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MORALITY BEFORE KNOWLEDGE

Circular economy transition through community-based ecopreneurship empowerment model: Reconstructing the environmental care community

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ABSTRACT

Background: The transition to a circular economy requires an approach that is not only concept-based but also practical and community-empowering. This study aims to design a community-based sustainable entrepreneurship *(ecopreneurship)* empowerment model as a strategy for transitioning to a circular economy, with case studies of various environmentally conscious communities in Indonesia. **Method:** The research approach employs a qualitative case study method, comprising the following stages: identifying the problems faced by the community, formulating solutions based on circular economy principles, and validating these solutions through consultation with relevant government agencies, as well as comparing them with best practices and policies in other countries. Data collection techniques include in-depth interviews, participatory observation, and documentation studies. **Findings:** The research results indicate that the primary challenges faced by communities are limited market access and inadequate business capital for developing recycling-based entrepreneurial activities. The primary solution to this problem is to convert the business model into a cooperative or Badan Usaha Milik Desa (BUMDes), allowing it to access business capital from the government through collaboration and institutional support. These findings confirm that a community-based empowerment approach with policy validation has the potential to accelerate the adoption of an inclusive and sustainable circular economy. **Conclusion:** This study shows that a community-based ecopreneurship model can be an effective strategy in the transition to a circular economy. Institutional transformation into cooperatives or BUMDes opens up broader access to funding and institutional support. **Novelty/Originality of the Article:** This article combines a circular economy approach with applicable community-based institutional solutions. The policy validation conducted strengthens the position of this model as a reference for inclusive and contextual transition strategies.

KEYWORDS: circular economy; ecopreneurship; community.

1. Introduction

The complexity of the environmental crisis has become a global issue that is the main concern of environmental observers and stakeholders. The environmental crisis, characterized by global warming and climate change, is one of the features of environmental damage caused by the crisis that has hit and caused concern in all countries around the world. (Malihah, 2024). In addition, environmental damage is also triggered by human activities that do not take into account environmental sustainability. Purwanti (2021) explains this concept as a linear economic model. This concept is based on the "take–make–dispose" principle, which means that we take resources, use them, and then dispose of the

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remains of those resources without further management. This concept has led to excessive use of resources, increased waste, and environmental pollution.

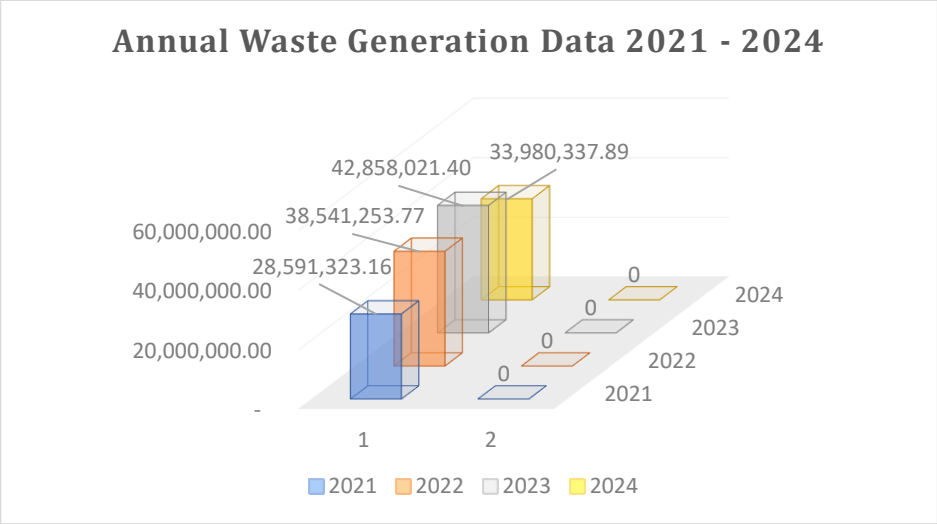

Fig. 1. Annual Waste Generation Data in Indonesia
(Ministry of Environment and Forestry, 2025)

Based on the annual report from the Ministry of Environment and Forestry through the National Waste Management Information System (SIPSN) in 2025, waste generation, which is a measure of the success of waste management, has shown an increase in recent years. Yasmeen et al. (2023) in their research stated that the high level of waste generation is a form of low public awareness, especially in the household sector, which is the largest contributor to waste in Indonesia. The low level of public awareness as a result of this linear economic model requires a comprehensive strategy that is not only focused on efficiency but also sustainability.

To solve all these environmental problems, experts have made various efforts to protect the earth from degradation and environmental issues (Malihah, 2024). These efforts have evolved into a new concept known as the circular economy. This concept aims to create a more sustainable system based on the principles of reducing waste, optimizing resource use, and regenerating natural systems (Harris et al., 2021). Unlike the linear economic model, where raw materials are extracted, processed into products, used, and then discarded, the circular economy prioritizes products that can be reused, repaired, and recycled (Mukherjee et al., 2023).

The implementation of a circular economy is closely related to the achievement of sustainable development goals. In line with the objectives of the Sustainable Development Goals (SDGs) to protect, restore, and improve the sustainable use of ecosystems, the circular economy has become an innovation that promotes the fulfillment of the needs of future generations (Ariningtyas Prabawati, 2022). Additionally, the implementation of the Green Economy concept also contributes to the three dimensions of sustainable development: economic, social, and environmental aspects (Agarwalla, 2024). The integration of global achievements and the implementation of the Green Economy concept within the circular model supports the effectiveness of this model for optimal utilization.

