

SRI GREEN SUKUK AS A CONCEPTUAL FINANCING MODEL FOR ERADICATING ENERGY POVERTY IN INDONESIA

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ABSTRACT

Energy poverty in Indonesia remains a multidimensional challenge, disproportionately affecting frontier, outermost, and underdeveloped (3T) regions despite a 99% national electrification ratio. The primary barrier has shifted from physical grid access to financial affordability, suppressing household productivity and straining the national budget through prolonged energy subsidies. This study aims to formulate a conceptual financing model utilizing Sustainable and Responsible Investment (SRI) Green Sukuk to address energy poverty efficiently and equitably. Adopting an exploratory qualitative design, this research combines a literature synthesis with conceptual modeling to propose a modified Wakalah-Ijarah Asset to be Leased contract, connecting government entities, a Special Purpose Vehicle (SPV), and investors to fund community-based renewable energy projects such as solar, micro-hydro, and biogas in 3T areas. To ensure holistic compliance with Islamic values, the model integrates a novel Composite Maqashid-SRI Impact (CMSI) mechanism, which operationalizes the five dimensions of Maqashid al-Shari'ah into measurable key performance indicators (KPIs) and requires projects to meet a minimum composite threshold for joint Green-SRI certification. The findings indicate that the integrated SRI Green Sukuk framework can bridge the fiscal gap in renewable energy infrastructure while mitigating transition risks, guaranteeing that the infrastructure delivers genuine social welfare, such as affordable communal tariffs (Rp1,500-2,000/kWh) and improved local productivity. By internalizing social impact into its core structure, this model provides a robust, Sharia-compliant pathway to eradicate energy poverty, foster sustainable regional development, and support Indonesia's equitable energy transition goals.

Keywords : : Composite Maqashid-SRI Impact (CMSI), Energy Poverty, Renewable Energy, SRI Green Sukuk.

INTRODUCTION

The development of the modern era has driven an increasing demand for energy among the public. The use of technology and ongoing development have boosted the availability of electricity to support both operational activities and daily life. BPS-Statistics reports that the amount of electricity distributed in 2024 reached 306,219.42 GWh across all regions of Indonesia, with West Java being the region with the highest electricity consumption at 61,637.47 GWh (BPS-Statistics, 2025). These figures indicate that rapid development will increase the demand for electricity to support both operational needs and daily community activities.

However, energy needs have not yet been fully and equitably met, particularly for communities in underdeveloped, frontier, and outermost regions (3T). This situation is caused by limitations in electricity distribution and costs that tend to rise over time. Energy distribution issues are evident in the disparities in energy access among Indonesia's provinces. For example, the DKI Jakarta province has the highest electricity electrification ratio, whereas West Papua and NTT provinces have the lowest electrification ratios (Suprpto & Hasanah, 2022). Central Papua and Papua Pegunungan provinces also have household electricity usage rates from PLN of 35.67% and 20.78%, respectively (BPS-Statistics, 2025). These conditions indicate that the equitable distribution of electricity infrastructure remains a challenge in a number of regions.

In addition to distribution issues, rising electricity costs also hinder the public's ability to access energy optimally. According to a PLN report, the average residential electricity rate in Indonesia reached Rp1,164 per kWh in 2024, a 39% increase compared to a decade ago (Muhammad, 2025). This increase has led to a rise in household expenses, particularly for the lower-middle class. Businesses are also feeling similar impacts on their operations. BPS-Statistics (2024) reported that the amount of energy consumed by the business sector in 2024 reached 58,771.13 GWh, 1.02% increase from the previous year indicating growing demand for electricity. This trend suggests that the business sector's electricity needs continue to rise, potentially driving up production costs.

To address these issues, the government has implemented a subsidy policy to support public productivity and meet basic needs. Through allocations from the state budget (APBN), the government has channeled Rp402.4 trillion toward the priority area of energy security, with the aim of providing more targeted energy subsidies and compensation (Pradipta et al., 2026). However, this policy faces the challenge of a budget deficit amounting to 2.68% of total state revenue of Rp3,153.6 trillion. Amid rising demand for electricity and uneven distribution, there is a need for alternative financing for power generation that is more efficient, inclusive, and does not place an excessive burden on the government's fiscal resources.

Sustainable and Responsible Investment (SRI) Sukuk offers an alternative solution to meet the public's demand for electricity. SRI Sukuk, which is based on green investment, is a form of financing aimed at developing environmentally friendly infrastructure for new and renewable energy sources. Through this financing scheme,

Green SRI Sukuk is expected to provide a solution for reducing energy poverty more efficiently, in line with the potential and needs of the Indonesian people.

