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ASSESSING THE FEASIBILITY OF KPI-LINKED SUKUK ISSUANCE: A REGULATORY IMPACT AND STRATEGIC ANALYSIS IN INDONESIA

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ABSTRACT

Research Originality - This study offers one of the first comprehensive assessments of KPI-linked sovereign sukuk as a performance-based climate financing instrument. Whereas prior literature predominantly focuses on sustainability-linked bonds or sukuk from corporate-level applications or conceptual and framework-based perspectives, this study examines the sovereign issuance context by assessing regulatory feasibility, cost-benefit considerations, and strategic preparedness. Employing Regulatory Impact Assessment (RIA) and SOAR analysis, the study advances the existing discourse beyond conventional use-of-proceeds financing toward a performance-based sovereign funding model that is closely aligned with Indonesia's national climate objectives.

Research Objectives - This study aims to evaluate the regulatory, economic, and strategic feasibility of issuing KPI-linked sovereign sukuk in Indonesia, with particular emphasis on cost-benefit considerations and institutional readiness for implementation.

Research Methods - An exploratory qualitative approach is employed by integrating Regulatory Impact Assessment (RIA) and SOAR analysis to examine the regulatory, economic, and strategic dimensions of KPI-linked sovereign sukuk issuance, drawing on expert interviews, stakeholder consultations, as well as relevant regulatory and policy documents.

Empirical Result - The findings indicate that KPI-linked sovereign sukuk issuance is feasible, supported by positive cost-benefit outcomes and strong institutional and regulatory capacity as reflected in the strength-result strategic positioning.

Implications - KPI-linked sovereign sukuk offer a policy-relevant mechanism to enhance performance-based climate financing, provided that KPI design, regulatory readiness, and monitoring capacity are adequately strengthened.

Keywords: KPI-linked Sukuk; Sovereign Sukuk; SOAR; RIA; Sustainable

JEL Classification: E62, G23, H63

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INTRODUCTION

The impacts of climate change are widely observed globally, including in Indonesia. The UN Intergovernmental Panel on Climate Change (IPCC) reported in 2024 that some global warming has been locked in and cannot be reversed. From 2011 to 2024, global temperatures rose by 1.54°C above the 1850–1900 level (the pre-industrial level). The increase in global temperature triggers extreme heat waves that endanger human health, ecosystems, and economic productivity. Findings from environmental experts show that 26% of global warming contributors stem from the use of fossil fuels for power generation, transportation, and industrial machinery. The use of these fuels produces excessive carbon monoxide (CO) emissions that contribute to the greenhouse effect.

A country's climate responsibilities and actions, referred to as the Nationally Determined Contributions (NDC), are submitted through the United Nations Framework Convention on Climate Change (UNFCCC). In 2022, the Indonesian government submitted its Enhanced Nationally Determined Contribution (ENDC) to the UNFCCC, setting a more ambitious 2030 emission-reduction target. In its ENDC, Indonesia aims to reduce greenhouse gas (GHG) emissions from the business-as-usual (BAU) baseline by 2030, with an unconditional target of 29% to 31.89% and a conditional target of 41% to 43.20%. Indonesia

is considering four types of mitigation measures as part of its efforts to meet the NDC: fuel switching, implementation of environmentally friendly coal technology, renewable energy, and energy efficiency measures (Suryanti, 2024)

As shown in Table 1, according to the Minister of Forestry and Environment, the estimated funds needed to achieve Indonesia’s emission-reduction goals are IDR 4,002 trillion, or nearly USD 281 billion. This amount is equivalent to approximately 20% of Indonesia’s 2022 GDP or 130% of Indonesia’s 2022 state budget. The energy and transportation sectors consume most of the allocation.

Mandatory spending for education, health, and other programs has burdened the APBN. Therefore, efforts to mitigate climate change require innovative financing to meet funding needs. Currently, the government has issued various financing instruments for sustainable development. They are in the form of loans and the issuance of sharia-based and conventional bonds. The government has also periodically issued securities for climate change mitigation since 2018.

APPLICATIONS FOR PRACTICE

- KPI and SPT determination is the critical element distinguishing KPI-linked sukuk and requires strict verification.
- Cost–benefit analysis confirms the feasibility of issuance, supported by DJPPR’s regulatory readiness and growing external interest.
- SOAR analysis highlights strong institutional capacity to achieve measurable results aligned with ENDC and SDG targets.
- Key strategies include public outreach, collaborative KPI–SPT setting, strengthening the legal framework, and ensuring government commitment. Renewable energy KPIs offer a low-risk, high-impact starting point for issuance

Table 1 Climate Finance Estimates to Achieve Nationally Determined Contribution (NDC) Targets by 2030

Policies and Programs	Finance Needs (IDR trillion)
Conservation, protection, and prevention of forest fires	307
Transition from power generation to renewable energy	3,500
Low-emission rice varieties, irrigation, use of biogas, and feed additives	7
Cement and steel industry	925
Management of household and industrial solid and liquid waste	185
Total	4,002

Source: Prihatini & Jatmiko (2021)

The government states that financing instruments to support emission reduction and the achievement of the NDC target require further development due to a large financing gap. When financing needs to achieve the NDC target of IDR 4,002 trillion, compared with the results of government financing instrument issuances of IDR 159.4 trillion (if all issuances are converted to rupiah at an exchange rate of IDR 15,000 per USD), there is a large financing gap.

One of the instruments to be developed is the issuance of state sukuk linked to Indonesia’s emission-reduction efforts. In other words, emission reduction will be a key performance indicator (KPI) that will affect the level of rewards given. The KPI-linked sukuk issuance program is a strategic step that needs to be implemented. The goal is to translate emission-reduction initiatives into more serious action, as they entail significant financing costs, which green sukuk helps cover. Related parties will strive to achieve the KPI to avoid the risk of increasing the yield given to investors.