Efforts to implement a circular economy in Indonesia have been integrated into national development planning documents. In the draft Rencana Pembangunan Jangka Panjang Nasional (RPJPN) 2025-2045, the circular economy is one of the policy directions in the Economic Transformation Development Agenda, specifically Goal 5: Implementation of a Green Economy (Jalan et al., 2025). This indicates that the government is striving to leverage circular economy innovations to significantly improve environmental management practices in Indonesia.

However, the implementation of a circular economy in Indonesia still faces challenges that hinder policy implementation. Hidayah dan Wimala (2024) states in their research that bureaucratic complexity and a top-down implementation system hinder the effectiveness of the circular economy model in Indonesia. In addition to these issues, Bittner et al. (2024) found that limitations in waste processing infrastructure and public awareness further exacerbate the implementation of the circular economy model. These issues require a solution-oriented approach to enhance the effectiveness of implementation in Indonesia.

To make the circular economy concept work, we need solutions and approaches that don't just focus on the technical stuff but also get local communities and informal sectors involved. This is where ecopreneurship comes in as a way to empower local communities. Ecopreneurship is a concept of entrepreneurship that combines business orientation and environmental conservation. This concept is not solely profit-oriented but also concerned with other aspects, particularly environmental aspects (Wahyunengseh et al., 2022). Furthermore, the participation of various environmental communities also holds significant potential in implementing circular economic transformation.

To implement a circular economy model, this study aims to provide an applicable community-based ecopreneurship empowerment model that enables community members to utilize natural resource potential sustainably, develop environmentally friendly businesses, and raise collective awareness of the importance of environmental conservation. Empowerment through the concept of ecopreneurship aims to encourage individuals or communities to build environmentally oriented businesses by minimizing waste and focusing not only on profitability but also on ecological sustainability.

2. Methods

This study uses a descriptive qualitative approach to gain an in-depth underst This study uses anding of social interactions, institutional transformations, and economic dynamics that occur in the transition to a circular economy. This approach is considered the most appropriate because it allows for the exploration of social, institutional, and economic dynamics in a real-world context. The research is used to analyze and interpret findings, phenomena, issues, and events that occur by field data (Fiantika et al., 2022). In this study, the ecopreneurship empowerment model is not only seen as an economic innovation but also as a form of collective strategy that grows from the community's concern for environmental sustainability. Thus, the qualitative approach allows researchers to capture the symbolic meanings attached to the community's actions in practicing the circular economy.

The next stage in this research is data collection. Data collection techniques in qualitative research refer to the methods or tools used to gather information relevant to the research objectives. This is designed to enable researchers to understand phenomena in depth and contextually, as well as to gain rich insights into the experiences and perspectives of the subjects (Nartin et al., 2024). This study employs a qualitative approach using data collection techniques through a literature review, which involves a systematic examination of scientific sources and policies relevant to the research theme.

The literature used includes scientific journals, academic books, national and international institutional reports, and the latest government regulations related to sustainable development, circular economy, and environmental entrepreneurship. The literature review provides an important contribution to building a theoretical framework and enriching an understanding of field practices. The literature was selected based on its recency, source credibility, and relevance to the research topic. The literature review not only serves as a theoretical foundation but also acts as a tool for exploring best practices from various regions around the world in the implementation of the ecopreneurship model.

The data obtained was analyzed using several integrated approaches as follows: thematic analysis is used to identify and group the main themes that emerge from the literature review, such as circular innovation, community participation, sustainability values, and policy support. This technique allows researchers to systematically explore the

links between social phenomena and local economic strategies. Thematic analysis helps to build an interpretive structure for qualitative data, thereby supporting a deeper understanding of social meaning.

This study uses SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to evaluate internal and external factors in the implementation of community-based ecopreneurship. This analysis is used to formulate adaptive strategies for facing challenges and optimizing existing potential. (Sasoko & Mahrudi, 2023). SWOT is an important strategic tool in the formulation of context-based policies. The data obtained was then compared with international best practices from countries that have successfully implemented a circular economy through community empowerment. This comparison aimed to identify elements that could be adapted to the Indonesian context.

The meta-synthesis approach is used to integrate various findings from previous studies to form a complete conceptual framework. Through this synthesis, researchers can construct a new narrative based on the integration of previous research results. This technique enriches the context and broadens the scope of discussion, especially in designing a community empowerment model based on sustainability values. In general, the research framework can be presented as follows.

