Jurnal Magister Ekonomi Syariah, Vol. 4 No. 2 (2025) 998-1019
Published by Magister Ekonomi Syariah, Universitas Islam Negeri Sunan Kalijaga
e-ISSN 2963-9182

OPEN ACCESS

Integrating Cash Waqf Linked Green Sukuk with Contract Farming: A Strategy Model for Sustainable Agriculture

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ABSTRACT

The study proposes an integrated financing model linking Cash Waqf Linked Green Sukuk (CWLGS) with contract farming to support sustainable agricultural development in Indonesia. The model addresses structural constraints in agriculture, including limited access to productive financing and low investment in environmentally sustainable farming systems. The findings indicate that the proposed model generates dual benefits: first, it preserves the principal value of cash waqf through investment in green sukuk; second, it channels sustainable returns into agricultural financing for farmers through contract farming schemes involving Islamic financial institutions (LKS-PWU), nazhir, and state or regional-owned enterprises (BUMN/BUMD). This mechanism enables a continuous flow of socially driven and environmentally responsible financing while strengthening farmer productivity and institutional coordination. From a policy perspective, the model suggests the need for regulatory alignment between Islamic social finance governance and green investment frameworks, particularly in strengthening the role of nazhir capacity, digital monitoring systems, and cross-institutional coordination mechanisms. Key implementation challenges include institutional capacity constraints, low waqf literacy, and risk exposure in agricultural and environmental sectors. Overall, the model contributes to the development of Islamic social finance policy by offering an actionable framework that integrates waqf-based investment with sustainable agricultural financing. It also supports the achievement of the Sustainable Development Goals (SDGs), particularly in food security, poverty alleviation, and climate-resilient agriculture through a maqāṣid al-sharīʿah–based approach.

Article Info
Received: Oct 15, 2025
Revised: Apr 13, 2026
Accepted: May 16, 2026
Online: May 31, 2026

Keywords: *Cash Waqf, Contract Farming, Green Sukuk, Sustaimability*

JEL Classification:
Q14, G23, Z12

1. Introduction

The agricultural sector remains a fundamental pillar in the economic structure of developing countries, particularly in absorbing labor and sustaining livelihoods. In the classical growth model proposed by Rostow, developing economies are positioned in the "traditional society" and "preconditions for take-off" stages, where economic activities are predominantly agrarian and characterized by low productivity, limited technological adoption, and inadequate infrastructure (Todaro & Smith, 2020). This theoretical framework is relevant in explaining the structural condition of Indonesia, where agriculture continues to play a dominant role. Empirical evidence from the 2023 Agricultural Census conducted by Statistics Indonesia (BPS) shows that Indonesia had

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https://doi.org/10.14421/jmes.2025.042-08

27.3 million agricultural households, indicating that approximately 38% of household heads are engaged in farming activities (Race et al., 2022). This condition reflects a structural dependence on agriculture that is not yet accompanied by optimal productivity and modernization.

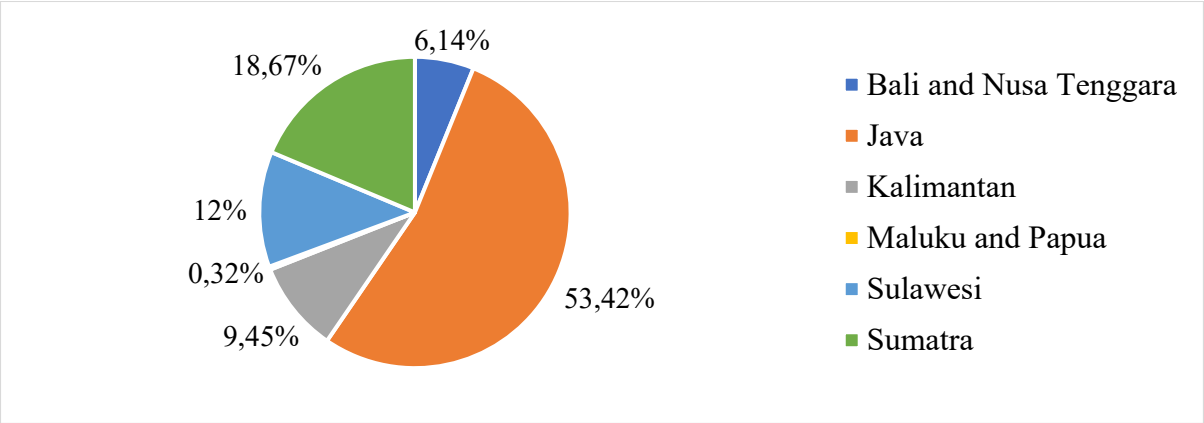

Figure 1. Percentage of Rice Mills by Island in Indonesia, 2020
Source: Processed by Author from BPS (2020)

Despite its significant role, the agricultural sector in Indonesia faces persistent structural inequalities. Data from the Rice Milling Industry Survey (PIPA) conducted by BPS in 2020 show that Java Island dominates rice milling activities, with 90,968 out of 168,789 rice milling units nationwide (BPS, 2020). This concentration indicates an imbalance in agricultural infrastructure development across regions, which potentially contributes to disparities in farmers' welfare outside Java (Wahyudi & Agustian, 2025). Furthermore, land ownership constraints remain a critical issue, as a large proportion of farmers are categorized as smallholders (*petani gurem*) with limited land size, restricting their ability to generate sufficient production surplus (Nurrohmah & Hariyanto, 2025). These structural constraints highlight that agricultural challenges in Indonesia are not merely technical but systemic in nature.

Table 1. Development of Farmers' Terms of Trade (NTP) in the 2021–2024 Period

Year	2021	2022	2023	2024
It Value	112,94	120,67	131,59	143,55
Ib Value	107,93	112,43	117,01	120,68
NTP	104,65	107,33	112,47	118,96

Source: BPS, 2021-2024

The systemic nature of these challenges is further reflected in the Farmers' Terms of Trade (Nilai Tukar Petani/NTP), which serves as a key indicator of farmers' welfare. Data from BPS for the period 2021–2024 show a gradual increase in NTP values from 104.65 in 2021 to 118.96 in 2024, alongside rising indices of prices received (It) and prices paid (Ib) by farmers (BPS, 2024). However, this aggregate improvement does not necessarily indicate uniform welfare gains across all farmer groups. Variations in NTP across regions, with the highest recorded in West Java at 113.08 and the lowest in Maluku at 92.92, demonstrate significant disparities (BPS, 2024). Moreover, differences in farming household typologies, including smallholders,

subsistence farmers, and commercial farmers, imply unequal access to resources, capital, and markets. According to Wahyudi & Agustian (2025), infrastructure inequality, price volatility, and internal production constraints are key determinants of NTP fluctuations, reinforcing the argument that farmers' welfare issues stem from deeper structural imbalances.

