the critical challenges of limited market awareness and the need for strong government support while proposing insightful solutions like educational campaigns and policy involvement. This paves the way for stakeholders to address these hurdles and unlock the full potential of Green Sukuk in achieving sustainable development goals.

Looking ahead, the future of Green Sukuk demands rigorous impact assessments to quantify its real-world environmental and economic benefits, attracting wider investment. Comparative analysis with other green finance instruments like green bonds can unlock best practices and synergies for increased reach. Developing innovative Sukuk structures tailored to emerging green technologies and sustainable projects holds immense promise. Furthermore, in-depth research into market barriers like regulatory challenges and risk perception can inform policy changes and market initiatives to overcome these obstacles. Finally, harnessing the potential of technological advancements like blockchain and digital platforms can streamline Green Sukuk issuance and enhance market transparency, attracting new investors and propelling Green Sukuk towards a brighter future.

Introduce the New Concept of ‘Circular’ Sukuk:

Circular Sukuk for energy development is a financial instrument that supports sustainable energy projects within a circular economy framework. In a circular economy, resources are used and reused in a closed loop, minimizing waste and maximizing the value of materials and Energy. This concept is particularly relevant in energy development, emphasizing the importance of transitioning towards renewable and sustainable energy sources.

When combined, circular Sukuk for energy development represents a financing mechanism that supports projects to transition towards sustainable energy sources within a circular economy framework. This could include renewable energy projects, energy efficiency initiatives, and other environmentally friendly energy developments.

Combining these concepts, a "circular Sukuk" for energy development could comprise the following characteristics:

Financing green energy projects aligned with circular economy principles, such as:

- Renewable energy production from recycled materials.
- Waste-to-energy conversion facilities.
- Sustainable energy storage solutions.

Utilizing a Sukuk structure that ensures investors share profits and risks associated with the project.

Incorporating mechanisms to maximize resource utilization and minimize waste within the project itself. This could involve:

- Repurposing or recycling byproducts generated during energy production.
- Integrating the project with existing infrastructure to increase resource efficiency.
- Partnering with waste management companies to close the resource loop.

Benefits of Circular Sukuk:

- Promotes renewable energy development while aligning with sustainability goals.
- Offers potential for higher returns through efficient resource utilization and reduced waste disposal costs.
- Appeals to environmentally conscious investors seeking ethical and impactful investments.

- Contributes to circular economy implementation within the energy sector.

Challenges and Considerations:

- Developing strong frameworks for evaluating the circularity and Sustainability of projects financed by Circular Sukuk.
- Ensuring market acceptance and investor confidence in this relatively new instrument.
- Addressing technological and regulatory hurdles associated with implementing circular economy principles in energy projects.

Overall, the concept of Circular Sukuk holds substantial promise for accelerating sustainable energy development and advancing towards a more circular economy. Further research and pilot projects are needed to refine the framework, address challenges, and unlock the full potential of this innovative financing tool.

Bibliographic Map:

The bibliometric map visually represents the relationships between countries in the context of Sukuk-related scholarly publications or activities. Sukuk are Islamic financial certificates, similar to bonds in Western finance, that comply with Islamic religious law known as Sharia.

The map is created using VOSviewer, a tool for constructing and visualizing bibliometric networks. These networks can include journals, researchers, or individual publications, and the connections between them often signify citation relationships, co-authorships, or keyword occurrences.

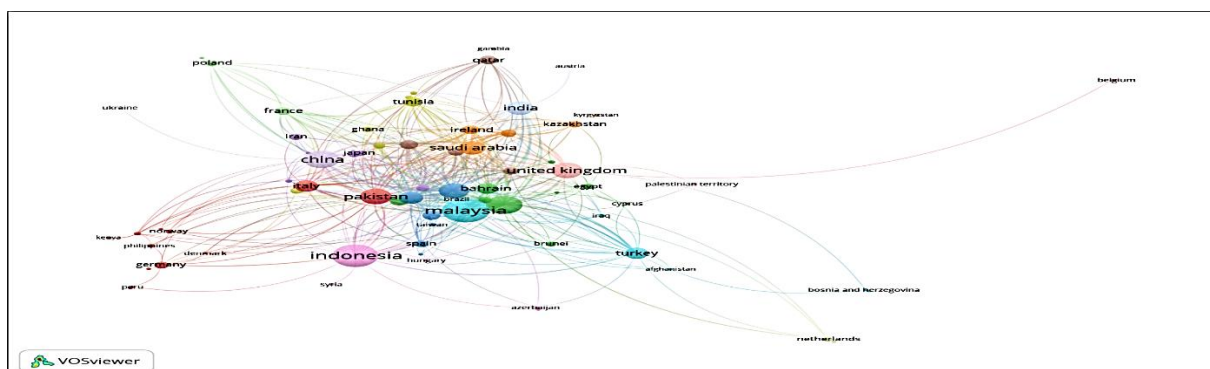
In the map, each country is represented by a label and a node, whose size presumably corresponds to the number of documents or the activity level related to Sukuk. The lines connecting the nodes indicate some form of relationship—likely co-authorships, citations, or collaboration in research on Sukuk. The thickness of the lines might represent the strength of the relationships, with thicker lines indicating stronger ties.

Clusters of nodes are color-coded, suggesting that countries within the same cluster have stronger interconnections among them regarding Sukuk research or literature. Colors are just there to help differentiate between the various clusters.

Here are a few key points one might gather from this visual:

1. Malaysia, Indonesia, and Pakistan have the largest nodes, proposing that these countries have substantial Sukuk-related academic activities.
2. A highly consistent cluster involving countries like Malaysia, Indonesia, and Pakistan indicates strong mutual collaborations or influences in the field of Sukuk within this region.
3. The map also shows connections to other countries worldwide, representing the interest in and links to Sukuk research.
4. European countries such as the United Kingdom, France, and Germany are also present, with smaller nodes than the primary cluster. This suggests that Europe has an active yet less dominant role in Sukuk research.

This bibliometric map visualizes how scholarly work on Sukuk is distributed and connected globally. It can help researchers identify key players and collaborative opportunities in this field.



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