

Integrating Circular Economy and Social Entrepreneurship for Community Empowerment: Lessons from Bank Sampah Flores

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ABSTRACT

The rapid growth of coastal pollution and unmanaged solid waste has intensified the need for sustainable approaches that address environmental degradation while improving community livelihoods. Previous studies have predominantly examined circular economy (CE) and social entrepreneurship (SE) as separate approaches, while limited attention has been given to how both are operationally integrated within grassroots waste management to foster community empowerment. This study examines how CE practices and SE are integrated through a community-based waste bank in Lokaria, Indonesia. A qualitative case study was conducted using semi-structured interviews, direct observation, and organizational documents involving five information-rich informants. Reflexive thematic analysis was combined with an abductive strategy, guided by Institutional Theory and the Resource-Based View (RBV). Findings show that the waste bank institutionalizes sorting, collection, pricing, recycling, and upcycling, converting waste into higher-value products while generating economic, social, and environmental value. Empowerment emerged through skills, inclusion, environmental awareness, and participation, but also functioned as a reinforcing capability for subsequent circular practices. Sustainability remained constrained by limited infrastructure, incentive-dependent participation, weak local demand, and insufficient institutional support. The study develops a Dynamic Community Empowerment Model in which circular practices enable resource transformation, social entrepreneurship organizes hybrid value creation, and empowerment feeds back to strengthen future circular engagement. The model extends RBV from firm-level resources to socially embedded community capabilities and complements Institutional Theory by showing that local capabilities require external institutional alignment to scale.

Keywords: Circular economy; Social entrepreneurship; Community empowerment; Waste management; Indonesia

INTRODUCTION

The accelerating growth of solid waste is a major sustainability challenge in developing countries, where consumption and urbanization often exceed waste-management capacity. Coastal communities are particularly exposed because unmanaged plastic waste affects ecosystems and livelihoods (Amin et al., 2026; Piao et al., 2023). Sustainable waste management therefore concerns not only environmental protection but also local economic opportunity and social inclusion (Reis et al., 2023).

Circular Economy (CE) offers an alternative to the linear extraction-production-disposal model by emphasizing resource circulation, waste prevention, reuse, recycling, and value retention (Geissdoerfer et al., 2017; Kirchherr et al., 2017). Yet much CE research remains oriented toward industrial systems, technological innovation, and formal policy, leaving less explanation of how circular principles are enacted by resource-constrained communities through local knowledge, informal institutions, and collective participation (Ceddia et al., 2024; Cherrington et al., 2024).



Social Entrepreneurship (SE) can bridge this implementation problem because it combines entrepreneurial mechanisms with explicit social or environmental missions (Mair & Martí, 2006; Saebi et al., 2018; Santos, 2012). However, SE research has more often emphasized social innovation and hybrid organizational forms than the everyday mechanisms through which communities turn environmental liabilities into circular economic value. The intersection of CE and SE consequently requires closer empirical attention at the grassroots level.

Three gaps motivate this study. First, an empirical gap concerns the operational integration of CE and SE: existing streams provide substantial knowledge on each approach but less evidence on how waste recovery, product innovation, livelihood creation, and social participation are organized simultaneously. Second, a theoretical gap concerns the interaction between external institutions and internal community capabilities. Institutional Theory explains legitimacy, norms, and regulatory conditions (Scott, 2014; Suchman, 1995), whereas RBV highlights valuable and socially embedded resources (Barney, 1991; Hart, 1995); neither perspective alone fully explains their interaction in grassroots circular initiatives. Third, a contextual gap concerns rural Indonesia, where Bank Sampah initiatives operate through community networks, informal arrangements, limited infrastructure, and collective values such as *gotong royong*. These conditions differ from mature recycling systems in developed economies and may alter how circular value is created and sustained.

These gaps are not simply a matter of combining two labels. They concern the mechanism through which environmental action becomes an enduring community capability. In grassroots settings, waste collection can generate environmental benefits without generating sufficient income, while entrepreneurial activity can generate income without producing durable ecological norms. The analytical problem is therefore to explain the conditions under which material recovery, entrepreneurial coordination, and community capability reinforce one another.

Evidence from community-based circularity also indicates that outcomes depend on the institutional and spatial context in which initiatives operate. Rural coastal communities may face longer collection distances, limited processing equipment, weaker purchasing power, and less reliable market access than industrial or urban circular-economy settings. These conditions make it necessary to examine not only what the waste bank does, but also why particular practices produce empowerment for some participants while remaining economically unattractive for others.

