



Green Compliance in Sustainable Finance: Challenges and Opportunities for Cooperatives in Sectoral Growth in Indonesia

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ABSTRACT

Cooperatives as part of the grassroots economy face challenges in implementing green compliance due to limited resources and dependence on conventional banks that have not implemented green financing. This hinders cooperatives' access to green financing and slows down the transition to sustainable business. This study aims to explore the impact of green compliance on sustainable financing in Indonesia and identify steps that cooperative financial institutions can take to improve their compliance with the regulation. The method used is quantitative descriptive analysis using literature studies. The data used is secondary data published on Google. The results show that compliance with sustainability regulations improves operational efficiency, reduces environmental risks and strengthens the competitiveness of cooperatives in green financing. The study also demonstrates that cooperatives that apply green compliance principles experience significant improvements in operational efficiency, which is crucial for their long-term sustainability.



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INTRODUCTION

The increasingly apparent issue of climate crisis and rising environmental damage has prompted the importance of sustainable finance to become a central topic in global policy. At the national level, Indonesia's Financial Services Authority (OJK) has responded to this situation by launching a Sustainable Finance Roadmap as a strategic step to integrate Environmental, Social, and Governance (ESG) principles into the national financial system. This roadmap aims to encourage financial institutions to adopt green financing that supports environmental protection and inclusive development. Internationally, the implementation of green finance has been proven to have a significant impact on sustainable economic growth by aligning financial allocation with long-term environmental goals (Zhang, Wang, & Lin, 2021).

A number of large commercial banks in Indonesia have begun to gradually adapt to this policy, but grassroots financial institutions such as cooperatives still face various institutional and technical obstacles in adopting green compliance mechanisms. However, cooperatives play a crucial role in expanding financial access for micro and small businesses, particularly in rural areas and regions not yet reached by formal banking services (Mukhlis, 2025a; Mukhlis & Saidah, 2025). Despite their strategic role in supporting financial inclusion, many cooperatives have not been able to optimally access green financing. This is due to cooperatives' dependence on conventional banking institutions that have not fully implemented sustainability principles (Li & Wang, 2022). Additionally, limitations in infrastructure, low understanding of regulations, and insufficient utilization of financial technology also pose major obstacles in transforming cooperatives toward practices aligned with the sustainable development agenda. These limitations ultimately impact the competitiveness of cooperatives in the increasingly competitive financial services market.

While research on sustainable finance in Indonesia has mostly focused on the formal banking sector, government-driven financial reforms, and green bonds, there has been limited exploration of how cooperatives, especially in Indonesia, are engaging with green compliance. Studies like those by Yuliana & Tan (2020) and Prabowo & Utami (2021) have touched on green finance in the broader financial sector, but cooperatives' adoption of green principles remains largely underexplored. Notably, the adaptation of green finance by cooperatives is critical because these institutions are often more deeply embedded in local communities and have the potential to influence grassroots economic activities in ways that larger financial institutions cannot. This gap in literature highlights the need for further investigation into the specific challenges and opportunities cooperatives face in integrating green compliance standards into their operations.

A few studies have examined the potential for cooperatives to contribute to sustainable economic development. However, little attention has been paid to the actual impact of green compliance on the operational performance and competitiveness of cooperatives in Indonesia's unique economic context. Research such as that by Sari & Sumarni (2019) on microfinance institutions has provided insights into the challenges of sustainability adoption, but more focused studies on green compliance within cooperatives, particularly in rural Indonesia, are scant.

Cooperatives, as defined in Law No. 25 of 1992, are business entities formed by individuals or legal cooperative bodies based on cooperative principles and functioning as a people's economic movement rooted in the value of kinship. In practice, many cooperatives in Indonesia are still concentrated on traditional economic activities such as trade and savings and loans, without aligning their business models with environmental or social sustainability goals (Mukhlis, Arifin, Ridwan, & Zulbaidah, 2025; Mukhlis, Arifin, Ridwan, Zulbaidah, et al., 2025). The concept of green cooperatives or green lending remains relatively undeveloped, especially at the grassroots level. According to the Financial Services Authority (OJK), green financing refers to financial services that support environmentally friendly activities, including renewable energy, energy efficiency, sustainable agriculture, biodiversity conservation, and waste management (OJK, 2019).

Therefore, this study seeks to fill the existing research gap by analyzing the implementation and impact of green compliance in cooperative institutions, particularly in relation to their operational performance and contribution to sectoral development. By identifying institutional challenges and opportunities, this research contributes to a deeper understanding of how cooperatives can support inclusive and environmentally sustainable financial reforms.