In addition to structural and welfare disparities, limited access to sustainable financing remains a major constraint in the agricultural sector. Farmers, particularly smallholders, often face difficulties in obtaining affordable and accessible financing to support production, adopt modern technology, and mitigate risks. While the government has implemented various support programs, financing gaps persist due to limited fiscal capacity and inefficiencies in distribution mechanisms. This condition indicates that existing financial systems have not fully addressed the needs of the agricultural sector, especially in promoting equitable and sustainable development. Consequently, the agricultural sector requires alternative financing mechanisms that can overcome structural barriers and ensure long-term sustainability.

From the perspective of Islamic social finance, Indonesia possesses significant potential to address these challenges through instruments such as waqf. With a Muslim population reaching 246,386,967 people or approximately 87% of the total population in 2023, the country has a substantial capacity to mobilize social funds (Ministry of Religious Affairs, 2022). Previous studies have highlighted that waqf can function as a productive financing instrument that supports social and economic development (Hasanah & Susetyo, 2020). In parallel, the development of green sukuk since its introduction by the Ministry of Finance in 2018 has demonstrated the potential of sharia-based instruments in financing environmentally sustainable projects, with a subscription value reaching IDR 1.46 trillion in the ST006 series (Ma'rifat et al., 2024). Additionally, the Cash Waqf Linked Sukuk (CWLS) has shown promising results, generating returns of IDR 27.69 billion in 2023, indicating its effectiveness in integrating social finance and investment mechanisms.

However, despite these developments, existing studies tend to examine these instruments in isolation. Research on CWLS primarily focuses on its role in social financing and public welfare (Rahayu & Agustianto, 2020; Rahman et al., 2021), while studies on green sukuk emphasize environmental financing and climate-related projects (Rohmah et al., 2020). Meanwhile, contract farming has been widely discussed as a mechanism for improving agricultural productivity and market access for farmers (Ranti et al., 2024; Ton et al., 2018). Although these strands of literature provide valuable insights, there is still limited research that integrates Islamic social finance instruments with agricultural production systems in a comprehensive framework. In particular, the linkage between waqf-based financing, green investment instruments, and contract farming mechanisms remains underexplored, creating a gap in both theoretical and practical contributions.

Based on these gaps, this study aims to analyze the integration potential between Islamic social finance and agricultural systems within the context of sustainable development. Specifically, this paper examines the concept of Cash Waqf Linked Green Sukuk (CWLGS) and explores its relevance in addressing structural challenges in the agricultural sector. Furthermore, the study investigates how such integration can be conceptualized within existing institutional and financial frameworks. Finally,

the discussion is extended to evaluate the implications of this integration from the perspective of *maqāṣid al-sharī'ah*, particularly in promoting justice, welfare, and sustainability in Islamic economics.

2. Literature Review

2.1. Cash Waqf Linked Sukuk

Cash Waqf Linked Sukuk (CWLS) is an Islamic social finance instrument that integrates both commercial and social financing elements within a single framework. According to Bank Indonesia, CWLS aims to mobilize social funds in the form of cash waqf through Sharia-compliant investment instruments, namely sukuk, thereby creating a linkage between philanthropy and state financing. CWLS involves collaboration between the Indonesian Waqf Board (BWI) as the nazir and Islamic banks as fund collectors, with funds subsequently managed by the Ministry of Finance and allocated for social and economic empowerment programs. This structure reflects a hybrid financing model that combines voluntary social contributions with formal financial market instruments.

From an academic perspective, CWLS has been widely discussed as a mechanism to enhance the productivity of waqf assets and strengthen Islamic social finance governance. Rahman et al. (2021) argue that CWLS contributes to improving the efficiency of waqf fund distribution by channeling resources into structured investment schemes rather than conventional charitable uses. Similarly, Rahayu & Agustianto (2020) emphasize that CWLS provides dual returns, both financial and spiritual, positioning it as a sustainable financing instrument that aligns economic incentives with religious values. However, existing studies tend to focus primarily on the social impact and governance aspects of CWLS, with limited exploration of its integration into specific productive sectors such as agriculture. This indicates that while CWLS is theoretically robust, its application in sectoral development remains underdeveloped.

2.2. Green Sukuk

Green Sukuk is a Sharia-compliant financial instrument specifically designed to finance environmentally sustainable projects, reflecting the growing convergence between Islamic finance and global green finance initiatives. The emergence of Green Sukuk is closely linked to the increasing global emphasis on climate change mitigation and sustainable development, where financial instruments are expected to contribute to environmental objectives. Through its issuance, funds are allocated to projects such as renewable energy, water management, energy efficiency, and carbon emission reduction, thereby embedding environmental accountability within financial systems. The first issuance in Malaysia under the Sustainable and Responsible Investment (SRI) Sukuk framework in 2015 marked a significant milestone in integrating Islamic finance with sustainability agendas (Rohmah et al., 2020).

In the Indonesian context, Green Sukuk has developed as a strategic fiscal instrument since its first issuance in 2018, supporting national commitments to reduce greenhouse gas (GHG) emissions. According to UNDP data (2018), Indonesia's Green Sukuk issuance reached approximately USD 3.24 billion by 2020, highlighting its growing role in financing sustainable development. Academic discussions emphasize

that Green Sukuk not only functions as a financing tool but also as a policy instrument that aligns fiscal policy with environmental objectives. However, similar to CWLS, the literature largely examines Green Sukuk from a macro-financing perspective, focusing on environmental impact and government policy, with limited attention to its integration with grassroots economic sectors such as agriculture. This creates a gap in understanding how green financing instruments can directly influence sectoral productivity and community welfare.

2.3. Contract Farming

Contract farming is widely recognized as an institutional arrangement that links farmers with agribusiness firms through formal agreements governing production and marketing processes. Ton et al. (2018) highlight that contract farming serves as a coordination mechanism that reduces market uncertainty by specifying production standards, pricing, and delivery arrangements prior to cultivation. This system enables farmers to access inputs, technical assistance, and guaranteed markets, while companies secure a stable supply of agricultural commodities. As such, contract farming is often viewed as a tool to improve efficiency and integration within agricultural value chains.

From a theoretical standpoint, contract farming is associated with transaction cost economics and value chain coordination, where contractual arrangements reduce information asymmetry and market risks. Ranti et al. (2024) emphasize that this partnership creates mutual benefits, as farmers gain access to resources and markets, while firms ensure supply consistency and quality. However, empirical studies also point out potential challenges, including unequal bargaining power, dependency risks, and contract enforcement issues. Despite its advantages, contract farming alone may not fully address structural constraints such as limited access to financing, indicating the need for complementary financial mechanisms. Therefore, integrating contract farming with innovative financing instruments becomes a relevant area for further exploration.

2.4. Sustainable Farming

Sustainable agriculture represents the application of sustainable development principles within the agricultural sector, integrating economic, social, and environmental dimensions. According to Hammada (2024), sustainable agriculture aims to ensure long-term productivity while maintaining ecological balance and improving farmers' welfare. This concept is closely aligned with the theory of agricultural sustainability popularized by Pretty, which emphasizes the importance of environmentally sound practices, efficient resource utilization, and community-based approaches in achieving sustainable food systems. Pretty's framework highlights that sustainability in agriculture is not only about environmental preservation but also about enhancing social equity and economic viability.