Addressing these gaps, this study examines Bank Sampah Flores in Lokaria, Sikka Regency, Indonesia, asking: (1) How are CE principles and SE practices operationally integrated? (2) Through what mechanisms does this integration contribute to community empowerment and local value creation? and (3) What institutional and resource-related conditions enable or constrain sustainability? The study contributes by explaining grassroots circularity as a capability-building process, showing how social entrepreneurship organizes hybrid value creation, and demonstrating that empowerment is both an outcome and a reinforcing capability rather than a terminal outcome.

LITERATURE REVIEW

Circular Economy, Social Entrepreneurship, and Grassroots Value Creation

CE provides the material logic of resource circulation, but does not fully explain who organizes resource recovery, how waste acquires exchange value, or how benefits are distributed at the grassroots level, where circular practices depend heavily on local skills, trust, voluntary participation, and informal coordination. Social entrepreneurship (SE) provides an organizing mechanism by linking social and environmental missions with entrepreneurial action and market-based activities (Gallardo-Vázquez et al., 2024; Saebi et al., 2018). In this case, entrepreneurial functions are distributed across managers, artisans, participants, and community networks that organize collection, develop value-added products, and connect them with potential buyers. Thus, the analytical question is not simply whether CE and SE are compatible, but how entrepreneurial capabilities make circular practices economically and socially actionable in local settings.

Bank Sampah initiatives illustrate this intersection: households sort and deposit recyclable materials, while the waste bank creates value through collection, valuation, recycling, and upcycling. Previous studies associate waste banks with environmental awareness, participation, and livelihood benefits (Dhokhikah et al., 2015; Irfana et al., 2023; Ismiraj et al., 2023). However, an

important unresolved issue is whether these activities represent isolated waste-management outputs or a capability-building ecosystem in which environmental action, entrepreneurship, and community empowerment reinforce one another.

Institutional Conditions and Resource Capabilities

Institutional Theory explains how regulatory arrangements, social norms, legitimacy, and market conditions shape the survival and scalability of grassroots circular initiatives (Scott, 2014; Suchman, 1995). However, an exclusive focus on external constraints may overlook why some communities can create value despite institutional weaknesses. RBV provides a complementary internal perspective, emphasizing valuable, rare, difficult-to-imitate, and effectively organized resources (Barney, 1991). In community waste banks, these resources are primarily socially embedded capabilities, including local ecological and craft knowledge, trust, social networks, collective learning, and the ability to coordinate sustained participation.

The two perspectives are therefore combined analytically rather than additively. Institutional Theory identifies the external conditions that enable or constrain the legitimization, support, and market connection of local initiatives, while RBV explains how communities mobilize embedded knowledge and social resources to transform waste into value. Importantly, waste itself is treated not as the strategic resource, but as an input whose value depends on these socially embedded capabilities. Their interaction helps explain why a capable grassroots initiative can generate environmental and social value yet experience weak economic value capture when infrastructure, incentives, legitimacy, and market demand remain inadequate.

Analytical Framework: Dynamic Community Empowerment Model

The analytical framework conceptualizes CE practices as the operational mechanism for resource transformation and SE as the organizing mechanism for hybrid value creation. Community empowerment emerges through income, skills, inclusion, environmental awareness, and participation. Importantly, empowerment feeds back into the system: enhanced capabilities and collective responsibility can strengthen subsequent sorting, innovation, and resource circulation. External institutional conditions surround this process by enabling or constraining infrastructure, legitimacy, market access, and scalability. The framework was used analytically rather than as a set of propositions.

Table 1. Analytical Elements of the Dynamic Community Empowerment Model

Analytical Element	Core Function	Theoretical Lens
Circular economy practices	Sorting, recovery, reuse, recycling, upcycling	CE
Social entrepreneurship	Mobilization, innovation, hybrid value creation	SE
Community empowerment	Income, skills, inclusion, ecological agency	RBV
Institutional environment	Regulation, legitimacy, infrastructure, markets	Institutional Theory
Feedback	Empowered communities reinforce participation and circular practices	Dynamic integration

Source: Authors' analytical synthesis, 2026.