Responding to the aforementioned disparities in domestic energy distribution and financial affordability, this research is directed to address the following core inquiries: How does multidimensional energy poverty manifest in Indonesia, particularly in terms of its affordability dimension and its distribution across the 3T regions? How is the conceptual model of SRI Green Sukuk designed to raise and channel funds for energy infrastructure in affected regions? How are the social and economic impacts measured for the SRI Green Sukuk financing model in addressing energy poverty in Indonesia? Research Objectives To map the structural and affordability dimensions of energy poverty in Indonesia, with particular attention to the 3T regions. Second to formulate a conceptual model for SRI Green Sukuk to raise and channel funds for energy infrastructure in affected regions. And to assess the social and economic impacts of the SRI Green Sukuk financing model in addressing energy poverty in Indonesia.

LITERATURE REVIEW

Energy Poverty

Energy poverty is a condition characterized by the inability of vulnerable populations to afford and access basic energy needs, ranging from space heating to daily transportation posing a major obstacle to global sustainable development and public health (Bekele et al., 2015; Nuzaimah, 2025; Xia et al., 2026). Beyond the mere absence of physical infrastructure, this multidimensional issue is fundamentally rooted in a financial inability to secure essential daily energy services. The phenomenon of energy poverty is fundamentally driven by a combination of socioeconomic and structural factors, such as income inequality, long-term unemployment, low residential energy efficiency, and high dependence on fossil fuels (Biancardi et al., 2026). Although macroeconomic income growth is sometimes uneven, sustainable energy poverty alleviation has proven to be highly dependent on two main pillars: the expansion of energy infrastructure (such as power generation capacity) and a stable, unimpeded political governance environment (Wijethunga et al., 2026). Energy poverty is a critical issue affecting energy access for the broader public. This multidimensional and context-specific phenomenon emphasizes the need for strategic and effective solutions to address this problem.

Sustainable Responsible Investment

Sustainable and Responsible Investment (SRI) is an investment portfolio and strategy that embedding moral values, societal welfare, and Environmental, Social, and Governance (ESG) directly into the financial and investment decisions-making process (Szewczuk & Więcek-Janka, 2024; Wahab & Naim, 2023). This approach not only focuses on generating financial returns but also actively contributes to the fulfillment of essential societal projects, including environmental protection, social integration, and poverty eradication (Szewczuk & Więcek-Janka, 2024). While the concepts of SRI and ESG are closely related, they possess distinct differences, ESG serves as an objective measure examining an organization's environmental, social, and governance practices,

whereas SRI acts as a subjective measure utilized by investors to evaluate an organization's social responsibility based on ethical and moral criteria (Szewczuk & Więcek-Janka, 2024). The foundational objectives of SRI encompass a strong emphasis on sustainable development, ethical alignment, positive social impact, and responsible corporate governance (Szewczuk & Więcek-Janka, 2024). This investment paradigm also echoes the principles of Creating Shared Value (CSV), where businesses integrate social issues into their core operational strategies to generate mutually beneficial economic and societal outcomes (Wibowo & Rahardja, 2025).

From the Islamic finance perspective, the fundamental aims of SRI and the ESG concept are highly consistent with the Islamic values of *Maqasid al-Shariah* (objectives of Islamic law) and *Maslahah* (public interest) (Wahab & Naim, 2023). For instance, the environmental protection initiatives promoted by SRI fall directly under the preservation of human life, which is a primary necessity (*Dharruriyat*) in *Maqasid al-Shariah* (Wahab & Naim, 2023). Furthermore, SRI promotes socio-economic justice, avoids of harm aspect, and encourages ethical behavior in financial transactions, all of which inherently comply with Islamic principles (Wahab & Naim, 2023).

Despite this intrinsic alignment, current SRI practices within Islamic financial institutions predominantly rely on ESG criteria developed by Western organizations (Wahab & Naim, 2023). Because certain Western philosophical concepts, such as absolute freedom and specific human rights definitions differ fundamentally from Islamic teachings, there is a critical necessity to develop specific Islamic SRI based *maqasid*. (Wahab & Naim, 2023). Establishing standardized SRI-*maqasid* frameworks is essential to eliminate potential Shariah compliance issues and to provide a clear reference point for investors and policymakers (Wahab & Naim, 2023). Ultimately, the development of robust SRI-*maqasid* criteria will significantly strengthen the current offerings of Islamic capital market products, such as SRI Sukuk, and support broader socio-economic goals (Wahab & Naim, 2023).

Green Sukuk

Green Sukuk is a sharia-compliant financial instrument developed by both the government and the private sector to fund projects that care about the environment and contribute to climate change resilience (Ulang et al, 2026). The proceeds from the issuance of green sukuk are allocated to sustainable projects, such as energy efficiency, renewable energy development, the construction of environmentally friendly infrastructure, green tourism, disaster mitigation, sustainable transportation, waste management and renewable energy, natural resource management, and sustainable agriculture (Hiljannah in Ulang et al, 2026).