In the global financial market, the first sustainability-linked bond (SLB) was issued in 2019 by Enel SpA, raising USD 1.5 billion. Meanwhile, in 2020, Etihad Airways issued the world’s first sustainability-linked sukuk (SLS) worth USD 600 million (Razali et al., 2023). Concerning the above-mentioned subject, this study was conducted to examine the potential of KPI-linked sukuk issuance in Indonesia in terms of cost-benefit. This study also focused on exploring the KPI-linked sukuk issuance strategy. It is hoped that this study will contribute to policymaking, especially financing for sustainable development.

Published studies on KPI-linked Sukuk remain relatively scarce. To date, the author has identified only Razali et al. (2023), which argues that the issuance of SRI-linked Sukuk has the potential to attract a broader base of sustainability-oriented investors, particularly institutional investors managing sustainable portfolios. However, the study primarily focuses on analyzing the SRI-linked Sukuk framework developed by the Securities Commission Malaysia (SCM), rather than examining performance-based sukuk structures in a broader fiscal context.

This study is conducted to assess the potential feasibility of issuing KPI-linked Sukuk in Indonesia, with particular emphasis on cost–benefit considerations. In addition, the analysis explores issuance strategies for KPI-linked Sukuk. Ultimately, this study seeks to contribute to the development of KPI-linked

Sukuk as a novel sovereign financing instrument capable of generating measurable outcomes and supporting sustainable development objectives in Indonesia.

LITERATURE REVIEW

Financial instruments issued to finance climate change mitigation and adaptation are driven by the idea of sustainable development. Sustainable development was first defined in the Brundtland Report, "Our Common Future," in 1987. Brundtland was the leader of the World Commission on Environment and Development. Sustainable development is broadly conceptualized in the scholarly literature as a multidimensional framework for societal progress that seeks to harmonize economic growth, social equity, and environmental protection so that the needs of present populations are met without jeopardizing the ability of future generations to meet their own needs. This intergenerational perspective underscores the ethical imperative of conserving natural resources and promoting social justice alongside economic development, reflecting the foundational principles of the Sustainable Development Goals (SDGs) adopted by the United Nations. In this sense, sustainable development is understood as an integrative approach that balances ecological resilience, socioeconomic well-being, and equity across temporal and spatial scales, thereby ensuring long-term viability of human and natural systems (Brown, 2017)

According to the European Commission, the concept of sustainable finance is defined as: "The process of considering environmental, social and governance (ESG) aspects when making investment decisions in the financial sector is the core guideline of sustainable finance. This investment leads to long-term investments in sustainable economic activities and projects". According to Marco (2021), sustainable finance should be understood today more coherently as 'finance for sustainability'. In this sense, it ought to be regarded as an independent and essential component in the broader effort to achieve a sustainable society, particularly in alignment with the sustainable development goals (SDGs) and the Paris Agreement. Investments in the sustainable finance sector can be made through various instruments, such as green stocks, blue bonds, and green sukuk. These investment instruments continue to evolve, adapting to issuers' needs.

Within this evolving landscape, green sukuk has emerged as a relatively new financial instrument designed to help Indonesia meet its GHG emission reduction commitments. This is regulated by the Green Bond and Green Sukuk Issuance Law and is independently reviewed by the Centre for International Climate and Environmental Research (CICERO). Indonesia became the first green bond issuer in Southeast Asia and, in March 2018, issued the world's first green sukuk, raising USD 1.25 billion. Green sukuk in Indonesia is an innovation with significant untapped and underutilized potential (Karina, 2019).

Green sukuk is an innovative sharia-based financial instrument issued by the government to support Indonesia's commitment to combating climate change. According to the Directorate General of Budget Financing and Risk Management (DJPPR), the issuance of green sukuk has several objectives, including financing environmentally friendly projects tagged in the APBN, supporting Indonesia's commitment to addressing the impacts of climate change, and helping finance the APBN deficit. Accordingly, the proceeds of green sukuk are strictly allocated to underlying green projects that meet predefined environmental eligibility criteria.

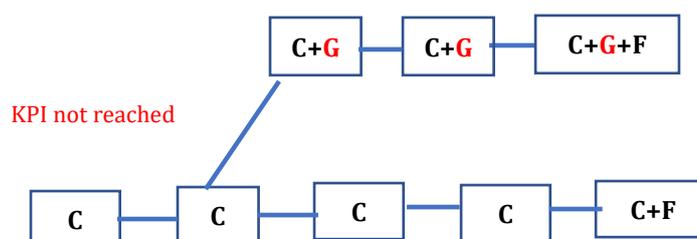
While this use-of-proceeds structure of green sukuk strengthens transparency and environmental accountability, it also implies certain limitations in terms of financing flexibility. In response to these constraints, KPI-linked bonds have emerged as an alternative instrument within the broader framework of sustainable and green finance. There are key differences between green bonds and KPI-linked bonds (Chowdhury, 2024), which are detailed as follows: [1] In green bonds, the proceeds raised from issuance will be used exclusively to finance or refinance, in whole or in part, new or existing eligible green projects. [2] In KPI-linked bonds, the funds used in these financing instruments are not limited to green projects and can be used for general corporate purposes. This flexibility has made KPI-linked bonds a popular alternative to traditional capital and debt raising. In practice, many refer to KPI-linked bonds as SLB. According to the International Capital Market Association (ICMA), SLBs are any type of bond instrument whose financial or structural characteristics may vary depending on whether the issuer achieves pre-determined sustainability or ESG objectives.

SLB issuers commit to pre-determined, measurable, and verifiable sustainability goals. The goals must meet two main criteria. First, the goals must be measurable through KPIs. Second, the goals must be assessed against pre-determined sustainability performance targets (SPT). In principle, SLBs can involve ESG targets. However, in practice, most SLBs are related to environmental targets (Berrada et al., 2022). To ensure the credibility of these commitments, SLBs embed sustainability performance directly into their financial structure through performance-contingent payment mechanisms, as shown in the figure below.