The framework illustrates a dynamic relationship between circular economy practices, social entrepreneurship, and community empowerment. Circular economy practices transform waste into economic and social value through sorting, recycling, reuse, and upcycling, while social entrepreneurship facilitates this process by mobilizing community participation, developing entrepreneurial capabilities, and creating sustainable livelihood opportunities. Community empowerment emerges through increased income, skills, environmental awareness, social inclusion, and collective capacity. Importantly, empowerment is not merely an outcome; empowered communities can reinforce circular practices through stronger participation, innovation, resource management, and collective environmental responsibility. Thus, grassroots

circular initiatives are conceptualized as a dynamic process in which circular practices, entrepreneurial mechanisms, and community capabilities continuously interact within a broader institutional environment.

METHOD

Research Design and Case Selection

This study employed an interpretive qualitative case study of Bank Sampah Flores in Lokaria Village, Sikka Regency, East Nusa Tenggara. The case was purposively selected because it integrates community-based waste recovery, upcycling, income-generating activities, and environmental education within a rural coastal context characterized by limited infrastructure and market access. Bank Sampah Flores constituted the primary unit of analysis, while managers, operators, artisans, and community participants served as embedded units, allowing organizational routines to be examined alongside participants lived experiences.

The interpretive approach treated empowerment, environmental responsibility, and entrepreneurial motivation as context-dependent meanings rather than fixed constructs. Participant accounts were therefore interpreted through everyday practices and the analytical framework, including both enabling and constraining evidence. Notably, financial incentives could increase participation while simultaneously indicating that environmental motivation was not yet fully internalized. The analysis followed an abductive strategy, iteratively comparing empirical observations with theoretical perspectives (Timmermans & Tavory, 2012), with Institutional Theory and RBV subsequently used to explain how external institutional conditions and community capabilities interact.

Participants, Information Power, and Data Collection

Five key informants were purposively selected because they held direct and complementary knowledge of Bank Sampah Flores. INF-01 contributed information on strategy, pricing, value creation, and external constraints; INF-02 on collection, sorting, and logistics; INF-03 on upcycling and income generation; INF-04 on motivation, behavior, and economic returns; and INF-05 on inclusion, awareness, and participation. The sample size was determined by information power rather than numerical representativeness, given the focused research questions, case specificity, strong interviewer-participant relevance, and use of multiple data sources (Malterud et al., 2016). Interviews were conducted sequentially with preliminary coding after each interview. By the fifth interview, recurring explanations had emerged across circular practices, value creation, empowerment, and institutional constraints, with no substantially new conceptual dimensions identified, supporting the adequacy of the sample through meaning saturation (Hennink et al., 2017).

Fieldwork was conducted from March to May 2026. Semi-structured, face-to-face interviews took place primarily at the Bank Sampah Flores facility and surrounding community areas and lasted approximately 50 – 90 minutes. With participants' permission, interviews were digitally audio-recorded and transcribed verbatim. Interviews were conducted in Bahasa Indonesia and translated into English for analysis and publication, with translated passages checked against the original transcripts to preserve contextual meaning.

The interview protocol covered four domains: (1) circular economy practices, including sorting, collection, recycling, reuse, and upcycling; (2) social entrepreneurship, including mission, mobilization, product innovation, and income generation; (3) community empowerment, including skills, income, awareness, inclusion, and participation; and (4) institutional conditions, including infrastructure, government support, market access, partnerships, and policy implementation. Follow-up questions were used to explore issues emerging beyond the predefined guide.

Table 2. Profile of Research Participants and Their Analytical Contributions

Informant	Role	Main Contribution
INF-01	Owner-manager	Strategy, pricing, constraints, value creation
INF-02	Operations coordinator	Collection, sorting, logistics

INF-03	Active member/artisan	Upcycling, production, income
INF-04	Community participant	Motivation, behavior, economic returns
INF-05	Regular community participant	Inclusion, awareness, participation

Source: Research Data, 2026

Data were collected through semi-structured interviews, direct observations, and organizational documents. The interview protocol covered four domains: circular economy practices, social entrepreneurship and value creation, community empowerment and participation, and institutional and market constraints. Interviews were conducted face-to-face, audio-recorded with participants' permission, transcribed verbatim, and translated into English, with translated passages checked against the Indonesian originals to preserve contextual meaning. Field notes documented operational practices and social interactions, while organizational documents provided contextual evidence for triangulation.