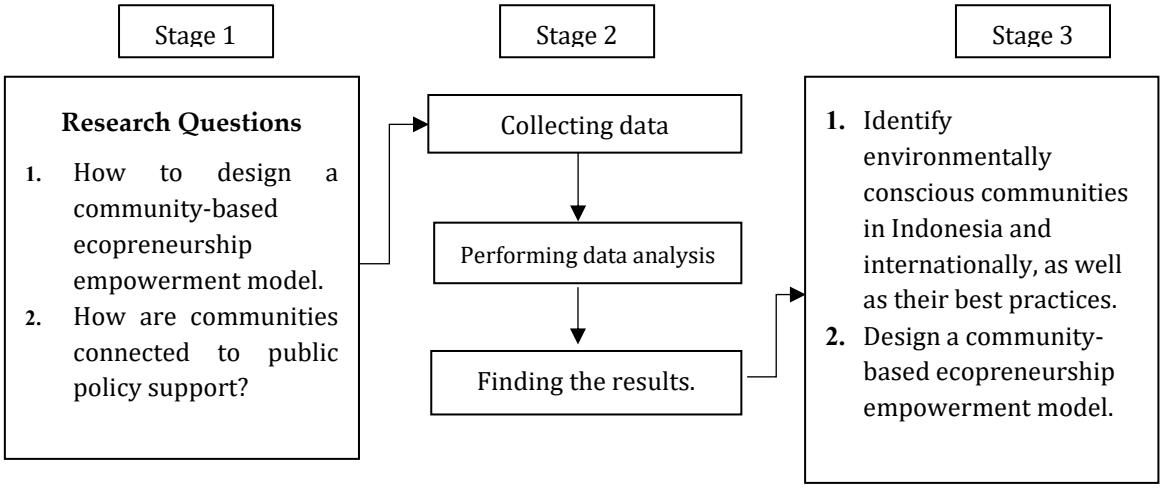

Fig. 2. Research framework

3. Results and Discussion

3.1 Characteristics of environmentally conscious communities in Indonesia

Environmental communities are the main focus of sustainable entrepreneurship (ecopreneurship) strategies that support the transition to a circular economy. These communities contribute significantly to environmental conservation efforts through various empowerment programs. In general, environmental communities in Indonesia act as non-governmental organizations or community-based organizations formed based on a mindset that focuses on raising environmental awareness.

In addition, a clear and professionally managed organizational structure is a key factor in the successful implementation of circular economy-based empowerment strategies. These communities not only prioritize environmental activities, but also build networks of cooperation with the government, the community, and the private sector. The following are several environmentally conscious communities in Indonesia, their focus of activities, and their institutional forms.

After conducting a comprehensive identification, environmental communities in Indonesia show similar characteristics, namely based on environmental awareness and ecosystem empowerment. This reflects a common vision among these communities. Research by Mulawarman et al. (2024) highlights the importance of the Trash Hero

community in Yogyakarta City as an early agent in raising public awareness of the importance of protecting and preserving the environment. Thus, environmental communities play a strategic role in creating a sustainable ecosystem that is not only reactive but also preventive and educational.

Table 1. Environmental care communities in Indonesia

No.	Community and Location	Focus of Activities	Institutional Form
1.	Trash Hero World Community	A non-profit training platform focused on raising awareness and providing environmental education based on SDGs principles.	A non-profit community-based organization affiliated with a multinational community network in various countries, including Indonesia.
2.	Zero Waste Indonesia Alliance (AZWI)	Emphasizes the dissemination of the concepts of zero waste, recycling, and redesigning the life cycle of resources.	A federation-style NGO consisting of various environmental organizations with a national and regional vertical structure in Indonesia.
3.	Waste4Change Indonesia	Offering large-scale waste management services, including waste processing and the provision of consulting and environmental campaigns.	Perseroan Terbatas (PT) provides waste management solutions ranging from research to daily waste processing, as well as generating profits.
4.	Asosiasi Daur Ulang Plastik Indonesia (ADUPI)	A forum for plastic recyclers to improve the quality and quantity of sustainable recycling.	A non-profit organization with more than 500 registered members as part of the upstream-to-downstream plastic recycling ecosystem.
5.	Bye Bye Plastic Bags	Campaign to reduce the use of single-use plastic bags through a series of beach clean-ups and educational activities.	A non-profit organization based in Bali with activities focused on raising awareness and regulatory cooperation with local governments.
6	Dietplastik Indonesia	Advocating for policies to reduce single-use plastic waste in Indonesia	A non-profit organization that collaborates with the KLHK, businesses, and community groups, and is also part of AZWI.
7	Pusat Pendidikan Lingkungan Hidup (PPLH) Bali	Enhancing community capacity in environmental management awareness through direct practice and assistance.	Non-governmental organizations engaged in environmental education and community empowerment are legal entities in the form of foundations.
8	Yaksa Pelestari Bumi Berkelanjutan (YPBB)	Training aimed at achieving an organic lifestyle through educational programs and group support.	A non-profit, non-governmental organization that is also part of AZWI.

(Handinie, 2023; Hastuti et al., 2022; Mulawarman et al., 2024; Nurvadyani, 2024; Ramadhatik et al., 2024)

In terms of institutional structure, it is evident that the forms of organization used are quite diverse, ranging from non-profit organizations, and non-governmental organizations (NGOs), to legal entities such as perseroan terbatas (PT). This diversity in institutional forms reflects both flexibility and sustainability strategies tailored to the primary objectives of each community (Hastuti et al., 2022). The patterns of inter-institutional relationships are also a key characteristic of these communities. Many of them are part of larger networks or collaborate with government agencies, the private sector, and educational institutions. This collaborative approach enhances the effectiveness of the programs implemented, as it

enables the integration of resources, knowledge, and policy influence to achieve sustainable environmental goals.

