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Financial Incentive Policy to Encourage Circular Economy of MSMEs in Rural Areas

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Abstract

This study aims to analyze various financial incentive policies that can be utilized to promote the implementation of circular economy practices among Micro, Small, and Medium Enterprises (MSMEs) in rural areas. Using a descriptive qualitative approach based on literature review, the research examines the effectiveness of various incentive mechanisms such as tax subsidies, low-interest microcredit, revolving village funds, and public-private partnerships implemented in Indonesia and ASEAN countries. The study also evaluates the challenges faced in the implementation of these policies and identifies the prerequisites for the successful deployment of financial incentives in supporting circular economy innovations among rural MSMEs. Findings indicate that appropriately designed financial incentives not only enhance MSMEs' interest in adopting circular business models but also strengthen multisectoral collaboration toward achieving sustainable rural economic development. This research provides practical recommendations on effective incentive policy design and underscores the crucial role of fiscal policies and institutional collaborations in accelerating the transition to a circular economy.

Keywords

Financial incentives, Circular economy, MSMEs, Fiscal Policy, Rural development, Indonesia, ASEAN

INTRODUCTION

Circular economy has emerged as a pivotal paradigm to achieve sustainable economic development, especially in rural areas where economic disparities and environmental challenges remain significant. The transition from traditional linear economic models to circular practices offers Micro, Small, and Medium Enterprises (MSMEs) the opportunity to enhance resource efficiency, reduce environmental impact, and foster local economic resilience. However, the adoption of circular economy practices among rural MSMEs remains limited due to financial constraints, lack of knowledge, and insufficient institutional support.

Recognizing these challenges, various financial incentive policies have been introduced to stimulate the adoption of circular business models. Instruments such as tax subsidies, low-interest microcredit, revolving village funds, and public-private partnerships have been implemented across Indonesia and ASEAN countries with varying degrees of success. Yet, there is limited comprehensive understanding of how these incentives operate, the challenges they face in implementation, and the conditions required for their effectiveness.

This study aims to analyze the role and effectiveness of financial incentive policies in encouraging circular economy practices among rural MSMEs. It adopts a descriptive qualitative approach grounded in an extensive literature review to evaluate policy mechanisms and their practical impacts. The research contributes to both theoretical and practical discourse by providing a systematic analysis of policy effectiveness and offering actionable recommendations for policy design.

The novelty of this research lies in its focused examination of financial incentives within the context of rural MSMEs—a sector often underrepresented in circular economy discussions. The findings underscore the importance of well-designed fiscal policies and robust institutional collaboration in accelerating the transition towards a circular economy in rural settings. Practical implications include guidance for

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policymakers on crafting targeted incentives that align with local needs and capacities, ultimately fostering sustainable rural development.

RESEARCH METHODS

This study adopts a descriptive qualitative approach utilizing an extensive literature review to analyze the role and effectiveness of financial incentive policies in supporting the adoption of circular economy practices among rural Micro, Small, and Medium Enterprises (MSMEs) in Indonesia.

Research Design

A literature-based research design was employed to systematically collect, analyze, and synthesize scholarly articles, policy documents, and reports related to circular economy incentives and MSME development in rural contexts. The study focused on publications from the past ten years (2015–2025), a period during which significant fiscal policies and financial instruments, such as tax incentives, low-interest microcredit programs, revolving village funds, and public-private partnerships have been introduced or scaled up in Indonesia to support sustainable development.

Data Collection and Sources

The primary data source comprised secondary data retrieved from:

1. Peer-reviewed journal articles (indexed in Scopus, Web of Science, and Sinta)
2. Official government reports and policy documents (e.g., Ministry of Finance, BPDLH, LPDB-KUMKM)
3. ASEAN regional studies and international organization publications (e.g., OECD, UNESCAP, World Bank)
4. Reports and case studies from Public-Private Partnership (PPP) initiatives
5. Empirical studies and meta-analyses on MSME engagement in circular economy activities

The literature search was conducted using academic databases (Google Scholar, Elsevier, SpringerLink), government portals, and institutional repositories, employing keywords such as: circular economy, financial incentives, tax subsidies, microcredit, revolving funds, public-private partnerships, MSMEs, and Indonesia.

Data Analysis

Data were analyzed using content analysis and thematic synthesis techniques. The process involved:

1. Identifying and coding relevant policy instruments and their characteristics.
2. Synthesizing evidence on the effectiveness, challenges, and best practices of financial incentives in fostering circular economy adoption.
3. Mapping relationships between different types of incentives and the drivers of circular economy adoption by rural MSMEs.
4. Drawing conclusions on the policy implications and providing recommendations for effective incentive design.