As shown in Figure 1, C is the coupon, G for the penalty, and F for the face value. The payment structure of an SLB can change after issuance, depending on whether the relevant KPIs are achieved. A pre-defined

trigger event initiates changes in the payment structure. Typically, this trigger event occurs when the company fails to meet a KPI by a predefined observation date. If the company fails to meet the KPI on time, the coupon will, in most cases, increase with a predefined penalty (in almost 95% of bonds). However, some SLBs offer a coupon reduction if the KPI is achieved, but this structure is less common (about 1.7% of SLBs). Other SLBs have a penalty that allows the company to choose between purchasing a predefined CO2 offset or donating a predefined amount to a charity. In the latter two structures, the coupon payment structure is not affected (Berrada et al., 2022). These variations illustrate the flexibility of KPI-linked instruments in embedding sustainability incentives and disincentives within their financial structures, beyond conventional coupon-based adjustments.

Figure 1 Coupon (reward) payment structure on SLB



Source: Berrada et al. (2022)

Building on this flexible, performance-based financing concept, Malaysia has introduced a dedicated regulatory and incentive framework to support the development of KPI-linked Islamic instruments. On 30 June 2022, the Securities Commission Malaysia (SC) issued the SRI-linked sukuk framework (the framework) as part of its KPI-linked sukuk development. On 23 August 2022, the SC announced that the sukuk grant scheme and SRI sukuk were extended to SRI-linked sukuk issuances. Eligible issuers can claim up to 90% of the costs incurred in appointing independent reviewers. In addition to the reviewer fee grant, sustainable sukuk issuers are also entitled to a five-year income tax exemption from 2021 to 2025 (Razali et al., 2023).

Furthermore, SRI-linked sukuk is defined based on their characteristics, both financially and structurally, that meet their sustainability targets. The issuer's selection of KPIs is critical to achieving sustainability targets. The KPIs selected by the issuer must, among others, [1] be an essential element of the sustainability policies, [2] focus on ESG issues that are relevant to the issuer's business, and [3] be controllable by the issuer. In addition, the issuer's SPTs are as important as selecting measurable KPIs to be improved over a predetermined period. The issuer is expected to be able to choose KPIs that have a significant impact on achieving the NDC target with measurable SPTs.

To adapt to and mitigate climate change, the government plans to issue KPI-linked sukuk. The government designs this policy to create a broad impact on the environment and support long-term economic growth. This policy is formulated through the following stages: problem identification, determining policy objectives, collecting data and information, identifying policy alternatives, evaluating alternatives (cost-benefit analysis), and selecting the best solution. These stages are identical to the steps in formulating rational model policies.

In the public policy literature, the rational-comprehensive model is commonly regarded as a normative approach to evidence-informed decision-making, in which policymakers define policy problems in a structured manner, develop a comprehensive range of viable alternatives, assess the anticipated costs and benefits associated with each option, and ultimately choose the course of action that yields the greatest net benefit to society (Gough & Boaz, 2017). The model is grounded in the assumption that policymakers operate with clearly defined objectives, possess access to comprehensive information, and can conduct thorough analyses of all feasible alternatives prior to determining the most optimal policy choice (Dunn, 2018).

Previous studies discussed in this section can serve as a basis for developing KPI-linked sukuk. As stated, the issuance of sustainable development financing instruments, such as sukuk or bonds, requires additional regulations in the form of a framework that serves as a guideline for sukuk issuers and investors (Hariyanto, 2020). Meanwhile, Berrada et al. (2022) stated that SLB requires greater transparency in the bond prospectus and certification process, and that companies should also disclose other parameters, including the costs of implementing environmental, social, or governance-based infrastructure to achieve KPIs. In addition, sustainable financial literacy is needed to prevent excessively high prices (yield demand) from this issuance, which ultimately benefits bondholders.

In relation to KPI-linked sukuk, Razali et al. (2023) explored features of SRI-linked sukuk, issuer innovation in choosing KPIs and SPT, and the characteristics of SRI-linked sukuk investors in Malaysia. The study found that SRI-linked sukuk will be particularly attractive to institutional investors focused on sustainability. This study was conducted to explore previous research findings to determine strategic priorities in the issuance of KPI-linked sukuk, including determining KPI and SPT targets, developing a framework for the issuance of KPI-linked bonds or sukuk, and the importance of financial literacy. This exploration offers some important insights into the implementation of KPI-linked sukuk in Indonesia.

METHODS

This research was conducted at the Directorate of Sharia Financing DJPPR, which manages government sukuk. The research was conducted from April to November 2024. This research uses regulatory impact assessment (RIA) and strengths, opportunities, aspirations, and results (SOAR) analysis. The RIA method is used to measure the cost and benefit values of the KPI-linked sukuk issuance plan. This method is expected to quantify cost and benefit values, thereby facilitating the development of policy recommendations.

Regulatory Impact Analysis (RIA) aims to provide a detailed and systematic analysis of the potential impacts of a regulation. RIA is usually conducted in a comparative context, comparing benefits and costs. RIA is a systematic, evidence-based policy analysis tool designed to improve the quality of regulatory decisions by explicitly comparing alternative policy options and their associated costs and benefits. RIA frameworks emphasize defining the policy problem clearly, identifying policy objectives, considering a full set of feasible alternatives, analysing the expected costs and benefits of each option, engaging relevant stakeholders in the assessment process, and documenting the results to inform decision-makers. Such structured analytical processes help ensure that regulatory actions produce net benefits and are justified relative to non-regulatory or alternative interventions, thereby enhancing transparency and accountability in policymaking. These best practice principles are widely endorsed in international regulatory policy literature and practice (Dudley & Kniesner, 2025).