Fig. 3. AZWI community activities
(Aliansi Zero Waste Indonesia, 2025)

3.2 SWOT analysis of the environmental awareness community

To understand the strategic position of environmental communities in supporting the transition to a circular economy, a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) was conducted. This approach was used to identify internal strengths that can be optimized, weaknesses that need to be addressed, external opportunities that can be exploited, and threats that must be watched out for. Environmental communities, as grassroots actors, play a crucial role in driving behavioral change among the public, strengthening locally-based waste management systems, and practicing the principles of a circular economy. However, the effectiveness of this role is significantly influenced by the internal dynamics of the community and the external context in which it operates.

Through SWOT analysis, a comprehensive picture of the factors that support and hinder the community's success in carrying out its transformative role is obtained. This analysis forms the basis for formulating community empowerment strategies that are more adaptive, measurable, and contextual.

Table 2. Internal factors

No.	Strength	Weakness
1.	High level of environmental awareness and concern among community members.	Weak institutional legality or lack of legal entity status, resulting in limited access to assistance
2.	Community-based (bottom-up) activities that increase a sense of ownership.	Lack of managerial capacity to run businesses or manage environmental projects.
3.	Utilization of waste and local resources for productive activities (e.g., recycling).	Limited access to efficient and environmentally friendly waste treatment technologies.
4.	Existence of networks between environmental communities at the local/regional level.	Limited market access to sell recycled products or eco-products.
5.	Adoption of sustainability values and social innovation in community programs.	Dependence on volunteers who do not have certainty regarding the sustainability of their roles.

(Finewood et al., 2024; Khattak, 2023; Sarkar & Pansera, 2017; Staggenborg, 2021; Van Oers et al., 2018; Weber et al., 2017)

Environmental communities in Indonesia have a number of internal strengths that greatly support their role in the transition to a circular economy. One of the main social assets is the high level of awareness and concern among community members about environmental issues, which forms the basis for the consistency of their movements

(Finewood et al., 2024). A community-based or bottom-up approach also strengthens a sense of ownership over the programs being implemented, thereby increasing active citizen participation. This creates a robust ecosystem to support sustainable environmental conservation efforts.

Innovation based on local potential is also a strength of the community, especially in the utilization of waste and local resources for productive activities such as recycling and handicraft production (Khattak, 2023). Support from inter-community networks further strengthens collaborative capacity in disseminating good practices and innovative solutions. The values of sustainability and the spirit of social innovation that have been internalized in various programs demonstrate that communities are not only responsive to environmental issues but also adaptive in developing relevant and sustainable social enterprise models (Sarkar & Pansera, 2017). Therefore, these communities serve as a concrete example of eco-entrepreneurs emerging from grassroots initiatives.

However, behind these various potentials, environmentally conscious communities also face a number of significant internal weaknesses. One of the main problems is weak institutional aspects, where many communities do not yet have adequate formal legal entities(Van Oers et al., 2018). This condition limits their ability to access funding assistance and establish strategic partnerships with the government and the private sector. Additionally, limited managerial capacity and insufficient access to waste processing technology pose challenges that hinder the efficient and professional management of activities (Staggenborg, 2021).

In addition to internal issues, the success of environmental communities is also greatly influenced by external factors beyond their direct control. These external factors include strategic opportunities that can be leveraged to strengthen the capacity and expand the impact of communities in supporting the circular economy. On the other hand, threats from the external environment can become serious obstacles that disrupt or even derail existing initiatives. Therefore, it is important for communities to develop adaptive strategies that can respond to external dynamics in order to maintain the sustainability of their role and contributions.

Table 3. External factors

No.	Opportunities	Threats
1.	The growing global and national trend toward green economy and sustainability.	Lack of integration between national policies and the specific needs of local communities.
2.	Government support for programs related to strengthening cooperatives, green UMKM, and village empowerment.	Competition with large industrial products that are not environmentally friendly but are cheaper.
3.	Potential collaboration with the private sector, NGOs, and donor agencies for green financing.	Uncertainty regarding environmental regulations and weak supervision of linear economic practices.
4.	Advances in information technology that can be utilized for community promotion and education.	Lack of digital literacy and online marketing among community members.
5.	The enthusiasm of the younger generation for social enterprise and green entrepreneurship.	Risk of “greenwashing” by outside parties who take advantage of community movements without having a real impact.

(Awan et al., 2023; Fernández-Llamazares et al., 2015; Gulliver et al., 2023; Melnykovych et al., 2018; Wallis & Loy, 2021)

Environmental communities have a variety of highly promising external opportunities to strengthen their capacity and expand their impact. Growing global awareness of sustainability issues, supported by green economy trends and the clean energy transition agenda, opens up opportunities for communities to take a more active role in the socio-economic system (Awan et al., 2023). Additionally, support from government programs such as strengthening BUMDes, green UMKM, and various environmentally friendly funding schemes presents strategic opportunities that communities can leverage to develop their

initiatives. This momentum offers communities the chance to become more integrated into sustainable development efforts.