The analysis explicitly considered the interaction between national policies (e.g., tax incentives, KUR) and local-level mechanisms (e.g., revolving village funds, PPP models), recognizing the importance of multi-level governance and institutional collaboration in the Indonesian context.

RESULTS AND DISCUSSION

The results of this literature-based analysis highlight how each financial incentive mechanism, including tax subsidies, low interest microcredit, village revolving funds, and public private partnerships, can influence the adoption of circular economy practices among rural Micro, Small, and Medium Enterprises (MSMEs). The discussion is organized by incentive type, focusing on their observed or potential impact on circular economy adoption, the challenges encountered during implementation, and the necessary conditions for these incentives to effectively support the transformation of rural MSMEs.

Tax Subsidies and Circular Practice Adoption

Tax incentives have the potential to encourage the adoption of circular economy practices among rural MSMEs, but their effectiveness depends on accessibility, administrative simplicity, and integration with non-financial support.

Tax incentives are considered a potentially powerful instrument to encourage Micro, Small, and Medium Enterprises (MSMEs) to invest in circular business models. By

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reducing tax burdens or offering tax credits for environmentally friendly investments, governments can effectively lower the cost of adopting circular technologies, such as recycling equipment or renewable energy systems (UNEP, 2023; ESG Hub Malaysia, 2023). Such fiscal relief directly enhances the financial viability of circular economy initiatives. For instance, the Malaysian government offers Green Investment Tax Allowances and tax exemptions for approved green technology projects, allowing businesses, including SMEs, to deduct expenditures related to sustainable innovations (ESG Hub Malaysia, 2023). These incentives have been credited with fostering environmentally responsible practices and accelerating a shift toward low carbon, circular operations (ESG Hub Malaysia, 2023). In Indonesia, although explicit tax incentives specifically targeting circular economy practices are still emerging, similar fiscal instruments exist under the broader green finance framework. The government has introduced tax benefits to support investments in renewable energy, waste management, and sustainable agriculture (Eco-Business, 2023), reflecting the role of fiscal policy in steering private capital toward sustainability goals.

Despite their potential, the implementation of tax subsidies faces several challenges, particularly for rural MSMEs. One critical issue is that many micro and small enterprises in rural areas operate informally or do not generate sufficient taxable income, limiting their ability to benefit directly from tax incentives (UNEP, 2023). Complex administrative procedures for claiming such benefits further discourage participation, as small business owners may lack the resources or capacity to navigate bureaucratic processes. Moreover, if the scope of the tax incentive is too narrow, for example limited to specific technologies or rigid eligibility requirements, very few rural enterprises may qualify. Another risk is deadweight loss, where subsidies are granted for activities that might have occurred regardless, or where the financial incentive is insufficient to offset the high initial costs of circular investments. Studies show that tax incentives tend to be more effective when combined with technical assistance and other forms of support (UNEP, 2023). In Indonesia's rural context, the lack of awareness about government incentive programs and limited access to advisory services further reduces their potential impact.

Several prerequisites must be fulfilled to ensure the effectiveness of tax incentives for circular economy transformation. First, incentive schemes should be simplified and tailored to the needs of MSMEs, including micro enterprises that may not be formally incorporated. For example, value added tax exemptions or local levy waivers could provide more accessible benefits. Second, socialization and outreach activities are essential to inform business owners in rural areas about the available incentives and how to access them. Third, capacity building efforts through local cooperatives, extension officers, or community financial facilitators are important to help MSMEs maintain financial records and meet compliance requirements. Furthermore, aligning fiscal incentives with measurable environmental outcomes, such as increased recycling rates or reduced material consumption, can strengthen the policy's impact. International evidence highlights that tax incentives are most successful when integrated into a broader support ecosystem. UNEP, for instance, recommends pairing financial incentives with non-financial measures such as training and mentoring to ensure that MSMEs are capable of translating tax relief into actionable circular economy practices (UNEP, 2023).

Low-Interest Microcredit for Circular Innovations

Low interest microcredit can support the adoption of circular economy practices among rural MSMEs, particularly when integrated with technical assistance, risk mitigation, and targeted implementation.

Access to affordable financing is widely recognized as a critical enabler for Micro, Small, and Medium Enterprises (MSMEs) aiming to implement circular economy innovations (SHS Conferences, 2023). Low interest microcredit, commonly subsidized by governments or development institutions, helps reduce capital constraints that rural entrepreneurs often face when investing in equipment or processes such as waste recycling, resource efficiency, or renewable energy. The literature indicates that establishing dedicated microfinance schemes for sustainable projects can significantly assist MSMEs in overcoming the high initial costs typically associated with transitioning to circular business models (SHS Conferences, 2023). By offering credit at rates below commercial market levels, these programs

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reduce financial risks and enhance the willingness of small businesses to experiment with environmentally friendly innovations.