In practice, sustainable agriculture involves the adoption of farming methods that minimize environmental degradation, such as soil conservation, water efficiency, and reduced chemical use. It also promotes resilience against climate change and external shocks, ensuring the continuity of agricultural production for future generations. However, achieving sustainable agriculture requires not only

technological and ecological interventions but also adequate institutional and financial support. Without sufficient financing mechanisms, farmers may face difficulties in adopting sustainable practices due to high initial costs and risks. This indicates that sustainability in agriculture is inherently linked to the availability of inclusive and innovative financing systems.

2.5. Qur'an and Hadith Foundations

The CWLGS with the contract farming system is grounded in Islamic principles that emphasize the preservation of the Earth and the environmental. Allah says:

وَلَا تُفْسِدُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا

"And do not cause corruption upon the earth after its reformation." *(Surah Al-A'raf, 7:56)*

This verse reminds humankind to manage resources wisely, prevent excessive exploitation, and maintain environmental sustainability. In the context of CWLGS, this principle is realized through the allocation of waqf funds to green projects that reduce carbon emissions, promote energy efficiency, and preserve soil and water quality. When these funds are used to finance contract farming, smallholder farmers gain access to capital, technology, and markets while maintaining agricultural ecosystems for long-term productivity.

This principle of environmental stewardship is further reinforced by the saying of the Prophet ﷺ:

مَا مِنْ مُسْلِمٍ يَغْرِسُ غَرْسًا أَوْ يَزْرَعُ زَرْعًا فَيَأْكُلُ مِنْهُ طَيْرٌ أَوْ إِنْسَانٌ أَوْ بَهِيمَةٌ إِلَّا كَانَ لَهُ بِهِ صَدَقَةٌ

"No Muslim plants a tree or sows a crop from which a bird, a person, or an animal eats, but it will be counted as charity for him." *(Narrated by al-Bukhari and Muslim)*

This hadith teaches that agricultural activities benefiting living beings are considered acts of charity, even if the farmer does not directly enjoy all of the produce. This aligns with the spirit of contract farming, which ensures agricultural outputs are efficiently distributed to society while supporting environmental preservation. Then, The integration of cash waqf and Green Sukuk financing sustains environmentally friendly agricultural initiatives, allowing the benefits to continuously flow as a form of *sadaqah jariyah* (ongoing charity). Thus, the model fulfills the objectives of sharia (maqāṣid al-sharī'ah) in safeguarding wealth (*ḥifẓ al-māl*), life (*ḥifẓ al-nafs*), and the environment (*ḥifẓ al-bi'ah*).

The existing literature on CWLS, Green Sukuk, contract farming, and sustainable agriculture demonstrates that each concept offers significant contributions within its respective domain, yet they are often studied in isolation. CWLS provides a framework for mobilizing Islamic social funds productively (Rahayu & Agustianto, 2020; Rahman et al., 2021), while Green Sukuk facilitates environmentally oriented financing at the macro level (Rohmah et al., 2020). On the other hand, contract farming addresses coordination and efficiency issues within agricultural production systems (Ranti et al., 2024; Ton et al., 2018), and sustainable agriculture emphasizes long-term

ecological and socio-economic balance (Hammada, 2024). Despite these contributions, there remains a lack of integrated frameworks that connect social finance, green investment, and agricultural production systems into a unified model.

This fragmentation in the literature highlights a critical gap, particularly in linking financing mechanisms with on-the-ground agricultural practices. The absence of integration limits the potential impact of each approach in addressing complex agricultural challenges, such as financing constraints, environmental sustainability, and farmer welfare simultaneously. Therefore, there is a need for a comprehensive framework that bridges these four pillars into a cohesive model. By synthesizing Islamic social finance instruments with green financing and contract-based agricultural systems, this study seeks to contribute to both theoretical development and practical policy innovation in sustainable agriculture.

3. Research Method

This study employs a descriptive qualitative approach to obtain a comprehensive understanding of the Cash Waqf Linked Green Sukuk (CWLGS) model and its potential integration with the contract farming system. The qualitative approach is considered the most suitable because it allows an in-depth exploration of social, institutional, and financial dynamics within a real-world context. According to Syafrida Hafni (2021), qualitative research focuses on interpreting social phenomena through descriptive analysis, while Sugiyono (2021) emphasizes that it is grounded in philosophical inquiry aimed at understanding meaning within natural settings. In this context, the qualitative method is applied to describe the CWLGS concept, formulate an integrated model with contract farming, identify potential, challenges, and strategies, and analyze its alignment with *maqāṣid al-sharī'ah* principles.

The object of this research is the integration model between CWLGS and contract farming, designed as a strategic framework for sustainable Islamic finance and agricultural empowerment in Indonesia. The ultimate objective is to develop a model that can serve as a policy reference for enhancing inclusive financing mechanisms through the synergy of waqf, green sukuk, and agricultural sustainability. Data were collected primarily through an extensive literature review, which involves a systematic examination of relevant scientific studies, institutional reports, and official government documents.

The data analysis process follows a descriptive and interpretative pattern through three integrated techniques. First, thematic analysis is used to identify and classify recurring themes that emerge from the literature, such as sustainable financial innovation, stakeholder collaboration, agricultural empowerment, and Islamic economic values. This method allows researchers to systematically uncover the relationships among these themes and construct a coherent analytical framework. Second, a meta-synthesis approach is employed to integrate findings from previous studies into a unified conceptual model. Through this synthesis, the study constructs a new narrative that combines theoretical and empirical insights from multiple sources, thereby enriching the conceptual depth of the CWLGS–contract farming integration.

In addition, the study incorporates several analytical frameworks to strengthen interpretation. The stakeholder mapping based on the Triple Helix model is applied to examine the interaction between government, public-academia, and industry in facilitating institutional collaboration and innovation. The Business Model Canvas (BMC) is used to structure the key components of the CWLGS–contract farming model, including value propositions, key activities, financial flows, and partnership networks. Lastly, SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) is utilized to evaluate internal and external factors influencing the model's feasibility and sustainability. Through the integration of these methods this study seeks to construct a comprehensive and adaptive framework for developing a sharia-based green financial model that supports sustainable agricultural systems and aligns with national development goals.

4. Result and Discussion

4.1. Cash Waqf Linked Green Sukuk

Cash Waqf Linked Green Sukuk (CWLGS) is an innovative Islamic financial instrument that integrates the concept of cash waqf (endowment funds) with Green Sukuk to support the financing of sustainability-oriented projects. The term "linked" in CWLGS illustrates the direct connection between the cash waqf funds collected through Islamic Financial Institutions Authorized to Receive Cash Waqf (Lembaga Keuangan Syariah Penerima Wakaf Uang or LKS-PWU) and investments in Green Sukuk instruments. Consequently, the benefits generated from these investments can be redistributed to fund social and environmental programs (Musari, 2022).