Advances in information technology also provide great opportunities for communities in terms of digital promotion and environmental education. Through online platforms, communities can expand the reach of their campaigns while increasing the marketing of their recycled products (Wallis & Loy, 2021). The enthusiasm of the younger generation for social entrepreneurship and sustainability issues has also driven the transformation of community-based eco-entrepreneurship to become more dynamic and innovative (Gulliver et al., 2023). Additionally, collaboration with the private sector, non-governmental organizations (NGOs), and donors provides access to funding and institutional capacity-building, which are critically needed.

However, amid these opportunities, environmentally conscious communities also face a number of external threats that could potentially hinder the sustainability of their programs. One of the main challenges is the lack of integration between national policies and the specific needs of local communities, which means that programs are not always in line with the reality on the ground (Fernández-Llamazares et al., 2015). Additionally, competition with large industrial products that are not environmentally friendly but are cheaper and highly competitive in the market poses a serious obstacle. Regulatory uncertainty and weak oversight of linear economic practices further exacerbate the situation, while the lack of digital literacy among community members limits the utilization of online marketing opportunities. Another equally important threat is greenwashing by external actors who use environmental imagery without making real contributions, risking damage to the credibility of community movements (Melnykovych et al., 2018).

By integrating internal strengths and external opportunities, environmentally conscious communities can take a strategic position as drivers of community-based circular economies. To that end, empowerment strategies need to be directed toward institutional transformation, digital capacity building, and the formation of inclusive partnership networks. A community-based approach that is responsive to local contexts must be supported by policy frameworks and sustainable access to funding. As a result, communities will not only survive but thrive as competitive and impactful players in the green economy.

3.3 National and international best practices

To formulate a more effective community empowerment strategy for environmental sustainability in support of a circular economy, it is important to examine best practices that have been implemented by other communities at the national and international levels. These best practices provide concrete examples of how communities can manage waste sustainably, build strong institutions, and create economic value through social innovation and community participation. Learning from these experiences is important, especially in addressing the various internal and external challenges identified through SWOT analysis. Therefore, this comparative study serves as the foundation for developing a more adaptive and long-term impactful community empowerment model.

Table 4. Best Practice

No.	Community and Location	Main Activities	Best Practices
1.	Waste4Change, Jakarta	Responsible Waste Management	Providing segregated waste collection services, education, and data-based community recycling processing
2.	Aliansi Zero Waste Indonesia (AZWI), Indonesia (National)	Zero waste policy advocacy & community engagement	Advocating for plastic ban policies and community involvement in sustainable waste management
3.	Delterra – Rethinking Recycling, Bali	Community-based integrated recycling	Building recycling systems in villages/cities with community training, waste separation, and logistics systems

4.	Bye Bye Plastic Bags (BBPB), Bali	Reduction of single-use plastics	Promoting plastic-free movements in schools & cities through youth educational campaigns
5.	YPBB Bandung, Bandung	Household waste reduction	Establishing community-based neighborhood systems for sorting and managing organic/inorganic waste
6.	Gemah Ripah Waste Bank, Yogyakarta	Community waste savings program	Creating resident incentive systems to save waste and exchange it for economic value through cooperatives
7.	Trash Hero Indonesia, Indonesia (Multikota)	Plastic waste education and reduction	Involving residents in regular clean-up actions and reusable bottle/bag campaigns
8.	PPLH Puntondo, Takalar	Environmental management education and training	Educating village communities about participatory recycling, composting, and conservation
9.	ADUPI, Indonesia (Nasional)	Small and medium-scale industrial plastic recycling	Developing plastic recycling value chains, MSME training, and integrating waste pickers into national recycling systems
10.	Dietplastik Indonesia, Indonesia (Nasional)	Plastic reduction advocacy and campaigns	Advocating plastic bag ban policies, educating about refill stations and plastic-free stores
11.	Precious Plastic, Global (berbasis di Belanda)	Open-source plastic recycling technology	Providing DIY recycling machine designs & small recycling business guides for global communities
12.	SWaCH Pune, India	Waste picker cooperatives and urban recycling systems	Offering official waste picker collection services with direct economic incentives
13.	Kamikatsu Zero Waste Center, Jepang	Zero-waste cities	45-category waste sorting system with active resident participation, only 20% waste to incinerators/landfills
14.	Cataki, Brazil	Digital recycling apps & informal waste worker	Connecting waste pickers with residents via apps to accelerate recycling and increase informal income
15.	Zero Waste Europe (ZWE), Eropa	Zero-waste policies and community advocacy	Supporting zero waste cities through policy advocacy and community circular economy case studies
16.	Capannori Zero Waste, Italia	Europe's first zero-waste city	Operating waste collection systems, reuse centers, and household/school education programs
17.	Partizánske Biowaste Program, Slovakia	Local-scale organic waste management	Household composting and community-based participatory monitoring of bio-waste management
18.	Calatafimi Segesta, Italia	Cities with drastically improved waste sorting	Increasing recycling rates from 40% to >85% in 3 years through incentives, education, and resident responsibility
19.	International Alliance of Waste Pickers, Global	Waste picker advocacy in global recycling systems	Advocating for formal recognition of waste pickers in developing countries' circular economy policies
20.	Trash Hero Global, Global	Community-led plastic reduction actions	Organizing scheduled clean-up movements with youth participation and local sustainability education