Empirical examples illustrate the real-world impact of such mechanisms. Malaysia's central bank has introduced a Low Carbon Transition Facility worth RM2 billion that provides concessional loans to SMEs involved in low carbon and circular activities (ESG Hub Malaysia, 2023). In Indonesia, the established Kredit Usaha Rakyat (KUR) program, a government subsidized credit initiative, has increasingly supported green-oriented MSMEs. For instance, Bank Negara Indonesia (BNI) launched the "BNI BUMI" program in 2024, channeling KUR loans to fund businesses engaged in eco-friendly production such as natural dyed textiles and recycled crafts. This program not only provided capital but also included mentoring in sustainable practices. As of 2024, the initiative disbursed approximately 38.9 billion rupiah to 164 micro enterprises in the craft industry (Kontan, 2024). These early outcomes suggest that when credit is affordable and accompanied by guidance, rural MSMEs are more likely to engage in circular economy practices.

Despite their potential, microcredit initiatives face several implementation challenges. From a financial institution's perspective, loans for emerging circular models are perceived as high risk, particularly because many rural MSMEs lack credit histories or collateral. In the absence of risk sharing instruments such as guarantees or insurance, lenders may hesitate or impose strict conditions that disqualify vulnerable enterprises. Furthermore, there is a risk of misuse; without proper targeting and supervision, loans intended for environmental transformation may be diverted to unrelated operational expenses, diminishing the program's intended impact.

Limited reach is another concern. Entrepreneurs in remote areas may be unaware of such loan schemes or discouraged by complex application procedures. Even when loans are secured, a lack of technical knowledge can render green technologies ineffective. For example, an MSME may purchase a composting unit but fail to operate it efficiently due to insufficient training. This highlights the importance of technical assistance alongside financing, as seen in the BNI BUMI initiative, where capacity building was integrated with credit distribution (Kontan, 2024). Sustainability is also a policy issue. Subsidizing interest rates imposes fiscal burdens on governments or donor institutions. If such support is uncertain or discontinued, MSMEs could suddenly face increased loan costs, compromising long term financial planning.

To enhance the effectiveness of microcredit programs in supporting circular economy transitions, several conditions are necessary. First, supporting financial infrastructure should include credit guarantee schemes and revolving funds to reduce lending risks (SHS Conferences, 2023). Second, blended finance approaches that combine public, private, and philanthropic resources can extend the longevity and scalability of programs. Targeting must be precise, with clearly defined criteria for eligible activities such as investment in waste conversion, renewable inputs, or sustainable packaging. Moreover, partnering with local financial institutions, cooperatives, or NGOs can improve program outreach and support.

Crucially, microcredit should be complemented by non financial assistance such as mentoring, skills training, and access to markets. The success of the BNI BUMI program illustrates this approach, as participating MSMEs received both affordable loans and promotional support to scale their green products (Kontan, 2024). This kind of integrated support ensures that financing leads to meaningful and sustained adoption of circular economy practices. In conclusion, low interest microcredit holds strong potential to drive circular innovation among rural MSMEs, provided it is inclusive, targeted, and embedded within a supportive policy and institutional ecosystem.

Village Revolving Funds and Community-Level Financing

Village level revolving funds can enable circular economy adoption among rural MSMEs through localized, community based financing, provided that strong governance, alignment with environmental goals, and capacity building mechanisms are in place.

Revolving funds at the community or village level represent an important financial mechanism to stimulate circular economy initiatives among rural microenterprises. A revolving fund typically consists of a pool of capital from which loans are provided to local businesses or projects. As borrowers repay their loans, the funds are recycled and distributed to new beneficiaries. This model

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creates a sustainable financing loop for circular initiatives, as successful enterprises return capital that can then support the development of other ventures (MDPI, 2022).
In the context of Indonesian villages, dana bergulir programs have previously been used to promote rural development through Village Owned Enterprises (Badan Usaha Milik Desa or BUMDes) or cooperatives that manage loan funds for local entrepreneurs. By design, these funds prioritize community-benefiting projects, such as waste banks or composting units, which align with circular economy principles. One advantage in rural settings is that access to finance is brought closer to the community. Rather than relying on commercial banks located in urban areas, villagers can obtain small loans from local revolving fund committees, which often have simpler procedures and a better understanding of local conditions. Literature on rural development supports the idea that revolving funds are suitable for these regions because they can be tailored to local priorities and reinvested to sustain long term impact (MDPI, 2022).