RIA assesses benefits and costs. Information and issues to be analyzed should be presented or converted into a quantitative analysis. The purpose of identifying problems and objectives is to quantify information and issues with formulated benchmarks. In addition to interviews, this study collects secondary data from published documents, literature, and related agencies. The secondary data of this study is used to identify factors related to the costs and benefits of the KPI-linked sukuk issuance plan (RIA). Although the institution from which the data are sourced limits the disclosure of confidential cost and benefit data, the data collected in this study constitute a major dataset and are sufficient for research purposes. In the subsequent step, a wide range of factors related to the costs and benefits of issuing KPI-linked sukuk is collected. These factors are then compared using a benefit-cost ratio (BCR) method, which evaluates a project by comparing the present value of its benefits with the present value of its costs (Mangkoesoebroto, 2018).

$$BCR = \frac{\sum benefit}{\sum cost} \dots\dots\dots(1)$$

The feasibility of a project can be assessed using the benefit-cost ratio (BCR). When the BCR is greater than one (BCR>1), the project is considered economically feasible, as the expected benefits exceed the associated costs. A BCR equal to one indicates that the project's benefits are exactly equal to its costs (BCR=1), suggesting that the project is economically viable but yields no net economic gain. Conversely, when the BCR is less than one (BCR<1), the project is deemed economically infeasible, as the projected costs outweigh the anticipated benefits.

In this study, SOAR analysis is used to formulate strategies and planning frameworks that allow organizations to plan their most desired future related to the KPI-linked sukuk issuance plan. This method is used to identify internal strengths within institutions and external market opportunities. This method then utilizes existing strengths to achieve the intended results. It is hoped that the issuance of KPI-linked sukuk can proceed as intended once the strategy is determined. The appreciative inquiry approach is used to develop the SWOT analysis into a SOAR analysis. Through this approach, the transformational change process is carried out by focusing on improving existing organizational processes and challenging established belief systems through the sharing of new ideas and knowledge.

The *Strengths, Opportunities, Aspirations, and Results* (SOAR) framework is a strength-based strategic thinking and planning approach that emphasizes positive inquiry and future-oriented decision-making. Originally developed as an alternative to traditional diagnostic tools like SWOT, the SOAR model integrates appreciative inquiry principles to focus on organizational strengths and emerging opportunities,

encourages articulation of aspirations, and links these with measurable results. Recent empirical work has advanced the framework by developing and validating a reliable 12-item SOAR Scale, demonstrating the construct’s relevance for strategic planning and performance enhancement in organizational contexts (Cole et al., 2022).

The SOAR framework is operationalized through four interrelated steps: identifying organizational strengths, exploring external opportunities, articulating collective aspirations, and defining measurable results. This strength-based approach emphasizes positive capabilities and future-oriented strategy formulation rather than problem-centered diagnosis. Empirical studies demonstrate that SOAR facilitates participatory strategic planning, enhances organizational alignment, and supports sustainable performance outcomes by integrating tangible and intangible performance indicators (Cole et al., 2022).

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The SOAR matrix is employed as an analytical tool to operationalize the SOAR framework by mapping strengths, opportunities, aspirations, and results into strategic alternatives (Cole et al., 2022). The SOAR matrix functions to determine a company’s strategic factors. These factors describe how a company’s external strengths and opportunities can be aligned with its aspirations and measurable results. The matrix is divided into the following four conditions:

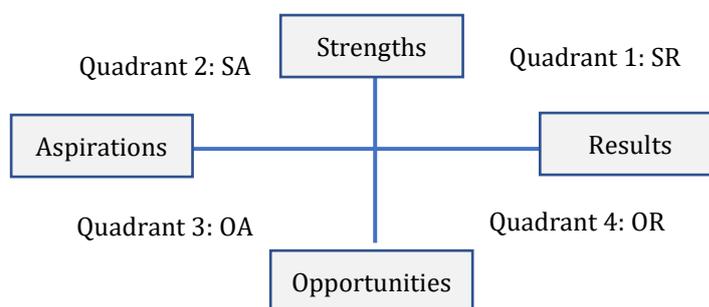
Table 2 SOAR Analysis Matrix

		IFAS	
		Strengths	Opportunities
EFAS		Internal Strength Factors	External Opportunities Factors
Aspirations		SA Strategy	OA Strategy
Internal expectation factors		Create strategies that use strengths to achieve aspirations	Aspiration-oriented strategies are expected to take advantage of opportunities
Results		SR Strategy	OR Strategy
Measurable results to realize		Create a strength-based strategy to achieve measurable results	Opportunity-oriented strategies to achieve measurable results

Source: Cole et al. (2022)

The internal strategic factors analysis summary (IFAS) comprises strategic factors originating within the company, while the external strategic factors analysis summary (EFAS) comprises those originating outside the company. Both are then compared to provide alternative SA, OA, SR, and OR strategies. The position diagram is displayed in Figure 3.

Figure 3 Position Diagram of SOAR Analysis Strategy



Source: Processed by the Author

Primary and secondary data were employed in this study. Primary data were collected through in-depth interviews with seven key informants, including experts, regulators, investors, financial institutions, and practitioners. The in-depth interview approach was selected to obtain comprehensive and nuanced insights into the research objects, particularly to map the government’s strategic positioning using the SOAR framework. Secondary data were derived from relevant publications and documentary sources to complement the primary findings and enrich the analytical perspective.

Building on the collected data, publishing aspects were first identified to extract factors relevant to the SOAR analysis. These factors were then systematically classified according to the Strengths, Opportunities, Aspirations, and Results dimensions. Following this classification, a scoring process was conducted to determine the strategic quadrant position within the SOAR matrix. To strengthen the validity and depth of the analysis, follow-up interviews were undertaken with selected informants to further explore strategic factors related to the publication and development strategy of KPI-linked sukuk.

Subsequently, data analysis was conducted as a systematic and iterative process aimed at organizing, reducing, and interpreting qualitative data obtained from interviews, field notes, documentation, and other relevant sources. The analytical process involved breaking down large volumes of raw data into manageable units, identifying recurring patterns and themes, synthesizing key insights, and drawing conclusions aligned with the research objectives. This approach emphasizes immersion in the data through coding, categorization, and interpretative analysis, enabling a rigorous and transparent understanding of stakeholders' perspectives and the broader policy context. Such systematic analysis enhances the clarity and interpretability of the qualitative findings and ensures that the conclusions accurately reflect the underlying meanings embedded in the data (Matondang & Tambusai, 2025).