Compared to other sustainable financing instruments such as conventional green bonds, Green Sukuk has ethical and spiritual advantages due to its rigorous Shariah screening process and its adherence to the principles of distributive justice (Ulang, 2026). The development of green sukuk is based on the principles of *Maqasid al-Syariah*, which reflect the synergy between religious values, economic ethics, and ecological responsibility. The sharia structure of green sukuk in Indonesia generally utilizes *ijarah* (leasing), *wakalah* (agency), or *mudharabah* (profit-sharing partnership)

contracts. These three contracts are designed to avoid elements of interest, uncertainty, and speculation (Rahmawati, 2025).

Green sukuk are fully involved in addressing climate change thru the financing of green infrastructure and renewable energy projects. Thru this instrument, funds can be specifically raised for projects that meet the principles of social and responsible finance, including efforts to reduce greenhouse gas emissions and promote sustainable development. In Indonesia, green sukuk also functions as a sharia financial instrument that supports the financing of urban waste management projects in line with the Sustainable Development Goals (SDGs), by channeling funds for sustainable waste management practices. The use of green sukuk also contributes to the achievement of the SDGs, particularly SDG 13 on climate action, by mobilizing environmentally friendly investments (Rahmawati, 2025).

Maqashid Shari'ah

Maqashid al-Shari'ah refers to the objectives within Islamic law used to evaluate Islamic economic instruments, extending beyond the mere legal validity of contracts. Classical formulations identify five primary objectives, as if *Hifz al-Din* (preservation of religion), *Hifz al-Nafs* (preservation of life/self), *Hifz al-'Aql* (preservation of intellect), *Hifz al-Nasl* (preservation of lineage and family), and *Hifz al-Mal* (preservation of wealth). Arrazi (2025) argues that these five dimensions should be used as an evaluation framework for Islamic finance transactions, rather than assuming Sharia compliance is met simply because the transaction's contractual form ('aqd) is valid. He proposes integrating these five Maqashid dimensions into the design, implementation, and evaluation cycle of green sukuk, while incorporating the premise of Homo Islamicus, an economic agent whose utility function encompasses *falah* (true well-being in this world and the Hereafter) rather than mere utility maximization, thereby establishing a behavioral basis for assessing financing instruments according to their contribution to these five dimensions, rather than solely based on financial returns..

Previous Studies

A study by Supriadi et al. (2025) assert that the reconstruction of Islamic finance is currently directed toward operationalizing the dimensions of *Maqasid al-Shariah*, especially *hifz al-bi'ah* which is oriented toward environmental preservation. In this regard, green sukuk are designed to fund environmentally friendly projects like renewable energy, waste management, and natural resource conservation while still adhering to the principles of justice (*al-adl*) and balance (*tawazun*). In line with this, Desfrida et al. (2026) created the Shariah Sustainable Service Framework (SSSF), which places spirituality as a moral foundation to ensure that Islamic banking innovations truly impact poverty reduction and environmental protection, rather than merely pursuing profit.

In the aspect of implementing energy poverty alleviation programs, previous research shows a shift toward empowering local communities and integrating social finance. When green instruments are integrated modularly within microeconomic

networks, they become more effective. This is demonstrated by Supriadi et al. (2025) using micro Green Sukuk and productive zakat managed by pesantren cooperatives to provide access to clean energy for the lower-class community. In practice, this implementation includes financing the installation of solar panels in remote villages that still lack resources. This project is expected to provide electricity supply and also create new job opportunities for local skilled labor. Rosewanti & Yazid (2025) state that, although the sustainable transportation sector still holds the largest share of Green Sukuk (32.39%), its contribution to the national green infrastructure has significantly reduced CO₂ emissions and strengthened community resilience to climate change.

Although it tends to show a positive trend, previous research and projects have identified several limitations. Syafitri et al. (2025) found a low level of public understanding and minimal participation from the private sector in the issuance of this instrument, caused by a lack of education regarding the underlying concept of economic fiqh. From an operational perspective, Rosewanti & Yazid (2025) identified obstacles for investors such as the risk of greenwashing and the limited pipeline of projects that are truly bankable. Additionally, Ulang, Amanda, et al. (2026) found regulatory issues between financial authorities and Sharia authorities that are not synchronized, as well as high transaction costs for small-scale issuers, which hinder the participation of local governments or medium-sized entrepreneurs in the green financial market. Desfrida et al. (2026) also emphasize the existence of a "substantive gap" where many banking practices are still Sharia-compliant (formally compliant) but not yet fully Sharia-based in internalizing the moral values of Maqasid into their core business strategies.