(Aliansi Zero Waste Indonesia, 2024; Bye Bye Plastic Bags, 2018; Costa & Mol, 2023; Delterra, 2021; Estrada et al., 2023; Handinie, 2023; Hogg, 2021; Lestari et al., 2020; Mulawarman et al., 2024; Mustikasari et al., 2022; Nurvadyani, 2024; Rahmadhani Rahman et al., 2023; Shenyoputro & Jones, 2023; Spekkink et al., 2020; Yuliarso & Purwani, 2018)

A comparative analysis of national and international community best practices reveals recurring success patterns driven by a combination of public participation, institutional strengthening, and technological support. At the national level, communities such as Waste4Change, YPBB Bandung, and Gemah Ripah Waste Bank have successfully developed

context-specific, participatory approaches to establish community-based circular economy systems. Meanwhile, international communities like SWaCH in India and Cataki in Brazil demonstrate successful models for integrating informal waste pickers into formal waste management systems through policy support and digital platforms. These cases provide compelling evidence that effective recycling practices require not only technical solutions but also inclusive social and economic structures.

The primary difference between national and international practices lies in institutional support and systemic integration. Several international communities like Kamikatsu and Capannori can achieve very high recycling rates because they are supported by strong local policies, citizen incentive systems, and mature logistical infrastructure. In contrast, national communities tend to grow from grassroots initiatives and still face challenges regarding legality, scale, and market access. However, Indonesian communities demonstrate strengths in locally-based innovation and educational approaches, as shown by Bye Bye Plastic Bags and Trash Hero Indonesia, which have successfully engaged the younger generation in environmental campaigns.

From this comparison, it can be concluded that international practices provide important lessons about the significance of synergy between communities, government, and technology in forming a structured circular economy system. For the Indonesian context, adopting similar models needs to be adapted to local social and cultural characteristics. An approach that emphasizes community empowerment, the establishment of environmental cooperatives, and the digitalization of waste management systems can serve as adaptive strategies that strengthen communities' position as key actors in transitioning toward an inclusive and sustainable green economy.

3.4 Community-based ecopreneurship empowerment model synthesis

Literature analysis results, community profiles, national and international best practices, and SWOT studies indicate that community-based ecopreneurship empowerment is a complex and multidimensional approach. This empowerment cannot be built on environmental preservation spirit alone but requires strong institutional support, cross-actor participation, and responsive policy support systems. The research findings confirm that communities successfully developing ecopreneurship generally possess adaptive organizational structures, access to training and technology, and extensive partnership networks. Therefore, an empowerment model is needed that emphasizes not only environmental aspects but also comprehensively integrated social, economic, and institutional aspects.

The initial stage in the community-based ecopreneurship empowerment model begins with mapping the basic capital already possessed by the community. This capital covers four main aspects that form the foundation for the success of subsequent empowerment processes. First, environmental awareness and local values constitute crucial social capital, demonstrating collective concern for sustainability issues and ecosystem preservation. Second, existing community structures provide an organizational basis that enables activity coordination, decision-making, and participatory role distribution. Third, available waste potential or local resources become production capital that can be developed into economically valuable products through recycling processes or environmental innovation. Finally, the existence of basic support such as initial funding, human resources, and external partnerships serves as reinforcing factors to begin program interventions. These four elements ensure the community has sufficient initial readiness to undergo the transformation process toward an ecopreneurship ecosystem.

The community empowerment process is the core of the model designed to transform local communities into competitive and sustainable environmentally-based entrepreneurs. There are five main interconnected stages. The first stage is institutional strengthening, which emphasizes the importance of establishing legal entities such as cooperatives, BUMDes (village-owned enterprises), or NGOs so that communities have formal legitimacy and access to funding and government programs. The second stage involves individual

capacity building through ecopreneurship literacy and training. This training covers technical aspects such as waste processing and creating eco-friendly products, as well as managerial aspects such as social enterprise management and digital marketing.

The third stage focuses on technological and production innovation, by encouraging the adoption of appropriate technologies (for example shredding machines, composters, or product digitalization systems) that suit the local community context. The fourth stage is network and partnership development that connects communities with universities, NGOs, the private sector, and local government, thereby expanding the scale and support system of the program. Finally, the fifth stage encourages communities to actively participate in policy advocacy and validation through discussion forums with policymakers and practice-based policy research. These five stages form the main pillars of building a resilient and integrated empowerment ecosystem.

The output of this community empowerment process materializes in the formation of a concrete and operational ecopreneurship ecosystem. This ecosystem encompasses various tangible outcomes from community activities that have undergone institutional transformation, training, and technological innovation processes. One key output is the creation of recycled products produced by the community, whether in the form of handicrafts, consumer goods, or other functional products with added economic value. Additionally, the emergence of local trading platforms or community marketplaces serves as an important medium for more widely and inclusively marketing green products.

This ecosystem is further strengthened by the formation of inter-community green cooperative networks, enabling collaboration, resource exchange, and strengthened bargaining positions within circular economy value chains. Moreover, the ecosystem helps drive broader public awareness of 3R principles (reduce, reuse, recycle) and the importance of circularity in daily life, reflecting behavioral shifts from consumptive patterns toward sustainable consumption models.