From a legal standpoint, the development of CWLGS is grounded in Law No. 41 of 2004 on Waqf, the Minister of Finance Regulations governing the issuance of Sovereign Sukuk (SBSN), and Fatwa No. 2/DSN-MUI/IV/2002 on Cash Waqf and Sharia Investment Guidelines (Qanita, 2023). The underlying Sharia principles mandate that fund management must be carried out with integrity, transparency, and in accordance with Islamic jurisprudence (*fiqh*), particularly by avoiding elements of *riba* (interest), *gharar* (uncertainty), and *maysir* (speculation) (Musari, 2022). In practice, LKS-PWU is responsible for processing the waqf declaration (ikrar wakaf), issuing cash waqf certificates, and channeling the collected funds into Green Sukuk instruments (Qanita, 2023). This approach reflects the Islamic concept of ownership, where Allah SWT is the absolute owner of all things, and humans act merely as trustees responsible for managing and utilizing wealth sustainably for the collective good.

The strategic objective of issuing CWLGS is to optimize the potential of Islamic philanthropy as a sustainable financing source that contributes to achieving the Sustainable Development Goals (SDGs). This instrument is expected to finance initiatives such as renewable energy development, environmental conservation, and sustainable agricultural management (Salam & Iskandar, 2021). Through the synergy between the philanthropic sector, Islamic financial instruments, and the green development agenda, CWLGS presents an innovative financing model that generates dual benefits, financial returns for nazir (waqf managers) and social-environmental value for the broader community.

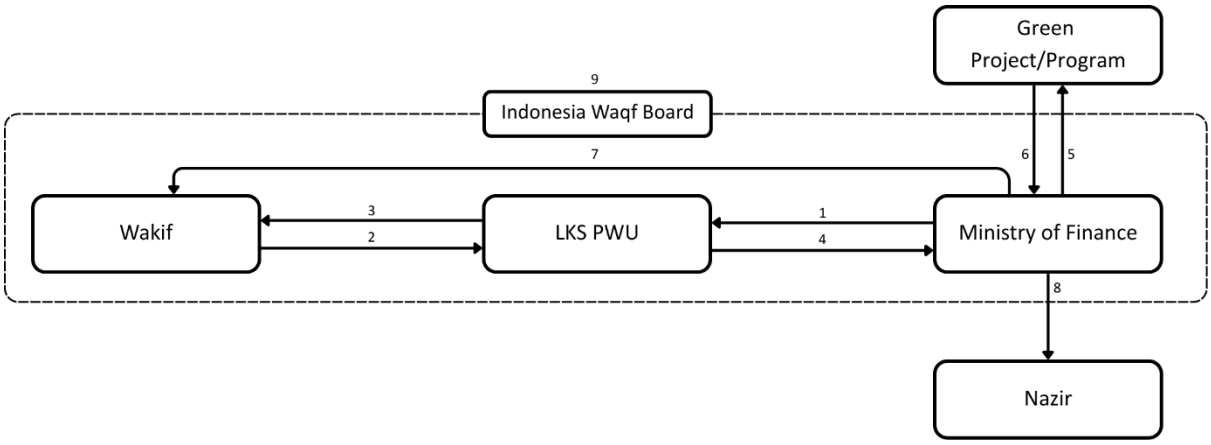

Figure 2. Cash Waqf Linked Green Sukuk (CWLGS) Mechanism
Source: Processed by Author (2025)

From Figure 2 above, the mechanism and funding flow of Cash Waqf Linked Green Sukuk (CWLGS) can be explained as an integrated process involving multiple institutional actors. The process begins with (1) the Ministry of Finance appointing distribution partners for retail CWLGS, particularly Islamic Financial Institutions Authorized to Receive Cash Waqf (LKS-PWU), which serve as intermediaries in collecting waqf funds. Subsequently, (2) the wakif (waqf donor) completes the Waqf Pledge Deed (Akta Ikrar Wakaf/AIW) along with the CWLGS subscription form and submits the cash waqf through the appointed institution. In response, (3) the LKS-PWU issues both the Waqf Pledge Deed (AIW) and the Cash Waqf Certificate (Sertifikat Wakaf Uang/SWU) as formal proof of participation in the scheme.

Following the collection process, (4) the LKS-PWU forwards and processes the CWLGS subscription with the Ministry of Finance under the ownership of the wakif. The Ministry of Finance then (5) allocates the accumulated funds to finance environmentally oriented projects or programs in line with the principles of Green Sukuk. These projects subsequently (6) generate returns or benefits, which are managed centrally by the Ministry of Finance to ensure compliance with both financial and sharia principles. At the end of the investment period, (7) the Ministry of Finance returns the principal value of the CWLGS to the wakif, thereby preserving the core principle of waqf, namely the perpetuity of the principal fund.

In addition to the return of the principal, (8) the Ministry of Finance distributes periodic coupons or investment returns to the appointed nazir (waqf manager), who is responsible for managing and channeling these benefits for social and productive purposes. Finally, (9) all these processes are conducted under the supervision of the Indonesian Waqf Board (BWI), which acts as the regulatory authority ensuring that all activities comply with established waqf governance and sharia regulations. This integrated mechanism reflects a coordinated system that connects philanthropic contributions, state-managed investment instruments, and socially oriented fund distribution within a single financial framework.

This process forms an integrated system that defines CWLGS as a unique financial instrument. Its characteristics reflect a synergy between Islamic philanthropy, Sharia financial instruments, and sustainable financing. First, in terms of funding source, CWLGS mobilizes cash waqf through LKS-PWU, which is

authorized by the Indonesian Waqf Board (BWI). The principal amount of cash waqf must remain intact (perpetuity of principal), while the returns from investments are used to finance social, humanitarian, and environmental programs (Qanita, 2023).

Second, in terms of investment instruments, CWLGS utilizes Green Sukuk, a Sharia-compliant sovereign bond (SBSN) labeled as "green." All funds raised from Green Sukuk issuance are exclusively allocated to projects meeting green financing criteria, such as renewable energy development, energy efficiency, clean water management, and climate change mitigation (Qanita, 2023). The term "linked" signifies a direct connection between the cash waqf funds and the green sukuk instrument, ensuring that financial returns and socio-environmental impacts are tied together in a single mechanism (Musari, 2022).

Third, from a governance perspective, CWLGS operates based on the Islamic trusteeship principle, where the nazir acts as a trustee responsible for fund placement, monitoring investment performance, and distributing the benefits (Salam & Iskandar, 2021). This governance requires transparency, accountability, and periodic reporting to the wakif and other stakeholders, in accordance with national regulations and the DSN-MUI fatwas on cash waqf and Sharia investment. However, there remains a limited number of qualified nazir capable of managing CWLGS returns effectively, a challenge similar to that faced by CWLS schemes.