Several anecdotal cases in Indonesia demonstrate how villages have used allocations from the national Village Fund (Dana Desa) to establish waste banks, which pay residents in exchange for recyclable waste, thereby incentivizing circular behavior at the grassroots level (RRI, 2023; Kompasiana, 2023). When managed properly, these community-driven revolving funds allow the initial capital to cycle through multiple projects, creating a chain of support for green entrepreneurship.

However, the implementation of village level revolving funds for MSMEs faces notable challenges. One key issue is governance and institutional capacity. Administering a loan fund requires financial skills and transparency, which are sometimes lacking in rural institutions. Past failures have been linked to weak management, limited accountability, or political interference. If loans are not repaid, either due to unsuccessful business outcomes or misperceptions that the funds are grants, the sustainability of the fund is at risk. Additionally, these funds often begin with limited capital, which restricts them to providing microloans that may not cover the full investment needs of circular technologies. Inflation and increased demand over time can further reduce the effectiveness of a small fund if no additional capital is injected.

Aligning fund usage with circular economy goals is also a concern. In the absence of clear environmental priorities, local decision makers may favor conventional income generating activities over innovative but riskier circular projects. Without a solid understanding of long term environmental benefits, funds may be allocated to traditional trading ventures rather than to waste to product initiatives. Technical support presents another challenge. A fund, by itself, is only financial capital. Borrowers still need adequate knowledge to implement circular solutions. Without access to technical assistance or linkage to advisory services, even well intentioned projects may fail due to operational missteps or lack of expertise.

To ensure the success of revolving funds in supporting circular adoption, several conditions are necessary. First, strong community engagement and training in fund management are essential. Establishing clear lending rules, repayment schedules, and oversight committees with representation from diverse community groups can help build transparency and trust. Involvement of local governments or trusted nongovernmental organizations can strengthen governance practices. For example, some successful rural funds operate in partnership with microfinance institutions that provide guidance on credit assessment and repayment procedures.

Second, coupling the fund with capacity building for borrowers can significantly increase project success rates. For instance, if a farmer cooperative receives financing to install a biogas digester, providing them with operational and maintenance training will improve project viability and increase the likelihood of repayment. Third, revolving funds can encourage circular entrepreneurship by offering lower interest rates or prioritizing applicants with environmentally beneficial proposals, such as those focused on waste reduction or resource reuse. From a policy standpoint, linking village level funds with regional or national financial institutions could address the limitations of scale. A multi tiered structure, where a central fund provides capital to multiple village level entities, can facilitate capital replenishment and risk sharing (MDPI, 2022).

Public–Private Partnerships (PPP) in Supporting MSME Transition

Public private partnerships can accelerate the adoption of circular economy practices among rural MSMEs by mobilizing multisectoral resources, provided they are designed inclusively,

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governed transparently, and aligned with local development priorities.

Public private partnerships bring together government bodies, private companies, and community organizations to collaborate on development initiatives by sharing resources, responsibilities, and risks. In the context of supporting circular economy practices among rural Micro, Small, and Medium Enterprises (MSMEs), such partnerships can play a transformative role by mobilizing investment, technology, and expertise that may not be accessible to individual enterprises or local governments. Existing research suggests that PPP models have been applied effectively in domains closely related to sustainable rural development, such as agriculture, renewable energy, and waste management, and these applications provide a foundation for their expansion into circular economy initiatives (FAO, 2023).

Since 2010, the Indonesian government has supported PPP schemes in agriculture to promote rural innovation and investment. These partnerships typically connect smallholder farmers and cooperatives with large agribusinesses, financial institutions, and public agencies. The private sector contributes capital, market access, and technical know-how, while the government may provide policy incentives, infrastructure, or partial funding guarantees (FAO, 2023). Such arrangements have introduced innovations including bioenergy crops and improved agricultural supply chains while raising the incomes of rural producers. When applied to the circular economy, a PPP might involve local governments collaborating with recycling companies and rural MSMEs to establish a village level plastic recycling center. The World Bank and related development institutions have emphasized that PPPs involving informal cooperatives or microenterprises in the waste sector can create meaningful livelihoods for low income communities while improving material recovery outcomes (PPIAF, 2020; PPP Knowledge Lab, 2020).