RESEARCH METHODS

This study uses a mixed methods approach with an explanatory sequential design, which combines quantitative and qualitative methods in sequence (Creswell & Plano Clark, 2018). In the initial stage, quantitative data is collected and analyzed to obtain an overview of the implementation of green compliance and cooperative performance. In the next stage, qualitative data is collected through observation to deepen understanding of the challenges, opportunities, and strategies implemented by cooperatives in applying sustainable finance principles. This approach enables researchers to obtain comprehensive and valid data, as well as provide a richer context for quantitative results.

The data used in this study includes secondary data in the form of official documents from financial institutions such as the OJK, cooperative financial reports, regulations related to green compliance, as well as relevant literature and previous studies related to the research topic. The research population consists of five cooperatives operating in the Bandung area that have the potential or have already implemented green compliance principles. Since the number of cooperatives meeting these criteria is limited, the entire population was used as the sample (saturated sample), consisting of five cooperatives in Bandung Raya: KPSBU Lembang, Koperasi Kopi Puntang, Koperasi Konsumen Syariah Al-Falah, Koperasi Jasa Karya Mandiri, and Koperasi Agro Berkah Mandiri. These cooperatives were selected using purposive sampling, which involves selecting cooperatives

considered representative based on criteria such as green compliance status, cooperative size, and business sector (Karismawati, 2024; UIN Jakarta Dissertation, 2023).

Quantitative data analysis was conducted using descriptive statistics to describe the level of green compliance implementation and cooperative performance. Meanwhile, qualitative data was analysed using thematic analysis techniques to identify patterns, themes, and key issues that emerged from interviews and observations. In addition, to identify the strengths, weaknesses, opportunities, and threats faced by cooperatives in implementing green compliance, a SWOT analysis was used. This analysis helps formulate cooperative development strategies to improve compliance with sustainable finance principles and strengthen sectoral growth (Rahman & Kusumawardani, 2023; Suryanto et al., 2020). To support the mapping and strategic analysis of cooperatives in implementing green compliance, this study uses SWOT analysis indicators that include internal strengths (such as cooperative leadership and member support), internal weaknesses (such as technological limitations and green financing), external opportunities (such as regulatory support and strategic partnerships), and external threats (such as market challenges, climate change, and policy pressures). These indicators are formulated based on a synthesis of previous literature and green finance measurement instruments from regulatory agencies such as the OJK, as well as related scientific studies (Rahman & Kusumawardani, 2023; Suryanto et al., 2020).

The operationalization of variables in this study is based on the concept of green compliance in the context of sustainable finance and its relationship with cooperative performance and sectoral growth. The independent variable is the level of green compliance implementation, which is measured through indicators such as cooperative compliance with sustainability regulations (e.g., POJK No. 51 of 2017), the existence of internal cooperative policies related to the environment, the integration of ESG (environmental, social, and governance) aspects into operational activities, and the adoption of environmentally friendly practices such as waste management, energy efficiency, and green financing. Dependent variables include cooperative performance and its contribution to sectoral growth. Cooperative performance is measured from financial aspects (asset growth, SHU, loan volume), social aspects (number of active members, financial inclusion), and environmental dimensions (positive impact on resource conservation or the surrounding environment). Contribution to sectoral growth is measured by the extent to which cooperatives promote sustainable economic activities in their business sectors, expand green partner networks, and contribute to the achievement of the Sustainable Development Goals (SDGs) (Rahman & Kusumawardani, 2023; Karismawati, 2024; Suryanto et al., 2020).

RESULTS AND DISCUSSION

This study analyses the implementation of green compliance by cooperatives and its impact on institutional performance and financial sector development. The analysis is based on the Triple Bottom Line (TBL) approach and Legitimacy Theory to understand the contribution of cooperatives to sustainable development, which encompasses economic, social, and environmental dimensions, as well as the relationship between sustainability implementation and institutional acceptance by stakeholders.

Green Compliance Implementation by Cooperatives

The most of the cooperatives that were the subject of this study have begun to integrate sustainability principles, albeit to varying degrees. Implementation has been carried out through energy efficiency policies, green business financing, member training on the environment, and document digitization. Although not all cooperatives have a complete sustainability reporting system, there is a positive trend toward ESG integration in institutional processes. Rahman and Kusumawardani (2023) note that cooperatives with visionary leaders and community support tend to adapt more quickly to green compliance principles. However, challenges persist in the form of technological limitations, lack of understanding of ESG, and the absence of fiscal incentives to support such initiatives. The understanding of the green economy has increasingly gained traction among medium and large-scale enterprises in Indonesia, driven by regulatory pressures, corporate responsibility, and access to green financing. These companies have begun integrating sustainability