The research employs an exploratory qualitative approach, a design frequently used in peer-reviewed studies when the aim is to generate in-depth insights into the meanings, experiences, and perceptions of participants regarding complex social phenomena. Exploratory qualitative research allows investigators to collect rich, descriptive data through flexible methods such as semi-structured interviews and thematic analysis, enabling a holistic understanding of subjective realities that cannot be captured through quantitative measures alone. This approach is particularly appropriate in contexts where existing theory is limited or where phenomena have not been extensively studied, as it facilitates the identification of underlying patterns and nuances in participants lived experiences (Oranga & Matere, 2023).

RESULT AND DISCUSSION

Etiha Airways issued SLS in 2020. This issuance is also the first transition bond or sukuk issued by an airline in the USD market. The selected KPIs are as follows: a 20% reduction in the passenger fleet's emission intensity by 2025, a 50% net reduction in emissions by 2035, and a commitment to achieve net-zero carbon emissions by 2050. If the SPT is not met on the targeted observation date (Razali et al., 2023), the issuer will commit to purchasing offsets (carbon redemption), which is an effort to balance the carbon footprint generated by financing green projects. Verification of performance against the SPT will be carried out annually until the last observation date.

As discussed above, KPI and SPT are distinguishing features of green bonds or sukuk compared with KPI-linked bonds or sukuk. The indicators for achieving the predetermined sustainability goals are measured through KPIs and assessed against SPTs. The SPT observation date and external reporting or verification must be completed before the due date. The financial characteristics and structure of bonds or sukuk (coupon rate) are adjusted to the SPT achievement.

RIA analyzes and communicates the impacts of existing regulations. The RIA process begins with problem formulation. The problems that are expected to be solved by implementing the issuance of KPI-linked sukuk are articulated through the following key questions: [a] Can the issuance of KPI-linked sukuk help encourage the resolution of climate change issues? [b] Can KPI-linked sukuk help the government provide financing to mitigate and adapt to climate change? [c] Can the issuance of KPI-linked sukuk help the government achieve the emission reduction targets stated in the ENDC by 2030? This is followed by the identification of objectives. The objectives of the issuance of KPI-linked sukuk are in accordance with Law Number 19 of 2008 concerning State Sharia Securities (SBSN) and OJK Regulation (POJK) Number 18 of 2023 concerning the issuance and requirements of debt securities and sukuk-based sustainability. The objectives include: [a] Issuing sharia-compliant financing instruments is a solution the government can offer to tackle climate change. [b] Increasing the SBN portfolio in financing projects that have an impact on reducing emissions, especially supporting the achievement of the ENDC target by 2030. [c] Setting KPI and SPT as drivers for achieving the SDGs targets, including reducing national emissions. [d] Assisting in achieving one of the objectives in the 2024-2029 RPJM listed in Asta Cita in National Priority 2, including the green economy and blue economy. [e] Alternative Solutions to the Problems.

Alternative solutions to the various problems mentioned above are as follows: [a] The government can develop financing instruments for sustainable development that align with the mandate of Law Number 19 of 2008 and POJK Number 18 of 2023. The development of these instruments is expected to be a driver of the government's performance in achieving SDGs. [b] The government continues to use existing financing instruments, such as green sukuk, waqf sukuk (cash waqf-linked sukuk (CWLS)), SDGs bond, and sovereign blue bond to achieve the SDGs targets. To date, sustainable development has widely used these types of government securities.

Cost-benefit analysis is used to determine whether an investment is feasible and to provide a basis for comparing projects or investments. The comparison is used to identify which option provides greater benefits than its costs. The cost-benefit analysis of the KPI-linked sukuk issuance plan is presented in Table 3.

Table 3 Blue Sukuk Cost and Benefit Matrix for 5 Years

Benefits	IDR	Costs	IDR
• Additional new investment	5.5 trillion	• Cost of preparing a new framework	-
• Additional income tax revenue from state sukuk	268.1 billion	• Legal consultant fees	250 million
• Residual value of infrastructure	2.75 trillion	• Marketing costs	78.75 billion
		• Socialization costs	1.4 billion
		• Project identification and preparation costs	100 million
		• SPO audit costs	-
		• Sukuk reward costs	1.787 trillion
		• Return on investment	5.5 trillion
• Total	8.5181 trillion	• Total	7.36725 trillion

Source: Processed by the authors

Based on the calculation results presented in Table 3, the benefit–cost ratio (BCR) of the proposed blue sukuk issuance is calculated at 1.16, indicating that the quantified benefits exceed the associated costs. A BCR greater than one suggests that, from an economic and fiscal efficiency perspective, the issuance of KPI-linked sukuk is feasible and justifiable as a public policy instrument. The BCR value of 1.16 implies that for every unit of cost incurred by the government, the issuance of KPI-linked sukuk generates approximately 1.16 units of economic, fiscal, and sustainability-related benefits. Although the margin above unity is moderate, it nevertheless reflects a positive net benefit, particularly when evaluated within the context of innovative sovereign financing instruments that integrate fiscal objectives with sustainability outcomes. This finding is especially relevant given that KPI-linked sukuk are not solely intended to minimize financing costs, but also to enhance policy effectiveness through performance-based incentives linked to measurable sustainability targets.

A consultation involving stakeholders is conducted to identify the best alternative. Public consultation is conducted through various focus group discussions (FGDs) and joint meetings involving: [a] Policy makers (the Ministry of Environment and Forestry (KLHK), before a structural change that separates it into two ministries: the Ministry of Environment and the Ministry of Forestry in the President Prabowo administration); [b] International consultants such as the United Nations Development Programme (UNDP); [c] Ministry of Finance (the Directorate General of Economic and Fiscal Strategy and the Legal Bureau); [d] the community as recipients of policy impacts; [e] Institutional investors, consisting of 16 investment banks, were invited to the FGD.