CWLGS offers dual benefits, economic returns and social-environmental impacts. It serves as an alternative, Sharia-based, and cost-effective public financing instrument, while also broadening the investor base through public philanthropic participation (Musari, 2022). The proceeds from Green Sukuk issuance finance productive green projects, while the waqf principal remains preserved, creating a sustainable source of financing (Qanita, 2023). Furthermore, CWLGS enhances Islamic financial inclusion, as it allows ordinary citizens, even with small amounts, to participate in national development financing. Thus, CWLGS can be positioned as a strategic instrument bridging economic interests, environmental sustainability, and Islamic values within an integrated framework.

Despite the established mechanism of Cash Waqf Linked Sukuk (CWLS) in previous studies, the proposed Cash Waqf Linked Green Sukuk (CWLGS) model in this study introduces a distinct conceptual extension by explicitly integrating green investment instruments with agricultural production systems. Unlike conventional CWLS frameworks that primarily focus on social financing and public welfare distribution, this model links the returns generated from Green Sukuk directly to a structured contract farming scheme. This integration creates a value chain approach in which financing, production, and market access are interconnected within a single system. Therefore, the proposed model does not merely function as a financing instrument but also as a mechanism for transforming agricultural productivity and sustainability. This positioning highlights the novelty of the model in bridging Islamic social finance, green investment, and agricultural institutional systems.

4.2. Integration Model of CWLGS with the Contract Farming System

The integration model between the Cash Waqf Linked Green Sukuk (CWLGS) instrument and the contract farming system is developed as a strategy to achieve sustainable agriculture. This integration model is designed to optimize the role of cash

waqf funds invested in green sukuk, while ensuring the active involvement of farmers through a contract scheme that guarantees the sustainability of agricultural production. The discussion of this integration model is divided into three main parts: the implementation mechanism of the model, stakeholder mapping, and the design of the business model canvas as an operational and business value framework of this model.

4.2.1. Mechanism and Flow

The integration mechanism between the Cash Waqf Linked Green Sukuk (CWLGS) and the contract farming system illustrates the process of mobilizing and managing cash waqf funds through green sukuk to support sustainable agricultural programs. The workflow includes sukuk issuance, investment allocation to green agricultural projects, and the implementation of farming contracts that prioritize sustainability principles. The synergy between Islamic financial instruments and partnership schemes involving state-owned enterprises (SOEs) or regionally owned enterprises (ROEs) with farmers serves as the key to ensuring funding effectiveness and optimizing environmentally friendly and sustainable agricultural outcomes. An in-depth analysis of this mechanism is fundamental to understanding the interconnection between financial and operational aspects in realizing sustainable agriculture.

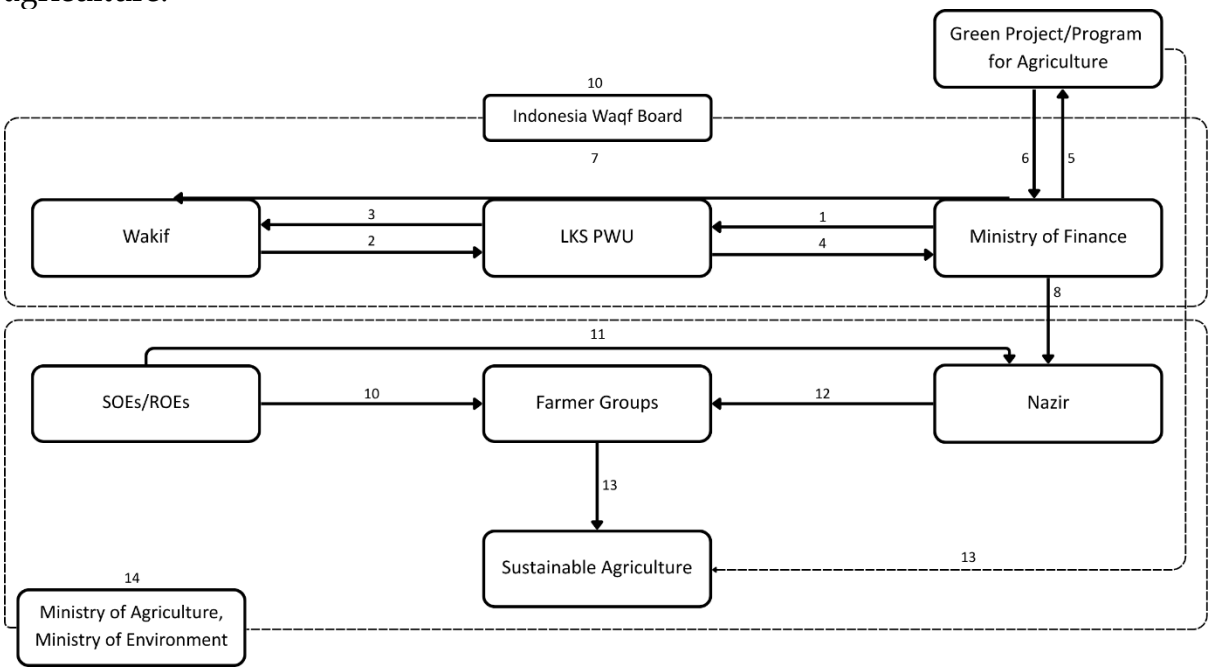

Figure 3. Mechanism and Flow of CWLGS and Contract Farming
Source: Processed by Author (2025)

As in most integration models, this mechanism merges two distinct concepts into one cohesive framework. Based on the flow above, points (1) through (9) represent the core process of the Cash Waqf Linked Green Sukuk (CWLGS), as previously discussed, while the contract farming system is incorporated as an extension of this financial mechanism. The integration aims to create a continuous linkage between financing, agricultural production, and sustainability outcomes. The overall process can therefore be understood as a sequential and interconnected system involving multiple stakeholders and stages.

The mechanism begins with (1) the Ministry of Finance appointing retail CWLGS distribution partners, particularly Islamic Financial Institutions Receiving Cash Waqf (LKS-PWU), which act as intermediaries in collecting funds. Subsequently, (2) the wakif completes the Waqf Pledge Deed (AIW) and the CWLGS subscription form before submitting the cash waqf through the appointed institution. In response, (3) the LKS-PWU issues and delivers the Waqf Pledge Deed (AIW) and the Cash Waqf Certificate (SWU) as formal documentation of the transaction. Following this, (4) the LKS-PWU processes the CWLGS submission with the Ministry of Finance under the wakif's ownership.

After the funds are collected, (5) the Ministry of Finance allocates them to finance green agricultural projects or programs aligned with sustainability principles. These projects then (6) generate economic and social value, which is managed by the Ministry of Finance in accordance with financial and sharia governance standards. At the end of the investment period, (7) the Ministry of Finance returns the nominal value of the CWLGS to the wakif, ensuring the preservation of the waqf principal. In addition, (8) periodic returns or coupons are distributed to the appointed nazir (waqf manager), while (9) all these financial processes remain under the supervision of the Indonesian Waqf Board (BWI) as the regulatory authority.