into their core operations through energy efficiency policies, digitalization, environmental training, and ESG-aligned reporting systems. However, at the micro, small, and medium enterprise (MSME) level, awareness and application of green economy principles remain significantly limited. According to Valdiansyah and Widiyati (2024), many MSMEs lack basic literacy in sustainable finance and environmental practices, often perceiving green initiatives as costly and non-essential. Lajaria and Utha (2024) emphasize that although green jobs have potential in sectors like culinary MSMEs, the lack of environmental skills and understanding hampers adoption. Similarly, Darni (2023) finds that MSMEs often interpret the green economy narrowly limited to waste management without embracing its broader environmental, social, and economic dimensions. Only a few small enterprises that have embedded sustainability from inception demonstrate deeper integration of green values. These findings highlight the urgent need for targeted interventions such as sustainability training, accessible green financing, and supportive policies to bridge the knowledge and resource gap, ensuring that MSMEs are not left behind in the transition to a sustainable economy.

Analysis Based on the Triple Bottom Line Theory

The Triple Bottom Line theory assesses the success of cooperatives not only in terms of economic profits, but also through their impact on the environment and society. From an economic perspective, cooperatives that adopt green compliance report operational cost efficiencies, particularly through digitization and energy savings. Some cooperatives have recorded cost reductions of up to 7% and increased income from environmentally-based businesses such as organic farming financing and recycling (Suryanto et al., 2020). Within the framework of the Triple Bottom Line (TBL), the social element emphasizes the role of cooperatives in improving community welfare. Cooperatives contribute to community development through entrepreneurship training programs, financial education, and the provision of capital to vulnerable groups such as women, small farmers, and micro, small, and medium enterprises (MSMEs). Cooperative activities that support social values include training on organic farming, the formation of community-oriented cooperatives, and participation in government social welfare programs. Therefore, cooperatives act as drivers in creating an inclusive and socially competitive society (Asmara et al. 2023). The adoption of ESG principles also opens up access to new financing, both from government schemes and donor institutions that require sustainability indicators. This indicates that sustainability can become a competitive advantage for cooperatives in the long term. The implementation of environmentally friendly cooperatives demonstrates the support of cooperative institutions for the achievement of the Sustainable Development Goals (SDGs), particularly in the environmental and social aspects. Some cooperatives have initiated activities that directly contribute to SDG 7 (affordable and clean energy), SDG 12 (responsible consumption and production), and SDG 13 (climate action). For example, cooperatives that produce and distribute renewable energy, such as communities using solar panels, or waste management cooperatives that handle household waste sustainably. These activities not only provide additional economic benefits for members but also contribute to the transition toward a more environmentally friendly economy. Such initiatives demonstrate that cooperatives play a strategic role as local actors in advancing the global development agenda (Development, Vol, and Issn 2025).

In terms of social aspects, cooperatives have helped expand financial inclusion by involving vulnerable groups in community-based empowerment and training programs (Taera and Lakner 2025). Training programs on waste management, renewable energy utilization, and member involvement in green businesses have encouraged increased active participation and even attracted new members to some cooperatives (Taera and Lakner 2025). Environmentally, cooperatives are beginning to take on a role in resource conservation and reducing ecological impacts through support for sustainable micro- enterprises. Although the scale is still small, this contribution reflects the potential of cooperatives as key actors in the transition to a circular economy and low-carbon development. In the Greater Bandung area, there are a number of cooperatives that have adopted environmentally friendly economic principles in line with sustainable development goals. One of them is the Hijau Lestari Cooperative, which focuses on organic farming and organic waste management. Additionally, the BMI Bandung Sharia Cooperative contributes by providing microfinance for renewable energy installations for low- income households. The Mitra Dhuafa Cooperative (KOMIDA) is another example of a community- based cooperative supporting women's

empowerment in sustainable businesses. Their activities demonstrate the concrete application of sustainability principles and support the circular economy at the local Level (Manik et al. 2024).

Analysis Based on Legitimacy Theory

In the context of Legitimacy Theory, cooperatives implement green compliance not only because of regulatory obligations, but also as a strategy to build positive perceptions and trust from external stakeholders (Mukhlis, Maryam, et al., 2023; Mukhlis et al., 2024). The implementation of sustainability principles strengthens the image of cooperatives as socially and environmentally responsible institutions, thereby gaining legitimacy that allows broader access to green financing, CSR programs, and protection from regulators. Toyon (2021) asserts that microfinance institutions with high legitimacy tend to be more resilient to crises and have long-term relationships with communities. Conversely, cooperatives that fail to demonstrate compliance with sustainability norms risk losing member trust and experiencing a decline in their role within the financial ecosystem.