RESEARCH METHODOLOGY

To evaluate how Islamic financial frameworks can bridge infrastructural deficits in marginalized areas, this study utilizes an exploratory qualitative approach. Specifically, the analysis focuses on the strategic potential of SRI Green Sukuk as a targeted mechanism for alleviating the structural energy crisis across Indonesia. The exploratory nature of this research allows for the construction of a fundamental understanding and the identification of key variables necessary for designing a novel financing model.

To achieve this, the conceptual design methodology integrates two complementary approaches, namely a structured literature synthesis and conceptual modeling. The literature synthesis draws on the principles outlined by Triandini et al. (2019) for the systematic identification, evaluation, and interpretation of prior studies, without adopting the full procedural rigor of a formal Systematic Literature Review (SLR), such as PRISMA-based screening or quantitative bibliometric reporting. This approach is used to map existing literature, identify research gaps, and benchmark global and national best practices in green financing. Subsequently, conceptual modeling serves as the foundational approach to synthesize the collected secondary data into a theoretical operational and financial framework, focusing on design and theoretical validation rather than empirical hypothesis testing.

This study relies entirely on secondary data gathered through a comprehensive desk research method. The research data comes from two sources, specifically academic literature and official documents. The academic literature comprises national and international journals indexed in Google Scholar, focusing on Islamic economics, green finance, and energy policy. Meanwhile, official documents include annual reports on Green Sukuk allocation and impact published by the Ministry of Finance (Kemenkeu) and the Financial Services Authority (OJK), as well as strategic roadmaps from the Ministry of Energy and Mineral Resources (ESDM) and statistical data from Statistics Indonesia (BPS) regarding energy accessibility in Indonesia's Frontier, Outermost, and Disadvantaged (3T) regions.

The literature search was conducted using the Publish or Perish application to query the Google Scholar database, chosen for its broad coverage of Islamic economics and energy policy scholarship. Using the keywords "SRI Green Sukuk Indonesia," "Energy Poverty Mitigation Financing," "Sukuk Conceptual Framework," and "Renewable Energy Financing 3T Regions," restricted primarily to publications from 2015–2026 to capture both foundational Maqashid-Sukuk literature and the most recent energy-poverty evidence, the search yielded an initial pool of articles that were then narrowed through a non-systematic relevance screening of titles and abstracts to those substantively addressing Islamic green financing, energy poverty measurement, or SBSN sukuk structures. This search supplements, rather than substitutes for, the conceptual-modelling component of the methodology, it is intended to ensure adequate literature coverage rather than to satisfy the procedural standards of a formal SLR. Official documents were similarly bounded to the 2020–2026 period to ensure the energy-access and fiscal data reflect Indonesia's current policy and infrastructure conditions.

Data were analyzed using qualitative descriptive and conceptual-synthesis techniques. The analysis proceeded in three stages. First, a problem-mapping stage identified the structural dimensions of energy poverty (natural/geographic, financial/affordability, social/distributional, and transition-risk dimensions) through thematic synthesis of the energy poverty literature. Second, a structural adaptation stage examined Indonesia's existing SBSN Ijarah Asset to be Leased and Wakalah structures to identify which elements could be retained, modified, or extended to accommodate community-based renewable energy financing in the 3T regions. Third, an impact-construction stage operationalized the five dimensions of Maqashid al-Shari'ah into field-measurable Key Performance Indicators (KPIs), each normalized on a 0–1 scale and aggregated into the Composite Maqashid-SRI Impact (CMSI) score through a two-level weighted aggregation method. This combination of problem-mapping, structural adaptation, and impact construction mirrors the conceptual modelling approach used in comparable studies that design green-sukuk financing models tailored to a specific developmental problem.

RESULTS AND DISCUSSIONS

The Problem of Energy Poverty in Indonesia

Indonesia's energy sector is confronted with a deceptive statistical paradox. Although the national electrification ratio is reported to have surpassed 99% (Databoks/Katadata, 2025), creating the illusion that the energy access crisis has been resolved, this aggregate figure in fact conceals a far more complex reality. Current grid expansion has stagnated because the remaining unserved population consists of the poorest communities residing in the most geographically remote locations (Indonesia Investments, 2024). This demonstrates that energy poverty can no longer be measured solely through a binary metric of connected versus unconnected. From a multidimensional perspective, many households statistically classified as "electrified" remain trapped in energy poverty, particularly due to persistently high deprivation in access to clean cooking fuel (Rizal et al., 2024).

Beyond the issue of physical accessibility, the principal constraint facing the remaining energy-poor population today is financial affordability. Various expenditure indicators show that the inability to pay for energy services has become the primary frontier of this crisis (Rizal et al., 2024). Conventional electrification metrics structurally fail to capture this reality on the ground, where the mere availability of electricity infrastructure becomes meaningless if tariffs lie far beyond a household's economic capacity (Rizal et al., 2024).