The integration with the contract farming system begins with (10) State-Owned Enterprises (SOEs) or Regional-Owned Enterprises (ROEs) identifying farmer groups that meet sustainability and operational criteria to participate in the program. Subsequently, (11) these enterprises coordinate with the nazir to establish agreements with selected farmer groups under predefined contract farming arrangements. Through this mechanism, (12) the nazir channels the returns generated from CWLGS into productive agricultural support, including capital assistance, seeds, equipment, and other necessary inputs. As a result, (13) the simultaneous implementation of green agricultural projects and contract farming schemes fosters the development of sustainable agriculture by improving productivity, efficiency, and environmental outcomes.

Finally, (14) the entire integrated process is conducted under the supervision and coordination of the Ministry of Agriculture and the Ministry of Environment and Forestry (MoEF), ensuring that both agricultural and environmental standards are maintained. This comprehensive mechanism illustrates how financial innovation and agricultural systems can be interconnected within a structured institutional framework. However, the effectiveness of this integration is highly dependent on coordination among stakeholders, governance clarity, and the operational readiness of participating farmer groups.

However, despite its conceptual strengths, the integration model also presents inherent trade-offs between financial and social objectives. A potential conflict may arise when the nazir, as the manager of waqf funds, aims to optimize financial returns from Green Sukuk investments, while the model simultaneously seeks to support marginalized farmers who may have lower productivity and higher risk profiles. In such conditions, the allocation of funds may become selective, prioritizing farmers or commodities with higher economic returns rather than those with the greatest social need. This creates a dilemma between efficiency and inclusivity, where maximizing financial sustainability may limit the model's ability to achieve equitable agricultural

empowerment. Therefore, balancing these competing objectives becomes a critical challenge in the practical implementation of the CWLGS–contract farming model.

4.2.2. Stakeholder Mapping

The stakeholder mapping aims to identify and categorize the key actors involved in implementing the integration of the Cash Waqf Linked Green Sukuk (CWLGS) scheme with the contract farming system. Stakeholders are grouped into three main categories: government, private sector, and community. Each plays a strategic role in managing waqf funds, promoting economic empowerment, developing business flows and ecosystems, and distributing assistance to farmers. This mapping is expected to strengthen coordination and enhance the effectiveness of cross-sector collaboration in achieving the program's objectives.

Table 2. Stakeholder Mapping

No.	Stakeholder	Role
	Government/Regulator	
1.	Ministry of Finance	Issues Retail CWLS, manages the distribution and returns of waqf proceeds, and repays the principal value at maturity.
2.	Ministry of Agriculture	Oversees the implementation of sustainable agriculture programs and contract farming.
3.	Ministry of Environment and Forestry	Monitors environmental compliance in green agricultural projects.
4.	Indonesian Waqf Board (BWI)	Regulates and supervises the implementation of cash waqf in accordance with sharia principles.
	Private/Industry	
1.	Islamic Financial Institution Receiving Cash Waqf (LKS-PWU)	Acts as a distribution partner for Retail CWLS: administers the Waqf Pledge Deed (AIW), Cash Waqf Certificate (SWU), and channels waqf funds to the Ministry of Finance.
2.	State-Owned/Regional-Owned Enterprises	Establishes contract farming agreements with farmers based on sustainability criteria and coordinates with the Nazir.
	Public/Academia	
1.	Wakif (Waqf Donor)	Contributes cash waqf funds and receives certificates and sukuk repayments.
2.	Nazir (Waqf Manager)	Manages waqf funds and distributes financial or material support to partner farmers.
3.	Farmer Groups	Implements contract farming and receives assistance from the Nazir.

Source: Processed by Author (2025)

In addition, the governance structure of the proposed model involves multiple stakeholders, including the Ministry of Finance, BWI, LKS-PWU, nazir, state-owned or regional-owned enterprises, and farmer groups, which creates a complex institutional arrangement. While this multi-actor collaboration strengthens the model's inclusiveness, it also introduces potential risks related to bureaucratic inefficiencies, coordination failure, and overlapping authority. The long chain of stakeholders may slow decision-making processes and reduce the responsiveness of the system in addressing field-level challenges. Furthermore, the issue of accountability becomes critical, particularly in determining which institution bears responsibility in the event of project failure or financial loss. Without a clearly defined

governance structure and accountability mechanism, the effectiveness of the model may be compromised despite its strong conceptual foundation.

4.2.3. Business Model Canvas

The customer segments of this model consist of four main groups, namely wakif (donors) as providers of waqf funds, the government as both issuer and regulator of sukuk, farmer groups as partners and direct beneficiaries, and the broader community that benefits from the social and economic outcomes generated. In line with these segments, the value proposition offered by the model emphasizes Sharia-compliant, secure, and sustainable financing that integrates economic, social, and environmental objectives. The model ensures the preservation of the waqf principal while generating continuous benefits through structured investment mechanisms, thereby supporting the achievement of the Sustainable Development Goals (SDGs). This combination of financial security and social impact creates a distinctive value that differentiates the model from conventional financing schemes.

Table 3. Business Model Canvas

<table>
<tr><td rowspan="2">Key Partnerships:
Ministry of Finance, Ministry of Agriculture, Ministry of Environment and Forestry, BWI, LKS PWU, SOEs/ROEs, Nazir, Farmers</td><td>Key Activities:
Fund collection, investment, distribution of returns, monitoring</td><td rowspan="2">Value Propositions:
Sustainable Islamic financing, economic–social–environmental benefits, returns for nazir, support for SDGs</td><td>Customer Relationships:
Trust, transparency, education, collaboration</td><td rowspan="2">Customer Segments:
Wakif (donors), government, farmer groups, general public</td></tr>
<tr><td>Key Resources:
Cash waqf funds, Green Sukuk, LKS-PWU, nazir, farmers, regulation</td><td>Channels:
LKS-PWU, digital platforms, public campaigns</td></tr>
<tr><td colspan="3">Cost Structure:
Administration, outreach, project management, supervision, operations</td><td colspan="2">Revenue Streams:
Green Sukuk returns, profits from agricultural production</td></tr>
</table>

Source: Processed by Author (2025)

In terms of delivery, the channels are primarily facilitated through Islamic Financial Institutions for Cash Waqf (LKS-PWU) authorized by the Indonesian Waqf Board (BWI), which act as official intermediaries in collecting and managing funds. These channels are further supported by digital platforms that enable efficient transactions, transparent reporting, and broader accessibility for participants. The customer relationships within this model are built upon trust, accountability, and long-term engagement, particularly through periodic reporting to wakif and continuous capacity-building programs for farmers. Additionally, collaboration across institutions strengthens the sustainability of relationships by ensuring that all stakeholders remain actively involved in the implementation process.

From a financial perspective, the revenue streams are primarily derived from returns or coupons generated by Green Sukuk investments, which are subsequently allocated to support agricultural programs. Additional value may also be generated

from contract farming activities, providing economic benefits for both farmers and nazir. To support these mechanisms, the model relies on several key resources, including cash waqf funds, Green Sukuk instruments as investment vehicles, competent LKS-PWU and nazir institutions, as well as farmer groups that meet sustainability and operational criteria. Furthermore, regulatory support and fatwas from the Indonesian Ulema Council (MUI) play a crucial role in ensuring the legitimacy and continuity of the model within a Sharia framework.