In the process of adopting green compliance, cooperatives face a number of institutional challenges (Mukhlis, 2025b; Mukhlis, Suradi, et al., 2023). The main challenges include low human resource capacity in understanding ESG principles, limited digital infrastructure for sustainability reporting, and minimal access to green funding sources. Additionally, there is still a perception that sustainability is an additional burden rather than a long-term investment, particularly in small cooperatives focused on conventional economic activities. However, there are significant opportunities that can be leveraged. National regulations such as POJK No. 51 of 2017 and the Sustainable Finance Roadmap provide a strong legal foundation for cooperatives to undergo transformation. Support from non-governmental organizations, private CSR initiatives, and the potential of apex cooperatives as education centers and sustainability facilitators present strategic opportunities. By building partnerships and strengthening internal governance, cooperatives have the potential to become key actors in the sustainable finance ecosystem at both the local and national levels.

Implications for the Development of the Financial Sector

The results of this study indicate that cooperatives play an important role in expanding the scope of sustainable finance at the grassroots level. By adopting green compliance, cooperatives not only improve internal efficiency and competitiveness, but also support green financial inclusion for micro- entrepreneurs and local communities (Mukhlis, Janwari, et al., 2023; Mukhlis & Abdullah, 2025). This shows that sustainable financial transformation can be achieved not only by large institutions, but also by community-based institutions. These implications suggest the need for stronger policy support, such as ESG training, access to green financing, and strengthening apex cooperatives as sustainability hubs. If maximized, cooperatives can become strategic partners in implementing the national Sustainable Finance Roadmap and driving the creation of a more equitable, resilient, and environmentally friendly financial system. The phenomenon of sustainable finance implementation by cooperatives in Bandung City reflects a real shift towards environmentally friendly cooperative practices. Based on observations and documentation, there are six cooperatives actively involved in sustainability initiatives: Koperasi KPSBU Lembang, Koperasi Kopi Puntang, Koperasi Hijau Lestari, Koperasi Mitra Dhuafa, Koperasi BMI Syariah, and Koperasi Produsen Olahan Limbah Bandung. Each cooperative applies sustainability principles with an approach tailored to the local context. For example, KPSBU Lembang manages livestock waste to produce biogas, while Kopi Puntang Cooperative focuses on developing organic coffee-based agroforestry to preserve protected forests in southern Bandung. On the other hand, the Hijau Lestari Cooperative runs a community-based household waste recycling program. This phenomenon demonstrates that cooperatives function not only as economic institutions but also as social and environmental actors contributing to local sustainability efforts and supporting the achievement of the Sustainable Development Goals (SDGs) at the micro level

Table 1. SWOT Analyses Implementation Green Cooperative

No	SWOT ANALYSIS	DESCRIPTION
1	Strengths	<ul style="list-style-type: none"> a. Cooperative KPSBU and Kopi Puntang are leadership that supports sustainability. b. Both of Cooperative Active member support for environmental programs. c. The member of both cooperative are environmentally friendly practices such as biogas, organic farming, and waste recycling have been implemented. d. Sustainability certification (organic, fair trade) that enhances the competitiveness of cooperatives.
2	Weaknesses	<ul style="list-style-type: none"> a. The member of cooperative have limited technical capacity and ESG literacy among cooperative managers b. There is no adequate sustainability reporting system in place. c. Limited fiscal incentives and specific policies to support green cooperatives.
3	Opportunities	<ul style="list-style-type: none"> a. The existence of national regulations that support sustainable finance (POJK 51/2017). b. Opportunities for collaboration with NGOs, CSR programs, and higher education institutions. c. Consumer awareness of environmentally friendly products is increasing.
4	Threats	<ul style="list-style-type: none"> a. The impact of climate change on the agricultural and livestock sectors of cooperatives. b. Competition with formal financial institutions in obtaining green financing. c. Lack of investor confidence due to the absence of standardised sustainability reporting standards for cooperatives. d. Institutional unpreparedness for the transformation towards sustainability.

CONCLUSION

This study reveals that the implementation of environmental compliance by cooperatives in Indonesia, particularly in the Bandung region, has had a positive impact on strengthening sustainable finance. Although the level of implementation varies, some cooperatives have successfully incorporated sustainability principles into their activities, resulting in improved economic efficiency, expanded social inclusion, and participation in environmental initiatives such as waste management and the use of renewable energy.

The Triple Bottom Line approach highlights the importance of sustainability not only in improving internal performance but also in enhancing the cooperative's social and environmental contributions to the community.

The SWOT analysis shows that the cooperative's strengths lie in its leadership that supports sustainability and existing green practices, but challenges remain, including limitations in technical capacity and sustainability reporting systems. To enhance the cooperative's role in the sustainable

financial ecosystem, greater policy support, capacity building, and a proactive role as an educational center and facilitator are essential. By focusing on these areas, cooperatives can significantly contribute to the implementation of the Sustainable Finance Roadmap initiated by OJK and help achieve the national sustainable development goals.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article. All research procedures were conducted independently, and no commercial or financial relationships were involved that could be construed as a potential conflict.

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