From an economic standpoint, energy poverty in Indonesia is not merely a consequence of low income, but is itself a structural constraint on productivity and growth. Household-level evidence confirms that the likelihood of a household falling into energy poverty is inversely related to spending, housing size, full-time job status, and the education level of the household head, while electricity and LPG prices have a significant positive relationship with the chance of experiencing energy poverty (Saputri et al., 2024). At the macroeconomic level, electrification exhibits a long-run bidirectional relationship with economic growth: increased electricity access drives productivity gains by enabling the use of modern machinery and equipment, expanding employment opportunities across sectors, and improving rural communities' access to health and education services (Sapthu, 2023). This productivity channel is particularly consequential for Indonesia's micro, small, and medium enterprises (MSMEs), which constitute approximately 99% of all business units in the country (Yolanda and Hasanah, 2024). Empirical evidence demonstrates that affordable electricity tariffs can raise the revenue of micro-enterprises such as craftspeople and small food vendors by up to 30% (Listrik Indonesia, 2025), while panel data analysis confirms that growth in the number of electricity subscribers, alongside access to proper sanitation and microfinance credit (Kredit Usaha Rakyat), is significantly associated with poverty reduction at the district level (Maisarah et al., 2024). Energy poverty therefore functions as a binding constraint that perpetuates a vicious cycle: insufficient and unaffordable energy suppresses household and enterprise productivity, which in turn limits the income growth needed to escape energy poverty itself.

Socially, the burden of energy poverty in Indonesia is neither evenly distributed nor gender-neutral. Disaggregated analysis of Indonesia's Multidimensional Energy Poverty Index reveals striking diversity by geographic location, gender, education level, business sector, and employment status (Rizal et al., 2024). Globally, the gendered

dimension of energy poverty has been well documented when women disproportionately bear its burden, since inadequate access to modern energy services constrains their participation in family, communal, and economic life (Shrestha et al., 2025), a pattern consistent with Indonesian household survey evidence, where the gender of the household head is positively associated with the likelihood of energy poverty (Saputri et al., 2024). The social cost extends to human capital formation: without stable energy access, schools are hindered in delivering technology-based learning, and rural communities face restricted access to health services and digital information, deepening the broader digital and educational divide between rural and urban Indonesia (Listrik Indonesia, 2025). Recent district-level evidence from Yogyakarta corroborates this shift in the nature of the problem, finding that communication and information deprivation now affects more than half of surveyed households, indicating that Indonesia's energy poverty challenge "is no longer mainly about access to electricity, but more about the ability to use energy effectively" for productivity and social participation (Darpito et al., 2025).

This residual energy poverty is also geographically and spatially fragmented rather than concentrated in a single province. Disparities in access are not confined to the 3T regions (*terdepan, terluar, tertinggal* / frontier, outermost, underdeveloped) in eastern Indonesia, but are also scattered across rural pockets in densely populated provinces, escaping detection by village-level statistics (Rahmah et al., 2026). This situation is further compounded by the distributive risk inherent in the green energy transition itself. The imperative to replace fossil energy with renewable energy carries the threat of energy price spikes that, if passed on to end consumers, could push already vulnerable populations into deeper poverty (Indonesia Investments, 2024).

Table 1. Dimensions of Residual Energy Poverty in Indonesia

Dimension	Manifestation
Physical	Electrification ratio exceeds 99%, but remaining unconnected households are in the most remote, costly-to-serve locations
Affordability	Tariffs and clean-cooking fuel costs exceed household economic capacity even where grid connection exists
Economic-Productivity	Energy poverty suppresses MSME productivity and household income, reinforcing a poverty cycle
Social-Distributional	Burden falls disproportionately on women, rural households, and those with lower education
Spatial Fragmentation	Disparities are not confined to 3T regions alone but scattered across rural pockets in dense provinces
Transition Risk	Renewable energy transition carries the risk of tariff increases that could deepen poverty

The Proposed Financing Model of SRI Green Sukuk

To answer the instrumental gap identified in the energy poverty problem, this study proposes an SRI Green Sukuk based financing model that adopts the Wakalah-Ijarah Asset to be Leased contract structure, modified from the SBSN Ijarah scheme that has been running in Indonesia (Bareksa, 2021; KNEKS, 2025) and enriched with the Composite Maqashid-SRI Impact (CMSI) mechanism as an impact verification layer that is not yet available in the conventional Green Sukuk structure. This contract structure was chosen because it is one of three innovative SBSN Ijarah variants that have been recognized regulatory in Indonesia, along with Sale and Lease Back and Al-Khadamat, and is specifically used when the underlying asset is a development project that has not yet been established (asset to be leased), making it the most suitable structure for financing new renewable energy (EBT) projects that are still under construction in the 3T region of Indonesia.