Reflexive Thematic and Abductive Analysis

Empirical data were analyzed using Reflexive Thematic Analysis following Braun and Clarke (2021), combined with an abductive strategy in which theoretical concepts were developed iteratively rather than imposed mechanically. Initial codes were generated from interview and observation data, refined through analytic memos and cross-source comparison, and subsequently interpreted using RBV and Institutional Theory. For example, product innovation was initially identified as an empirical practice and later interpreted as a capability for resource transformation, while infrastructure and market constraints were understood as institutional boundary conditions.

The analysis proceeded through six stages: familiarization, initial coding, focused coding and category development, theme development, theoretical interpretation, and analytical integration. Initial codes included waste sorting, plastic collection, ecobrick production, product innovation, community participation, household income, environmental awareness, government support, infrastructure limitations, market uncertainty, and community trust. These codes were clustered into broader categories: circular resource management; hybrid value creation; community empowerment; and institutional conditions, respectively. The resulting themes were examined for relationships and explanatory patterns rather than frequency alone.

To enhance analytical transparency, the coding tree and illustrative coding examples were retained. Four aggregate themes emerged: (1) Operationalization of Circular Economy Practices; (2) Social Entrepreneurship as a Mechanism of Value Creation; (3) Community Empowerment through Circular Social Innovation; and (4) Institutional Conditions Shaping Sustainability. The abductive interpretation then examined how these themes interacted with RBV and Institutional Theory to explain the relationship between community capabilities, value creation, empowerment, and institutional constraints.

Table 3. Coding Tree Linking Initial Codes, Focused Categories, and Aggregate Themes

Initial Codes	Focused Categories	Aggregate Themes
Waste sorting; collection; recycling; upcycling	Circular resource management; material transformation	Theme 1: Operationalization of CE Practices
Social mission; mobilization; product innovation; market linkage	Hybrid value creation; entrepreneurial capability	Theme 2: SE as Value-Creation Mechanism
Income; skills; awareness; participation; inclusion	Economic capability; collective learning; behavioral change	Theme 3: Community Empowerment
Infrastructure limits; weak regulation; market demand; support gaps	Institutional barriers; legitimacy; external dependency	Theme 4: Institutional Conditions

Source: Authors' analysis of interview, observation, and document data, 2026.

The coding tree shows that the analysis moves beyond describing waste management activities to explain how environmental problems are transformed into social and economic opportunities. The four themes capture the operationalization of circular economy practices, entrepreneurial mechanisms of value creation, development of community capabilities, and institutional conditions that enable or constrain sustainability. Importantly, the coding structure reflects the dynamic analytical framework in which community empowerment is not merely an outcome but an evolving capability that can reinforce circular practices through increased participation, collective knowledge, and environmental responsibility. Thus, grassroots circular initiatives are understood as a continuous interaction among resource transformation, entrepreneurial action, community capability development, and institutional conditions.

Research Trustworthiness and Ethics

Methodological rigor was ensured through the four trustworthiness criteria of Lincoln and Guba (1985). Credibility was strengthened through methodological and source triangulation and member checking. Transferability was supported through contextual description of the case and participants. Dependability was addressed through an audit trail covering interview procedures, field notes, coding decisions, and analytical memos. Confirmability was supported through reflexive notes and continuous comparison between empirical evidence and theoretical interpretation. Participation was voluntary, confidentiality was respected, and quotations were reported using informant codes.

RESULT

Environmental Crisis as the Trigger for Circular Social Innovation

INF-01 described the origin of the initiative as a response to recurring coastal accumulation: "Around 2014, when the western season arrived, waste from the sea drifted into our yards and gradually accumulated. Moreover, many people were still disposing of their waste into drainage channels that flow into the sea." This account indicates that the initiative was initially problem-driven rather than market-driven. The environmental crisis created a shared reason for collective action, while the later economic mechanisms helped stabilize participation.

The finding also contains an important qualification. The reinterpretation of waste as a resource was uneven. Some participation became more active when residents could see a direct economic return. Thus, environmental crisis was sufficient to trigger collective action but not sufficient to guarantee durable ecological commitment. Repeated education, practical learning, and incentives were required to maintain participation.