The long-term impacts of this model's implementation are divided into four main dimensions: economic, social, environmental, and policy. Economically, community empowerment through ecopreneurship directly contributes to increased local income and encourages the emergence of active and competitive green MSMEs. Socially, this model empowers vulnerable groups such as women and youth, while reviving collective values like cooperation (gotong royong) in business management and environmental conservation. Environmentally, the impacts are significant, where waste amounts can be drastically reduced, and environmental quality (both at household and community levels) becomes cleaner and healthier. Finally, from a policy perspective, this model has the potential to be replicated and adopted by other communities as well as local governments, as an alternative development policy based on community participation. Thus, the outcomes of this model are not only local and sectoral but also contribute to systemic change in the transition towards a green and circular economy at the national level.

Based on literature synthesis, SWOT analysis, and best practices from both national and international communities, the community-based ecopreneurship empowerment model is formulated through five integrated key components. Each component is designed to address specific problems faced by communities while building a systemic foundation toward a competitive and sustainable circular economy ecosystem. These five components include: (1) adaptive institutions, (2) environmental education and literacy, (3) multi-stakeholder networks and collaboration, (4) access to technology and markets, and (5) policy validation and advocacy. Each component does not stand alone but rather supports each other and forms a comprehensive transformation framework. For example, strong community institutionalization will increase the capacity to access training and technology; collaborative networks will open market opportunities and resources; while policy validation will expand the systemic impact of community practices. The following table summarizes these five components along with their functional descriptions in the context of environmental community empowerment.

Table 5. Formulation of the model

No.	Model Components	Description
1.	Adaptive Institutions	Communities need to have formal organizational structures (cooperatives/NGOs/BUMDes) to access funding, training, and partnerships with both public and private sectors.
2.	Environmental Education and Literacy	Strengthening individual community capacity is conducted through ecopreneurship training, business management, waste processing, and simple recycling technologies.
3.	Multi-stakeholder Networks and Collaboration	Establishing a collaborative ecosystem between communities, local governments, universities, and private sector partners to expand program reach and scale.
4.	Technology and Market Access	Encouraging the use of information technology for digital marketing and opening market access for eco-friendly products through local and national platforms.
5.	Policy Validation and Responsiveness	Developing evidence-based policies from local community practices, and involving communities in environmental policy-making processes.

Table 5 above shows that the community-based ecopreneurship empowerment approach does not only focus on environmental aspects, but also includes institutional, human resource capacity, technology, partnerships, and public policy dimensions. Institutional strengthening serves as the foundational base that enables communities to gain legal access, funding, and strategic partnerships. The education and literacy component then ensures community members possess relevant technical and managerial skills to independently and sustainably manage environmentally friendly businesses.

Furthermore, this model emphasizes the importance of multi-stakeholder networks and collaboration as a strategy to expand support from the government, private sector, and academic institutions. Strengthening access to technology and markets aims to address common challenges faced by communities regarding production tool limitations and product marketing difficulties. Meanwhile, policy validation and advocacy enable communities to not just be program recipients, but active participants in evidence-based policy formulation. Thus, these five components collectively form a comprehensive empowerment framework that is ready to be replicated in various regions with appropriate local adaptations.

3.5 Strategic recommendations for implementation in Indonesia

The series of strategic recommendations for implementing the community-based ecopreneurship circular economy model aims to build an adaptive, inclusive, and sustainable community empowerment system. This strategy is designed to strengthen the position of environmentally-conscious communities as key actors in driving the green economy - not merely as program implementers, but as equal partners in sustainable social and economic development. Strengthening community institutions, whether through the establishment of cooperatives, non-governmental organizations, or Village-Owned Enterprises (BUMDes), serves as the main foundation so that communities gain formal legitimacy to access funding, training, and partnerships.

Furthermore, these recommendations emphasize the importance of building cross-sectoral collaborations between communities, central and local governments, the private sector, financial institutions, academics, as well as media and digital platforms. Such collaboration is necessary to create a comprehensive support ecosystem and avoid the top-down approach that has been a constraint in policy implementation at the grassroots level. Therefore, the proposed strategy also focuses on aligning public policies with local community needs, prioritizing the principles of evidence-based policy and active community involvement in environmental policy formulation processes.

Next, another strategic objective is to expand community access to recycling technologies, digital markets, and green funding sources. This initiative is expected to

overcome classic barriers such as limited production tools, marketing skills, and low digital literacy among communities. With open access to these resources, communities can develop ecopreneurship more professionally and competitively. Finally, this strategy is also directed at driving social transformation through public education, promotion of low-waste lifestyles, and strengthening environmentally-friendly consumer behavior in society at large. Consumer behavior change becomes an integral part of realizing a circular economy system, where all levels of society participate as active subjects in the sustainability agenda.

Thus, the formulated strategic recommendations are not merely technocratic, but also transformative and contextual. This strategy comprehensively addresses the needs for community strengthening, policy alignment, access expansion, and social influence to support an effective circular economy transition in Indonesia. In implementing the strategy, various stakeholders are naturally involved. The following are several stakeholders involved in implementing the community-based ecopreneurship empowerment concept.