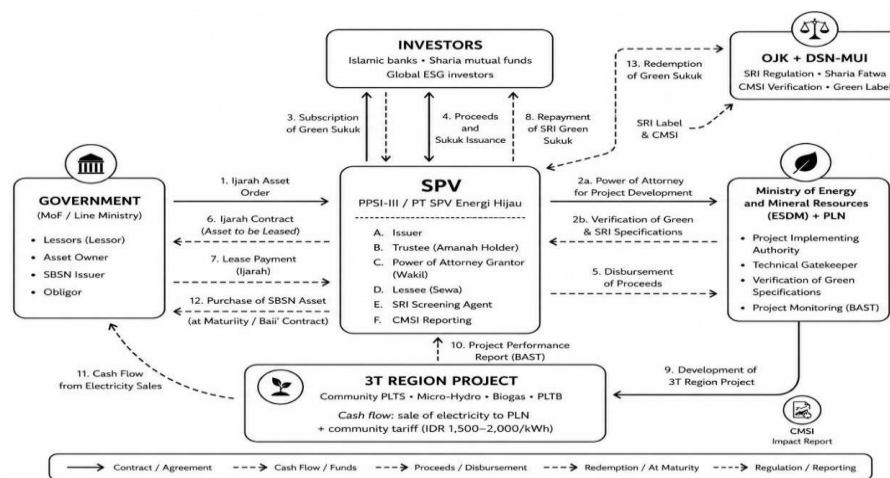


Figure 1. SRI Green Sukuk Wakalah–Ijarah Asset to be Leased Flow
Source: Author's conceptual design (2026). Steps 1–13 correspond to the operational mechanism described above.

This scheme involves six main parties who interact with each other through a series of contracts and integrated cash flows, namely the Investor (Sharia banks, Sharia mutual funds and global ESG investors), the SPV which operates through the Indonesian SBSN Issuing Company (PPSI-III) with additional functions as an SRI screening agent and CMSI reporting body, the Government which plays a dual role as lessee (mustajir) and publisher, the Ministry of Energy and Mineral Resources along with the Provincial Government and PLN as representatives of project development authorization, OJK together with DSN-MUI as the regulatory authority and sharia compliance, as well as the 3T Region EBT Project as the underlying asset itself. The operational mechanism of this scheme is delineated through a systematic, multi-stage process. It initiates with the ordering of the ijarah object, where the Government submits a formal request to the Special Purpose Vehicle (SPV) for renewable energy (EBT) projects to be developed in the 3T (Frontier, Outermost, and Disadvantaged) regions. These projects encompass communal solar power plants (PLTS), micro-hydro, biogas, or wind power plants (PLTB). This initial order establishes the type, value, and

technical specifications of the projects that will serve as the underlying asset for the sukuk issuance.

Concurrently, the SPV authorizes the Ministry of Energy and Mineral Resources (ESDM), alongside the Provincial Government and the State Electricity Company (PLN), through an agency agreement (*akad wakalah*) to execute the project's construction. As a critical prerequisite before any funds are disbursed, the SPV mandates a rigorous verification of the project's adherence to technical green specifications and SRI criteria. This additional layer, which is absent in conventional SBSN *Ijarah* structures, is specifically designed to ensure the project unequivocally merits both the "green" and "SRI" labels prior to construction. Following the verification phase, the SPV, acting as the trustee or representative of the sukuk holders, issues the SRI Green Sukuk to the investors. In alignment with the *wakalah* structure utilized in the Retail Green Sukuk ST008 issuance, investors delegate their capital to the SPV to act as a trustee for profitable investment activities. The proceeds from this issuance flow to the SPV, which subsequently channels the funds to the Ministry of ESDM, Provincial Governments, and PLN. These designated representatives then utilize the allocated capital to procure and develop the renewable energy projects according to the agreed-upon parameters (Bareksa, 2021).

Regarding the physical execution, the delegated government bodies carry out the construction of the EBT infrastructure at the specified 3T locations. Upon completion, they submit a Handover Certificate (BAST) to the SPV, serving as official documentation of the project's conclusion and confirming the asset's readiness for operation and leasing. Once the infrastructure is fully built, the SPV (acting as the lessor) and the Government (acting as the lessee) enter into an *ijarah* contract for the "asset to be leased." Under this agreement, the Government is obligated to make periodic rental payments (*ujrah*) to the SPV. The *ujrah* funds received by the SPV are then distributed to the investors as compensation (coupons) for their Green Sukuk holdings. Crucially, this return is not categorized as interest (*riba*), but rather as a legitimate yield derived from asset management via the *ijarah* mechanism on the underlying renewable energy projects. This echoes the principles established in the *wakalah*-based Savings Sukuk framework (Bareksa, 2026). Operationally, the active EBT projects generate an independent cash flow through electricity sales to PLN and/or the implementation of communal tariffs set between Rp1,500 and Rp2,000 per kWh. This specific pricing strategy is deliberately set substantially lower than the prohibitive costs of installing independent solar panels, which can range from Rp17 to Rp51 million per household guaranteeing that the generated energy remains genuinely affordable for the beneficiary communities in the 3T regions.