Operationally, the key activities of the model include the collection of waqf funds, their investment into Green Sukuk instruments, the distribution of returns to support sustainable agricultural programs, and continuous monitoring and evaluation of project implementation. These activities are supported through extensive key partnerships, involving the Ministry of Finance (MoF) as the sukuk issuer, the Ministry of Agriculture (MoA) and the Ministry of Environment and Forestry (MoEF) for technical and environmental oversight, the Indonesian Waqf Board (BWI) for regulatory supervision, LKS-PWU as distribution channels, SOEs/ROEs as implementers of contract farming, nazir as fund managers, and farmers as primary executors in the field. Lastly, the cost structure includes administrative expenses of LKS-PWU, promotion and education related to productive waqf, agricultural project management, regulatory supervision, and operational support for farmers provided by SOEs/ROEs and nazir. These interconnected components illustrate a comprehensive business model that integrates financial, institutional, and operational dimensions within a single sustainable framework.

From a technical perspective, the feasibility of implementing contract farming within the CWLGS framework is not universally applicable across all agricultural contexts. Not all commodities are suitable for contract farming arrangements, as such schemes typically require stable demand, standardized quality, and predictable production cycles. Similarly, regional disparities in infrastructure, market access, and farmer capacity may limit the applicability of the model in certain areas. Therefore, careful selection criteria are required, including the identification of appropriate commodities, regions with adequate supporting infrastructure, and farmer groups with sufficient organizational readiness. Without these considerations, the implementation of the model may face significant operational constraints, reducing its overall effectiveness in achieving sustainable agricultural outcomes. This condition is particularly relevant in the context of countries such as Indonesia, which, alongside Malaysia, has been recognized as having strong academic capacity as well as proactive national policy support, regulatory frameworks, and institutional backing in integrating Islamic finance with green finance (Dupi & Baloch, 2025).

4.3. Challenges, Opportunities, and Strategies

In the implementation of a policy plan, identifying opportunities and challenges is a crucial step. Such identification serves to formulate implementation strategies that optimize available opportunities while addressing existing challenges. The challenges identified in the implementation of the CWLGS–contract farming model, including governance complexity, potential conflicts of interest, and technical feasibility constraints, are further examined through a structured SWOT analysis. This approach allows for a systematic evaluation of both internal and external factors that may

influence the success of the model. Furthermore, the SWOT framework is utilized to design appropriate strategies for implementing the policy.

Internal and external analyses in the development of a sustainable economy are naturally classified into two (2) main elements. First, the internal element, which represents an integral component that can generally be controlled by the stakeholders involved. All components within the internal element can be designed, implemented, and supervised by internal stakeholders to ensure the achievement of objectives and to minimize potential risks (Grasse & Neely, 2020).

Table 4. Internal Element

No.	Strengths	Weaknesses
1.	High Sharia credibility and strong regulatory support	Public literacy on cash waqf remains suboptimal
2.	Sustainable financing mechanism	Limited capacity of nazir and farmers
3.	Strategic partnership between regional-owned enterprises and farmers	Suboptimal use of technology and transparency practices
4.	Dual benefits for the economy and the environment	Limited liquidity of the CWLGS instrument
5.	Broad financial inclusion and public participation	Fundraising realization remains below potential

Source: Processed by Author (2025)

The integration of CWLGS with the contract farming system has a major advantage in terms of public trust, as it is government-supported and implemented transparently. This scheme offers dual benefits: maintaining the integrity of the waqf principal while generating returns to support agricultural financing (Salam et al., 2024). In addition, collaboration with regional-owned enterprises (BUMD) and farmer groups ensures effective aid distribution, technical assistance, and market guarantees (Rifki et al., 2023). Another strength lies in the accessibility of financing through affordable cash waqf contributions, which expands public participation (Amirah & Al Fu'adah, 2021).

On the other hand, public literacy regarding productive waqf remains low, resulting in suboptimal participation (Hakim et al., 2024). The capacity of *nazir* and farmers in managing funds and implementing sustainable agricultural technology is also limited (Saputra, 2020). Moreover, reporting systems and fund management digitalization are not yet optimal, leading to less effective transparency and fund distribution. The main weakness of CWLS lies in its limited liquidity, as the instrument cannot be traded on the secondary market, which poses a significant constraint and consideration for some investors (Hakim et al., 2024).

To ensure a comprehensive SWOT analysis, the second essential element consists of external factors, namely opportunities and threats, related to CWLGS and the contract farming system. These external elements are beyond the direct control of the stakeholders involved but play a critical role in formulating strategies within the SWOT framework (Grasse & Neely, 2020).

Table 5. External Element

No.	Opportunities	Threats
1.	The vast potential of cash waqf and a strong culture of philanthropy	Fluctuating agricultural commodity prices
2.	Strong government support for green financing	Climate change and extreme weather conditions
3.	Growing investor interest in ESG and sharia-based instruments	Outbreaks of pests and plant diseases
4.	Advancements in digital and agricultural technology	Public trust vulnerability
5.	Collaboration with financial institutions and international support	Macroeconomic conditions and global crises

Source: Processed by Authors (2025)

The potential for developing this scheme is substantial, as Indonesia possesses a high potential for cash waqf and a strong culture of philanthropy (Mudriqoh, 2023). Government support for green financing and food security provides a favorable environment for expanding the implementation of CWLGS (Mahbub Jamalul Lail, 2022). Investor interest in sustainable finance and ESG-based products continues to grow, aligning with global Islamic finance trends (Mubarok et al., 2024). Moreover, advancements in digital and agricultural technology pave the way for improving fundraising efficiency and agricultural productivity.

However, several threats must be anticipated, including fluctuations in commodity prices that may disrupt farmers' income stability. Climate change and natural disasters such as droughts or floods could reduce agricultural output (Rifki et al., 2023). Pest and disease outbreaks also pose challenges to the success of contract farming. Furthermore, unstable public trust in fund management could become a risk if transparency is lacking. Macroeconomic uncertainty, such as inflation or global crises, may also affect fundraising capacity and the sustainability of the program (Hakim et al., 2024).

Table 6. SWOT Strategy

Type	Strategy
S-O	Utilize sharia credibility and government support to attract green investors and expand financing.
S-T	Employ legal frameworks and monitoring technologies to address market fluctuations and environmental risks.
W-O	Enhance the capacity of *nazir* and farmers as well as public literacy on waqf to maximize green investment opportunities.
W-T	Implement risk mitigation SOPs, diversify agricultural commodities, and strengthen reporting systems to maintain public trust.

Source: Processed by Author (2025)

The SWOT analysis indicates that the optimal strategy for implementing the integration model of the Cash Waqf Linked Green Sukuk (CWLGS) with contract farming should leverage existing strengths, such as sharia credibility, regulatory support, and strategic partnerships, to seize green investment opportunities and government backing. These strengths are also essential in mitigating threats, including price fluctuations and environmental risks, through stronger legal frameworks and the application of monitoring technologies.