Public consultation is necessary because it is based on the principle that [a] Strategic policy making involves all affected parties in the negotiation and consultation process on an equal basis, and [b] An inclusive approach to implementing the policy could improve the quality of benefits received by the public. The analysis of KPI-linked sukuk issuance using the RIA method yields a BCR > 1, indicating that the issuance of KPI-linked sukuk is feasible as policy.

The SOAR analysis of the planned issuance of KPI-linked sukuk by the Directorate General of Financing and Risk Management (DJPPR) highlights several key strengths and opportunities. From the perspective of strengths, DJPPR is supported by a strong legal and regulatory foundation, including Law Number 19 of 2008 on State Sukuk and Financial Services Authority Regulation (POJK) Number 18 of 2023 concerning the Issuance and Requirements of Debt Securities and Sustainability-Based Sukuk. Institutional capacity further strengthens DJPPR's position, particularly through high-quality human resources with expertise in sustainable securities developed since 2018, the availability of an online transaction system, and an established sukuk marketing network across domestic and global financial markets. In addition, the issuance of KPI-linked sukuk is supported by a clear sharia basis through the DSN–MUI Fatwa Number 95/DSN-MUI/XII/2014 concerning SBSN Wakalah, which can be utilized as the underlying structure for this instrument. DJPPR's track record in managing sukuk for sustainable financing also constitutes a significant strength, as evidenced by the successful issuance of green sukuk and cash waqf-linked sukuk (CWLS) to support sustainable development and the achievement of the Sustainable Development Goals (SDGs). Since 2018, these instruments have received approximately 20 international and national awards, reinforcing the credibility and reputation of the Indonesian government in the global sustainable finance market.

In terms of opportunities, the planned issuance of KPI-linked sukuk is supported by a conducive domestic and international environment. Domestically, Law Number 4 of 2023 on the Strengthening and Development of the Financial Sector (PPSK) mandates key institutions, including the Ministry of Finance, Bank Indonesia, and the Financial Services Authority (OJK), to promote the development of a sustainable financial sector. Internationally, guidance and support from institutions such as the IMF, World Bank, UNDP, and the International Capital Market Association (ICMA) provide a strong framework for financing and issuing investment instruments aligned with the SDGs. UNDP has expressed its willingness to support the development of the KPI-linked sukuk framework, including technical assistance and potential financial support. Moreover, the absence of finalized KPIs and sustainability performance targets (SPTs) presents an opportunity for DJPPR to design indicators with significant developmental impact while maintaining manageable risk levels. To this end, DJPPR has conducted a series of focus group discussions with relevant government agencies, such as the Ministry of Environment and Forestry, as well as with international institutions and investment banks that have previously served as joint lead managers for sustainable-linked bond issuances in countries such as Chile and Paraguay. These consultations provide a solid basis for selecting impactful KPIs and SPTs, including initiatives related to renewable energy development, forest expansion, and other sustainability-oriented programs. Furthermore, the relatively limited number of issuers of sustainable-linked sukuk in the global financial market creates a strategic opportunity for the Indonesian government to pioneer the issuance of KPI-linked sukuk and potentially become the first sovereign issuer of this instrument worldwide.

From the aspirations perspective, the planned issuance of KPI-linked sukuk reflects the government's intention to meet growing public expectations for innovative financing instruments that support the Sustainable Development Goals (SDGs). Indonesia has previously issued various SDG-oriented instruments, including green, SDG, and blue bonds, which have demonstrated measurable environmental impacts. DJPPR records indicate that the issuance of SDG bonds during 2018–2021 contributed to an estimated reduction of approximately 10.3 million tons of CO₂e emissions. Building on this achievement, the issuance of KPI-linked sukuk is widely expected to further enhance the attainment of Indonesia's Enhanced Nationally Determined Contribution (ENDC) and SDGs targets. In addition, KPI-linked sukuk is envisioned as a strategic instrument to strengthen Indonesia's reputation in the global sustainable finance market. Indonesia has already received international recognition for its green financing initiatives, and the introduction of KPI-linked sukuk is expected to reinforce this standing, potentially contributing to an improvement in the sovereign credit rating and a reduction in the required rate of return demanded by investors, thereby lowering sovereign borrowing costs.

Another key aspiration relates to the strategic use of KPI-linked sukuk proceeds to support climate change mitigation and adaptation initiatives. Although KPI-linked sukuk does not impose strict limitations on the use of proceeds for specific green or sustainable projects, the strong emphasis on performance-based KPIs provides an opportunity to align funding with national climate priorities. In this context, allocating KPI-linked sukuk proceeds to finance climate change mitigation and adaptation projects represents a strategic policy choice. Indonesia's commitment, reaffirmed during COP29 in Baku, Azerbaijan, on 11 November 2024, to accelerate energy transition and forest rehabilitation initiatives underscores the relevance of KPI-linked sukuk as a potential financing source for these commitments. Such alignment is also expected to further enhance Indonesia's image as a country actively pursuing climate change mitigation and adaptation objectives through innovative financial instruments.

From a results perspective, several concrete outcomes are required to ensure the successful issuance of KPI-linked sukuk. First, effective socialization and education programs targeting the public and potential investors are essential, particularly given the relatively low level of market awareness of green and sustainability-linked instruments in many developing countries. Previous studies highlight that limited domestic demand often constrains the development of green bond markets, necessitating greater reliance on international investors (Anbumozhi et al., 2023). Accordingly, comprehensive outreach and investor education initiatives are critical to building market confidence in KPI-linked sukuk. Furthermore, the establishment of institutions responsible for monitoring KPIs and sustainability performance targets (SPTs) is crucial to ensure credibility and accountability. In this regard, Presidential Regulation Number 98 of 2021 on the implementation of carbon economic value mechanisms for achieving NDC targets and controlling greenhouse gas emissions can serve as a key reference for designing effective monitoring arrangements. In parallel, the timely issuance of a sustainability-linked framework represents another important outcome. DJPPR is currently engaging in intensive discussions with relevant stakeholders to finalize a framework that not only supports KPI-linked sukuk issuance but also provides a broader foundation for other sustainable financing instruments, such as green and blue sukuk or bonds. Finally, the realization of a strong and credible commitment from the government remains a decisive factor in ensuring the success of KPI-linked sukuk issuance. Such commitment includes proactive risk mitigation and

enhanced coordination across ministries and institutions, thereby fostering collective ownership and reinforcing the credibility of the instrument in both domestic and international markets.