From a cost-recovery standpoint, a communal tariff of Rp1,500–2,000/kWh sits modestly above the average national residential rate of Rp1,164/kWh (Muhammad, 2025), reflecting the higher per-unit generation and distribution cost typical of small-scale, off-grid renewable installations in remote 3T locations. This premium is nonetheless calibrated to remain within a politically and socially acceptable range, as it represents only a fraction of the Rp17–51 million per household that 3T residents would otherwise need to self-finance for independent solar panel installation (Caandra, 2025). The premium over the PLN baseline is intended to be absorbed primarily through the *ujrah* structure and blended government subsidies rather than passed fully

onto end users, ensuring the communal tariff still functions as an affordability floor rather than a market-clearing price. Upon the maturity of the sukuk tenure, the financing cycle approaches its conclusion. The Government, functioning as the asset buyer, executes a bai' contract to repurchase the SBSN assets from the SPV, strictly complying with the standard SBSN Ijarah structure implemented in Indonesia. Ultimately, the SPV repays the principal value of the sukuk to the investors, thereby fully closing the comprehensive financing cycle.

The Composite Maqashid SRI-Impact (CMSI) Mechanism

What fundamentally differentiates this model from the conventional SBSN Ijarah structure is the layer of regulation and impact reporting that runs parallel throughout the financing cycle. Rather than confining OJK and DSN-MUI to the issuance of sharia-compliance fatwas and conformity statements alone, as has been practiced through DSN-MUI Fatwa No. 95/DSN-MUI/VII/2014 concerning SBSN Wakalah and the Syariah Conformity Statements issued for each series of Savings Sukuk (Bareksa, 2026) the proposed model assigns both authorities a second, substantive task: verifying the project's SRI label and its Composite Maqashid-SRI Impact (CMSI) score, generated through the CMSI Impact Report that the SPV is mandated to produce in its capacity as reporting body.

The CMSI operationalizes this verification through a two-level weighted aggregation, in which a project's composite score is calculated as:

$$CMSI_i = \sum_{i=1-5} (w_i \times S_i)$$

where each dimension score S_i derives from a set of field-measurable Key Performance Indicators (KPIs) normalized on a 0–1 scale.

Table 2. The Five Dimensions of the CMSI

Maqashid Dimension	Weights	Illustrative KPIs
Hifz al-Nafs (life)	25%	Household electrification rate, energy-related infant mortality rate
Hifz al-'Aql (intellect)	20%	Children's evening study hours; school electrification rate
Hifz al-Mal (wealth)	25%	Household energy expenditure savings, energy-cost-to-income ratio
Hifz al-Nasl (lineage)	15%	Village lighting coverage, household food security indicators
Hifz al-Din (religion)	15%	Electrified mosques and pesantren, pesantren renewable-energy adoption, DSN-MUI contract compliance score

The weighting structure reflects the classical Maqashid hierarchy of priorities (darūriyyāt, ḥājīyyāt, and taḥsīniyyāt), Hifz al-Nafs and Hifz al-Mal receive the highest weight (25% each) as the most immediate objectives addressed by energy poverty alleviation, physical survival, and household economic capacity while Hifz al-'Aql is weighted at 20% as a secondary enabler of human capital formation, and Hifz al-Nasl and Hifz al-Din are each weighted at 15% as complementary dimensions positioned further from the immediate problem. This structure is illustrative rather than empirically derived; the model anticipates that DSN-MUI and OJK would formally calibrate these weights through expert consensus (e.g., an Analytic Hierarchy Process or Delphi-based approach) prior to regulatory adoption. Critically, a project is only eligible for joint Green Sukuk-SRI labelling if its composite CMSI score reaches a minimum threshold of 0.65, a design choice that prevents a project from compensating for weak performance in one dimension, particularly Hifz al-Mal, with strong performance in another, thereby operationalizing the principle that a transaction failing on substantive welfare grounds cannot be considered fully sharia-compliant merely by satisfying contractual form.

This mechanism directly addresses the gap identified by Arrazi (2025), where existing Green Sukuk studies have focused predominantly on macroeconomic outcomes and SDG contribution, while the depth of each sukuk's structural alignment with sharia objectives such as hifz al-nafs, hifz al-mal, and hifz al-nasl has remained comparatively underexplored. By integrating this single, quantifiable, and independently verifiable index across the project lifecycle, the proposed model repositions SRI Green Sukuk beyond a "green-labeled" fiscal instrument, operationalizing what has so far remained a qualitative, case-by-case shari'ah-board judgment into a concrete, replicable measurement instrument.