Weaknesses such as limited managerial capacity and low waqf literacy must be addressed through training, mentoring, and public education to fully harness the potential of green investment. Meanwhile, the convergence of weaknesses and threats requires a defensive approach by introducing risk mitigation SOPs, commodity diversification, and enhanced transparency in reporting to sustain public confidence. By combining these strategies, the model is expected to ensure sustainable financing, improved agricultural productivity, and positive socio-environmental impacts.

4.4. Islamic Perspective

The integration of the Cash Waqf Linked Green Sukuk (CWLGS) model with the contract farming system can be fundamentally understood through the framework of *maqāṣid al-sharī'ah*, which emphasizes the preservation of essential human values, namely religion, life, intellect, progeny, and wealth. From the perspective of *hifz al-dīn* (protection of religion), the model ensures that all financial and agricultural transactions are conducted using sharia-compliant contracts such as *wakālah*, *ijārah*, and *mushārakah*, thereby avoiding elements of *riba*, *gharar*, and *maysir*. This compliance not only legitimizes the financial structure but also reinforces ethical economic behavior within the agricultural sector. In addition, the principle of *hifz al-nafs* (protection of life) is reflected in the model's contribution to food security through sustainable agricultural financing, enabling communities to access safe, healthy, and affordable food. This demonstrates that the CWLGS–contract farming integration does not merely function as a financial innovation but also as a mechanism to support fundamental human needs and societal well-being.

Furthermore, the model contributes to *hifz al-'aql* (protection of intellect) by incorporating farmer training and capacity-building programs within the contract farming scheme, which enhance knowledge, technological adoption, and innovation in agricultural practices. The principle of *hifz al-nasl* (protection of progeny) is also embedded through the promotion of sustainable agriculture, ensuring that natural resources such as land, water, and ecosystems are preserved for future generations. Meanwhile, *hifz al-māl* (protection of wealth) is realized through the productive management of cash waqf funds via CWLGS, which generates continuous benefits while maintaining the principal value of the waqf.

This approach aligns with DSN-MUI Fatwa No. 131/DSN-MUI/X/2019 on Sukuk Waqf and Fatwa No. 123/DSN-MUI/XI/2018 on Cash Waqf, both of which emphasize the importance of preserving and productively managing waqf assets. Therefore, the CWLGS–contract farming model can be viewed as a comprehensive application of maqāṣid al-sharī'ah, integrating financial sustainability, social welfare, and environmental preservation within a unified Islamic economic framework. These principles are in line with the words of Allah:

وَلَا تُفْسِدُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا

"*And do not cause corruption on the earth after it has been set in order.*" (QS. Al-A'rāf [7]:56)

This verse commands the balanced management of resources and the avoidance of both ecological and social destruction. In this context, green sukuk serves as a

source of financing for environmentally friendly projects, while contract farming ensures the sustainability of agricultural production and the welfare of farmers.

This is further reinforced by the saying of the Prophet ﷺ:

مَا مِنْ مُسْلِمٍ يَغْرِسُ غَرْسًا أَوْ يَزْرَعُ زَرْعًا فَيَأْكُلُ مِنْهُ طَيْرٌ أَوْ إِنْسَانٌ أَوْ بَهِيمَةٌ إِلَّا كَانَ لَهُ بِهِ صَدَقَةٌ

"*No Muslim plants a tree or sows seeds, and then a bird, a person, or an animal eats from it, except that it is regarded as charity for him.*" (Narrated by Bukhari and Muslim)

This hadith emphasizes that agricultural activities benefiting others are regarded as acts of charity. Thus, the integration of cash waqf and green sukuk in financing contract farming is not merely an economic solution, but a tangible realization of *maqāṣid al-sharī'ah*, the Qur'anic command to preserve the earth, and the Prophet's encouragement to cultivate agriculture that benefits all living beings.

5. Conclusion

This study finds that the integration of Cash Waqf Linked Green Sukuk (CWLGS) with the contract farming system represents a promising framework for addressing structural challenges in Indonesia's agricultural sector. The model connects the mobilization of cash waqf funds with Green Sukuk investments, generating returns that are channeled into productive agricultural activities. Through this mechanism, the principal value of waqf funds is preserved while simultaneously delivering social, economic, and environmental benefits. Furthermore, the integration with contract farming provides farmers with improved access to capital, production inputs, and market certainty, thereby enhancing agricultural productivity and resilience.

From a theoretical perspective, this study contributes to the literature by integrating three previously fragmented domains, namely Islamic social finance, green finance, and agricultural production systems. Unlike prior studies that examine Cash Waqf Linked Sukuk (CWLS), Green Sukuk, and contract farming in isolation, this research proposes a unified framework that connects financial instruments with real-sector agricultural activities. Additionally, the study extends the application of *maqāṣid al-sharī'ah* by demonstrating how financial innovation can simultaneously achieve the protection of religion, life, intellect, progeny, and wealth. This integrative approach offers a new perspective in Islamic economics by positioning financial instruments not only as tools of capital mobilization but also as mechanisms for sustainable development.

Practically, the CWLGS–contract farming model offers a policy-relevant solution for improving agricultural financing and farmer welfare in Indonesia. The involvement of key stakeholders, including the government, the Indonesian Waqf Board (BWI), LKS-PWU, state-owned enterprises (BUMN/BUMD), and farmer groups, creates a collaborative ecosystem that supports implementation. However, the study also highlights critical challenges, such as governance complexity, potential conflicts of interest between financial and social objectives, and the limited feasibility of contract farming across all commodities and regions. Therefore, effective implementation requires clear institutional coordination, well-defined accountability

mechanisms, and careful selection of target commodities and farmer groups. Strengthening human resource capacity, improving transparency, and utilizing digital technologies are also essential to ensure the model operates efficiently and sustainably.

Despite its contributions, this study has several limitations that need to be acknowledged. First, the analysis is primarily conceptual and based on qualitative approaches, without empirical validation through field data or case studies. Second, the proposed model assumes relatively ideal institutional coordination, which may not fully reflect the complexities and constraints encountered in real-world implementation. Third, the discussion on contract farming feasibility remains general and does not differentiate specific commodities or regional characteristics in detail. These limitations indicate that the findings should be interpreted as a conceptual framework rather than a fully tested operational model.

Future research is recommended to further validate and refine the CWLGS–contract farming model through empirical studies, including pilot projects and case-based analysis. Quantitative approaches could also be employed to assess the financial performance, social impact, and environmental outcomes of the model in practice. Additionally, further studies should explore commodity-specific and region-specific applications to determine the most suitable contexts for implementation. Expanding the analysis to include risk management frameworks, governance design, and stakeholder incentives would also enhance the robustness of the model. Through these efforts, the proposed framework can be developed into a more practical and scalable solution for sustainable agriculture in Indonesia.

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