Prior to conducting the SOAR matrix analysis, an initial classification and assessment of internal and external strategic factors were undertaken through the IFAS and EFAS frameworks. The analysis began by identifying DJPPR's key strategic factors related to the issuance of KPI-linked sukuk, including strengths, opportunities, aspirations, and targeted results. These factors were then examined to capture the institutional conditions and strategic challenges faced by DJPPR in implementing KPI-linked sukuk. To facilitate systematic assessment, an auxiliary significance column was introduced, in which each factor was assigned a significance level on a scale of 1 to 4, ranging from not significant to very significant, reflecting the relative importance of each factor. Based on this assessment, weights were determined according to each factor's priority, with values ranging from 0.0 to 1.0, where higher values indicate greater strategic importance. Following (Alam et al., 2018), the weight for each factor was calculated by dividing its significance score by the total significance score of all IFAS or EFAS factors. Subsequently, each factor was assigned a rating using a Likert scale with scores ranging from 1 to 3, where higher scores indicate a stronger strategic position. The score for each factor was obtained by multiplying its weight by the corresponding rating. Finally, total scores were calculated by aggregating the scores of strengths and weaknesses for IFAS and opportunities and threats for EFAS, with the IFAS value derived from the difference between strengths and weaknesses and the EFAS value calculated as the difference between opportunities and threats.

After mapping the organization's internal and external factors, a questionnaire was distributed to assess perceptions of these factors. The questionnaire was distributed to five policymakers and academics with expertise in Islamic finance. The questionnaire uses closed-ended questions with scores ranging from 1 to 4 to assess each indicator. To determine respondents' answers, this study employed a Likert scale as a psychometric instrument to measure attitudes, opinions, and perceptions toward organizational factors identified in the SOAR analysis (Rokeman, 2024). Internal factor analysis is conducted to identify strengths and opportunity factors that will be used to determine strategic missions and actions. To evaluate these factors, the IFAS matrix is used.

Table 4 IFAS Analysis Matrix

Internal Factors: Strengths	Significance level (1-4)	Weight	Rating (1-3)	Score
1. Strong legal basis	3.8	0.26	2.8	0.728
2. High-quality human resources	3.6	0.246	2.6	0.641
3. Sharia-compliant support	3.8	0.26	2.8	0.728
4. Internationally recognized achievements	3.4	0.232	2.4	0.559
Total (S)	14.6			2.656
Internal Factors: Opportunities				
1. Domestic-international institutional support	3.4	0.245	2.6	0.638
2. Framework development support	3.6	0.259	2.8	0.727
3. KPI and SPT have not been determined	3.6	0.259	2.8	0.727
4. Few competitors	3.25	0.234	2	0.469
Total (O)	13.85			2.561

Source: Processed by the authors

An external factor analysis is conducted to identify opportunity factors to leverage and threat factors to avoid. To evaluate these factors, the EFAS matrix is used.

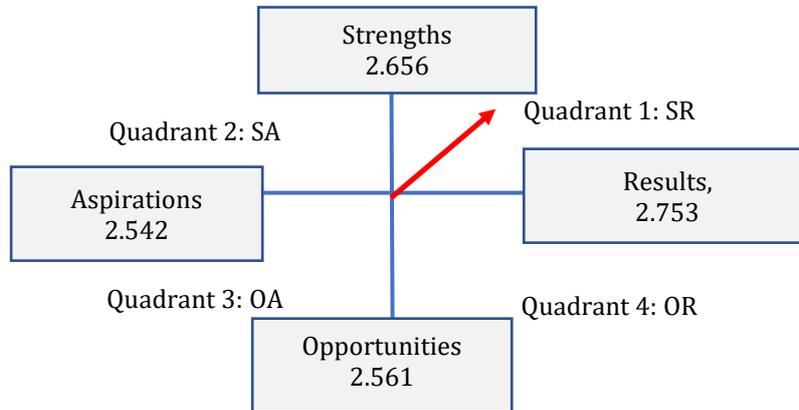
Table 5 EFAS Matrix Analysis

External Factor: Aspiration	Significance level (1-4)	Weight	Rating (1-3)	Score
1. Fulfilling the community expectations in achieving SDGs and ENDC targets	3.2	0.242	2.4	0.581
2. Improving Indonesia's reputation and sovereign credit rating	3.8	0.287	3	0.861
3. Proceeds are used to finance climate change projects	2.8	0.212	1.8	0.381
4. Improving Indonesia's image	3.4	0.257	2.8	0.719
Total (A)	13.2			2.542
External Factors: Results				
1. Socialization and educating the community and investors	3.6	0.243	2.8	0.680
2. Determination of KPI and SPT monitoring institutions	3.2	0.216	2.6	0.561
3. Issuance of sustainability	4	0.27	3	0.810
4. Strong commitment to issuing KPI-linked sukuk	4	0.27	2.6	0.702
Total (R)	14.8			2.753

Source: Processed by the authors

After inputting the data into the IFAS and EFAS matrices and assigning weights and ratings to each factor, the total scores from both matrices were calculated to determine the strategic position of the planned issuance of KPI-linked sukuk. This positioning aims to identify the most appropriate strategy quadrant within the SOAR framework. Strategy rankings for each quadrant were obtained by summing the respective scores generated in the matrix. The results indicate that the total scores for the SA, OA, SR, and OR strategies are 5.198, 5.103, 5.409, and 5.314, respectively. Based on the total score above, the determination of the position of the strategy in the IFAS and EFAS matrices is as follows:

Figure 3 SOAR Quadrant Analysis



Source: Processed by the authors

Alternative strategies in Quadrant I, namely the SR Strategy, are designed to leverage strengths to achieve measurable results. DJPPR uses an alternative strategy to issue KPI-linked sukuk. Following the successful identification of each component of SOAR, the strategy is formulated, as presented in the matrix below.