Problems and Solutions in Implementing the Integrated SRI Green Sukuk

Drawing on existing data sources and empirical practices, this study identifies various challenges frequently encountered in the implementation of SRI Green Sukuk. Utilizing a problem-solution mapping framework common in Islamic social finance literature, potential implementation obstacles are classified into five dimensions, specifically management, human resources, government involvement, institutional infrastructure, and stakeholder outreach. To address these challenges, a series of strategic solutions is formulated for each dimension, aiming to strengthen the long-term viability and effectiveness of SRI Green Sukuk initiatives.

Table 3. Problems and Solutions for Implementing the Model in the 3T Regions

Aspect	Problems	Solutions
Management	High construction and operational risks in 3T regions, added technical complexity from CMSI verification, and the challenge of balancing affordable communal tariffs (Rp1,500–2,000/kWh) with sufficient investor returns (ujrah).	Establish a risk-mitigation framework (combining sovereign guarantees and technical due diligence), utilize digitized CMSI reporting templates to cut costs, and use blended financing (sukuk proceeds plus government subsidies) to keep tariffs affordable.

Human Resources	A lack of SPV personnel with combined expertise in Islamic capital markets, renewable energy, and Maqashid-based impact, as well as a need for new technical competencies among OJK and DSN-MUI reviewers	Implement joint training programs across agencies (OJK, DSN-MUI, KNEKS, ESDM) and recruit a specialized, certified pool of CMSI verifiers/auditors
Government	No explicit regulation mandates the CMSI threshold, institutional coordination is fragmented, and fiscal constraints limit the government's ability to lease a massive pipeline of projects simultaneously.	Issue an implementing regulation or DSN-MUI fatwa explicitly recognizing CMSI, establish a centralized inter-ministerial coordination unit (e.g., under KNEKS), and roll out projects in prioritized phases.
Institutional Infrastructure	The SPV's required expanded mandate (as an SRI screening and reporting body) exceeds its current design, and 3T regions lack the monitoring infrastructure needed to collect field-level KPI data.	Formally expand the mandate and reporting lines of the SPV (PPSI-III) and leverage existing village-level data collection systems (e.g., BPS Susenas) to lower the cost of monitoring.
Socialization	Low awareness among investors regarding the specific impact narrative of SRI Green Sukuk, and limited understanding among local 3T beneficiaries regarding communal tariff obligations.	Integrate CMSI impact reporting directly into investor-facing communications to strengthen the ESG value proposition, and conduct grassroots outreach through local governments and religious institutions (e.g., mosques, pesantren).

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study concludes that addressing Indonesia's multidimensional energy poverty in Indonesia, particularly the affordability crisis in 3T regions requires an innovative, Sharia-compliant financing approach that transcends conventional state budget subsidies. The proposed SRI Green Sukuk model, leveraging a Wakalah-Ijarah Asset to be Leased structure, offers a viable conceptual framework to mobilize private and global ESG capital for local renewable energy projects, such as communal solar and micro-hydro. By introducing the Composite Maqashid-SRI Impact (CMSI) mechanism, this model successfully bridges the gap between formal Sharia compliance and substantive socio-economic impact. It ensures that funded projects directly enhance the preservation of life, intellect, wealth, lineage, and religion before they can receive certification. Ultimately, this integrated financing scheme not only provides a fiscally sustainable solution for the government but also guarantees affordable energy access, thereby breaking the cycle of energy poverty and fostering inclusive economic growth in Indonesia's most vulnerable regions, to oriented towards achieving sustainable

development that integrates access to adequate energy with the attainment of societal well-being.

Recommendations

To successfully implement the proposed SRI Green Sukuk model, it is highly recommended that financial authorities, specifically the OJK and DSN-MUI, formally integrate the Composite Maqashid-SRI Impact (CMSI) threshold into their regulatory and Sharia-certification frameworks. Additionally, the government should establish a dedicated inter-ministerial coordination unit, potentially under KNEKS to streamline project nomination, verification, and blended-finance tariff subsidies, ensuring communal electricity remains affordable without compromising investor returns. Furthermore, future studies should focus on empirically piloting this model in a targeted 3T region to rigorously test the CMSI reporting mechanics, evaluate the real-world financial viability of communal tariffs, and refine the capacity-building programs needed for local stakeholders and SPV personnel. Future research is also recommended to empirically validate the CMSI indicators through field surveys at the pilot project sites. Given that this study remains conceptual in nature, its primary limitation lies in the current unavailability of primary field data. Therefore, follow-up research utilizing a mixed-methods approach or the implementation of a pilot project would significantly strengthen the validity and enhance the practical application of the proposed model.

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