Table 6. Stakeholder mapping in strategy implementation

No.	Stakeholder	Primary Role	Contribution
1.	Local Communities	Main actors implementing ecopreneurship	Green business initiatives, waste management, recycling, environmental education
2.	Local Government	Local regulator and facilitator	Permits provision, MSME/BUMDes support access, training, RPJMD integration
3.	Ministries/Agencies (Ministry of Environment and Forestry, Ministry of Cooperatives and SMEs, Ministry of Villages, National Development Planning Agency)	National policymakers & funding scheme providers	National programs (BUMDes, green cooperatives), circular economy roadmap
4.	Financial Institutions & Corporate CSR	Financial support and social investment providers	Green financing, business incubation, environment-based CSR
5.	Universities/Academics	Research partners and capacity builders	Knowledge transfer, technical training, policy validation, monitoring & evaluation
6.	NGOs/Civil Society Organizations	Community-global network connectors & advocates	Community mentoring, public education, zero waste campaigns
7.	Media & Digital Platforms	Communication Channels, Promotion, and Public Literacy	Dissemination of best practices, community product branding, digital marketing
8.	Private Sector/Green Startups	Business partners and green technology collaborators	Recycling equipment provision, joint marketing, green value chain integration
9.	General Public	Consumers and movement supporters	Green product purchases, cooperation participation, consumption behavior change

The implementation strategy for the community-based ecopreneurship circular economy model in Indonesia is designed based on fundamental principles that are adaptive, participatory, and contextual. The first principle underlying the implementation is the institutional transformation of communities. Many environmental communities in Indonesia do not yet have legitimate legal entities, so their access to funding, training, and formal partnerships remains very limited. Therefore, the implementation strategy emphasizes the importance of changing community organizational structures into legal institutional forms such as cooperatives, BUMDes (Village-Owned Enterprises), or foundations, to enhance their legitimacy and operational sustainability within the green economy ecosystem.

The second principle is multistakeholder collaboration, which emphasizes the importance of active involvement from all stakeholders in the community empowerment process. Central and local governments, the private sector, universities, donor institutions, NGOs, as well as media and digital platforms need to form a mutually supportive ecosystem to expand the impact and sustainability of programs. This collaborative approach not only strengthens community capacity but also creates strategic alliances capable of addressing the complex challenges of implementation at the local level.

Furthermore, the implementation strategy is also based on the principle of policy adaptation to local needs. To date, national policies have often failed to integrate with on-the-ground community realities, resulting in many ineffective programs. This principle demands community involvement in the policy formulation process, along with evidence-based policy development that reflects grassroots best practices. This approach will strengthen policy legitimacy while enhancing program relevance at the local level.

The fourth principle is strengthening digital literacy and technological access. To realize a competitive ecopreneurship model, communities need to be equipped with capabilities to access and utilize information technology, particularly in digital marketing and innovation-based waste processing. Additionally, communities must also have access to broader markets for the eco-friendly products they produce. Therefore, the implementation strategy prioritizes community connectivity with digital platforms, online markets, and sustainable distribution partnerships.

Finally, this strategy makes public behavior transformation a crucial implementation component. Public awareness of the circular economy importance must be built through education, social campaigns, and active community participation as conscious consumers. This consumption behavior change serves as the primary requirement for community ecopreneur products to gain market support while creating a sustainability-oriented ecosystem. Collectively, these principles form a comprehensive and realistic implementation framework supporting Indonesia's circular economy transition. This approach focuses not merely on technical or policy aspects alone, but equally emphasizes strengthening social capacities, institutional frameworks, and community participation as foundational pillars of sustainable development.

4. Conclusions

This research confirms that Indonesia's transition to a circular economy requires an approach that is not only based on technocratic concepts but also emphasizes community empowerment as the main agent of change. The community-based ecopreneurship model serves as a strategic solution that bridges environmental and economic interests through participatory approaches grounded in sustainability values. Case studies of various environmentally-conscious communities in Indonesia reveal that limitations in legality, market access, and capital constitute major obstacles to developing recycling-based green businesses. Therefore, institutional transformation into cooperatives or BUMDes (Village-Owned Enterprises) becomes a crucial step to strengthen communities' position within the sustainable development system.

The empowerment model formulated in this study is built upon five main components: adaptive institutions, environmental education and literacy, multi-stakeholder networks, technology and market access, and public policy validation. These five components work in an integrated manner to form a resilient and inclusive circular economy ecosystem. The findings show that community success is determined not only by internal capacity, but also by systemic external support, including the roles of government, private sector, and academia. With a contextual and best practice-based model, community empowerment can be replicated across various regions while still considering local characteristics.

The strategic recommendations in this study provide clear implementation guidance for expanding the impact of community ecopreneurship models nationally. The principles underlying the implementation strategy—such as institutional transformation, cross-sector

collaboration, digitalization, and public education—form the foundation for creating sustainable social and economic change. The synergy between communities and public policy becomes key to driving systemic change that is inclusive and relevant to local challenges. With strengthened collaboration among stakeholders, this model can support the achievement of green economy development targets as outlined in the RPJPN 2025–2045.

Overall, this study provides both theoretical and practical contributions to Indonesia's circular economy transition efforts. This contribution is reflected in the formulation of an applicable empowerment model that is responsive to community dynamics and capable of driving social and environmental innovation. The community-based ecopreneurship model has the potential to strengthen local socio-economic resilience while sustainably improving environmental quality. Therefore, this study recommends integrating this model into national development policies, as well as strengthening cross-sectoral support to expand its scalability and impact in the future.

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