Table 6 SOAR Matrix Strategy Combination

	Internal Factors	Strengths (S)	Opportunities (O)
	External Factor		<ol style="list-style-type: none"> Strong legal basis High-quality human resources Sharia-compliant support Internationally recognized achievements
Aspirations (A)	<ol style="list-style-type: none"> Meeting the expectation to achieve SDGs and ENDC targets Improving Indonesia's reputation and sovereign credit rating Proceeds from KPI-linked sukuk to finance climate change projects Improving Indonesia's image 	SA Strategy	OA Strategy
Results (R)	<ol style="list-style-type: none"> Socialization and educating the community and potential investors Establishment of KPI and SPT monitoring institutions Issuance of the Sustainability Framework Realization of a strong commitment to issue KPI-linked sukuk 	<ol style="list-style-type: none"> Seeking opportunities for the immediate issuance of KPI-linked sukuk Directing proceeds from sukuk to projects that align with the achievements of SDGs or ESG targets 	<ol style="list-style-type: none"> Strengthen cooperation with global institutions such as the World Bank, Islamic Development Bank, and UNDP. Expand investor networks, especially to countries that have implemented ESG standards
		SR Strategy	OR Strategy
		<ol style="list-style-type: none"> Socialization and educating the public and potential investors Building a strong commitment to issuing KPI-linked sukuk Fostering collaboration between stakeholders Strengthening the legal basis by issuing a sustainability-linked framework 	<ol style="list-style-type: none"> Assessment of market needs for tenor, yield, and issuance size Determining clear and ambitious but realistic KPI and SPT

Source: Processed by the authors

The results of the IFAS EFAS matrix analysis indicate that the KPI-linked sukuk issuance strategy falls in the strengths and results (SR) quadrant. In this quadrant, the strategy is formulated based on strengths to achieve measurable results. Based on the quadrant position of Table 6 above, the results of interviews and data collection at related institutions, the strategies appropriate for the issuance of KPI-linked sukuk

are: [1] Socialization and education. KPI-linked sukuk is a special and newly emerging financial instrument. Education about the benefits and the government's ability to meet KPI and SPT targets is important. Education and socialization are expected to increase investors' understanding of how KPIs are measured, verified, and reported. The government can also enhance transparency in the use of funds and their impact on the environment or society. [2] Strengthening the legal basis by preparing a framework for the issuance of SLS, adjusting to best practices in the international world. The framework is required for the issuance of SLS and must be readily available. [3] Determining KPIs and SPT is the most challenging stage in issuing KPI-linked sukuk; therefore, collaboration is important. This stage requires coordination with various government ministries, agencies, and public bodies, such as the Ministry of Environment and Forestry and Bappenas, as well as external parties, such as investment banks and NGOs (Yayasan Kehati, WALHI, etc.). Discussions on KPIs and SPT are expected to cover the benefits, risks, and mitigation measures. It is hoped that the selected KPI and SPT levels are realistic and beneficial, contributing to achieving the SDG goals in Indonesia. [4] Building government commitment is very important. KPI-linked sukuk requires long-term policy stability and government support to achieve the goals. The findings from this study can also align with national development plans, such as the National Medium-Term Development Plan (RPJMN), Indonesia's climate commitments under the NDC, and President Prabowo's Asta Cita. The above strategies should be implemented simultaneously and in synergy with all related parties. Achieving the SDGs targets, including the NDC, requires concrete, coordinated, and measurable steps.

CONCLUSION

Several important conclusions can be drawn from this study's results. Importantly, determining KPIs and targets in the SPT is the most important aspect. It is also a differentiator for the KPI-linked sukuk instrument from other green-themed instruments, such as green sukuk, blue bonds, or sustainable bonds. Although the proceeds from KPI-linked sukuk can be used for non-green financing, it is recommended that the proceeds be used for sustainable projects. Reports on KPI-linked sukuk will undergo stricter verification, especially to monitor the achievement of KPI based on the established SPT.

In addition, the feasibility analysis of the issuance of KPI-linked sukuk based on a comparison of costs and benefits (cost-benefit ratio) shows that DJPPR is eligible to issue the instrument. Internal aspects of DJPPR, such as basic regulations, DJPPR's readiness as an originator, a special purpose vehicle (SPV) as an issuer, and sharia aspects, are available. There is growing support from external stakeholders, such as marketing networks, investors, and KPI-linked sukuk reviewers, for issuing this instrument. Several other aspects, such as the certainty of determining KPIs and SPTs, are currently being discussed. Furthermore, based on the SOAR analysis, the plan to issue KPI-linked sukuk is supported by more dominant SR. This indicates that the government can use its strengths to achieve measurable results. The government also needs to use its strengths to support the successful issuance of KPI-linked sukuk. It is expected that the KPIs effectively support the ENDC or SDGs targets.

From a policy perspective, the policy strategies that can be devised are [a] Socialization and education programs to increase the public and potential investors' knowledge of KPI-linked sukuk. [b] Building collaboration in determining KPIs and SPTs, which are important aspects in the issuance of KPI-linked sukuk. [c] Strengthening the legal basis by preparing a framework for the issuance of KPI-linked sukuk that is adjusted to Indonesian conditions and international best practices. [d] Government commitment is important to implement KPI-linked sukuk.

Finally, the government can initiate the issuance of KPI-linked sukuk by selecting a KPI focused on renewable energy development. This alternative is worth considering because it is lower-risk and using it will make it easier to monitor target achievement and contributions to renewable energy production. In addition, renewable energy development has strong growth prospects, thereby reducing energy imports and emissions.

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