In practice, PPPs have taken the form of collaborations between municipal governments and private recyclers, where the public sector facilitates land and policy support, the private sector provides technology and capital, and local community groups handle collection and sorting. Evidence from developing countries shows that inclusive PPPs are more efficient than standalone efforts and can also reduce poverty by generating steady income for small scale recyclers (PPIAF, 2020). In the renewable energy sector, PPP models have also enabled the deployment of off grid solar panels and biodigesters through cooperation between government agencies, solar providers, and local cooperatives. These cases demonstrate how PPPs can help overcome the high upfront costs and operational complexity of circular infrastructure by distributing responsibilities among capable partners (SHS Conferences, 2023).

Despite these strengths, PPPs are not without challenges. One primary issue is the alignment of goals. While private actors may prioritize profitability, governments focus on policy impact, and communities seek livelihood improvements. Without a shared understanding, a PPP can fail to address community needs. For example, a corporate partner may prioritize only high value recyclable materials, neglecting waste streams that are more environmentally significant to the local context. Additionally, large private entities may dominate decision making, marginalizing MSMEs or village groups. Partnerships must avoid exploitative dynamics in which local businesses are used as inexpensive labor without receiving equitable capacity building or revenue sharing.

Coordination and trust are also essential but often fragile. Building trust between stakeholders with different cultures, timelines, and expectations requires strong facilitation and sustained engagement. Experience in Indonesia suggests that bureaucratic delays and rigid procurement regulations can frustrate private partners, while communities may grow suspicious if projects are perceived as imposed from above. Risk sharing mechanisms are critical: without clarity on who bears the cost of failure, investors may hesitate, especially in circular initiatives with uncertain returns. Legal and contractual complexities also present barriers. MSMEs often lack the legal literacy to navigate agreements and could be placed at a disadvantage without advisory support.

To ensure that PPPs succeed in promoting circular economy adoption among rural MSMEs, several enabling conditions must be met. First, each stakeholder should have a clearly defined value proposition. The partnership must offer viable business opportunities for private investors, policy outcomes for government, and real benefits

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for MSMEs, including income, training, and access to markets. Identifying a lead institution or champion can help maintain momentum and alignment. Second, supportive policies and regulations are essential. These may include simplified licensing, tax incentives, and national roadmaps that prioritize circular infrastructure development. Such clarity can attract private capital by signaling long term government commitment (FAO, 2023).

Third, capacity building is vital for local MSMEs. This may involve training in quality control, bookkeeping, and technology use, enabling them to participate as equal partners rather than dependent suppliers. Successful PPPs in Indonesia's agribusiness sector have shown that when cooperatives are supported in meeting operational standards, they are better positioned to engage in sustainable partnerships (FAO, 2023). Similarly, circular economy PPPs must invest in strengthening local entrepreneurial ecosystems. Transparent governance, benefit sharing agreements, and grievance mechanisms further reinforce trust and accountability. Finally, pilot projects can test partnership models before scaling. A small scale trial in one or two villages can address technical or relational obstacles early and provide proof of concept to attract broader adoption.

In essence, PPPs can accelerate the uptake of circular economy practices in rural areas by creating synergies between the public, private, and community sectors. When well designed, inclusive, and aligned with local development goals, they connect grassroots innovators with the broader systems of capital and knowledge required to scale sustainable transformation (SHS Conferences, 2023; PPIAF, 2020).

CONCLUSION

This study has examined the role and effectiveness of various financial incentive policies, including tax subsidies, low interest microcredit, village revolving funds, and public private partnerships, in promoting the adoption of circular economy practices among rural Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. Based on a literature based analysis, the findings indicate that appropriately designed and well implemented financial incentives can significantly reduce barriers to circular economy adoption and encourage sustainable innovation within rural MSMEs.

Tax incentives reduce financial burdens and provide rewards for environmentally friendly investments, although their accessibility remains limited, particularly for informal and micro enterprises. Low interest microcredit programs offer essential capital for green innovations, but their success depends on accurate targeting, risk mitigation, and adequate technical support. Village revolving funds serve as community based financing mechanisms that are sustainable over time, but require strong governance and capacity building to remain effective and aligned with circular economy objectives. Public private partnerships show high potential to mobilize investment, technology, and expertise, provided that these partnerships are structured inclusively, transparently, and deliver mutual benefits for all stakeholders.

This study emphasizes that financial incentives on their own are not sufficient to drive long term transformation. Their effectiveness depends heavily on enabling conditions such as institutional capacity, access to technical assistance, stakeholder awareness, and mutual trust. Furthermore, integrated approaches in which different types of incentives complement and reinforce one another are more likely to result in successful and lasting outcomes.

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