Bank Sampah Flores emerged from recurring coastal waste accumulation rather than from an initially commercial objective. INF-01 recalled that during the western season, marine waste drifted into residential areas while household waste was still entering drainage channels toward the sea. The environmental crisis created a shared recognition that disposal-oriented practices were incompatible with local ecological conditions.

Analytically, the crisis operated as a trigger for institutional change. Waste was gradually reinterpreted from unwanted residue into a resource with economic and social value. Yet the transformation was incomplete: some participation remained dependent on economic incentives. The case therefore indicates that environmental awareness can initiate collective action, while durable norm internalization requires repeated education, incentives, and social learning.

Circular Practices and Value Transformation

The operational sequence began with socialization and education through community meetings, health posts, schools, and other local gatherings. Households were encouraged to separate recyclable materials at source and bring plastic bottles, cardboard, paper, fabric, and glass to the waste bank. Materials were weighed and valued, and participants' earnings were recorded through a savings-based mechanism, generally accumulated for two to three months before withdrawal.

The savings mechanism was designed to convert irregular household waste collection into a recognizable economic record. Participants therefore did not receive value only at the point of disposal; the accumulated balance provided a simple incentive structure for continued sorting and delivery. At the same time, the field evidence shows that this mechanism had a practical limit:

where waste volume was small or transport distance was long, the value recorded in the savings account could be outweighed by the cost of bringing material to the facility.

Table 4. Observed Raw-Waste Purchase Prices at Bank Sampah Flores

Material typology	Observed raw-waste price/kg
Paper scrap	Rp800 – Rp1,000
Cardboard	Rp4,000 – Rp6,000
Plastic bottles	Rp2,500

Source: Empirical Fieldwork Data, 2026.

During fieldwork, the raw-material pricing structure was modest: paper scrap was approximately Rp800 – Rp1,000/kg, cardboard Rp4,000 – Rp6,000/kg, and plastic bottles approximately Rp2,500/kg. These prices explain why simple collection alone generated limited financial attraction. The economic significance of the initiative became clearer when materials were processed into differentiated products.

INF-01 explained the contrast directly: “If we only sell the waste in its original form or as raw material, we will not gain any profit. However, it is a different story if we transform that waste into handicraft products.” The same informant estimated that approximately 1 kg of instant-drink packaging generated only around Rp5,000 as raw material, whereas plastic rings extracted from the packaging could be incorporated into plates or baskets sold individually. A plate required approximately 22 rings, while a basket could require 100 – 150 rings.

Another example involved plastic sachets woven into bags and baskets sold at approximately Rp50,000. Organic waste was also processed into liquid fertilizer that could be harvested in about 14 days. Training further enabled production of ecobrick furniture sets with market values of approximately Rp2,000,000 per set. These observations demonstrate that the main value-creation mechanism was not the waste itself but the combination of material recovery with local knowledge, craft skills, design, and organizational coordination.

INF-01 provided a more detailed account of this value transformation: “If we only sell the waste in its original form or as raw material, we will not gain any profit. However, it is a different story if we transform that waste into handicraft products. This is where the economic value emerges. For example, instant drink packaging waste. One kilogram of such waste, which consists of hundreds of pieces, only generates around Rp5,000, which is clearly not profitable in terms of labor, time, and transportation. But if from that one kilogram we take the plastic rings and turn them into plates or small baskets that can be sold individually for Rp10,000 to Rp120,000, then we gain much higher profits. For instance, making one plate requires around 22 plastic rings, while a basket requires approximately 100 to 150 rings.”



Figure 1. Upcycled Products Made from Plastic Packaging Waste

Source: Research Documentation, 2026.

Nevertheless, value creation did not automatically translate into value capture. Low local demand, transportation costs, limited tools, and restricted production capacity reduced the ability to sell products consistently. For households located farther from the waste bank, low waste volumes could make transport costs disproportionate to the value received. The circular model was therefore economically productive but spatially and institutionally conditional.

The waste bank operationalizes circularity through source separation, collection, valuation, and material transformation. Recyclable plastics, cardboard, paper, fabric, and packaging are either sold

as inputs or processed into higher-value products. The critical finding is that value does not arise from waste collection alone; it emerges when material inputs are combined with craftsmanship, knowledge, creativity, and organizational coordination.

During fieldwork, approximately 1 kg of instant-drink packaging generated only about Rp5,000 when sold as raw material. Through upcycling, plastic rings from the same stream were incorporated into plates and baskets, with products sold individually at approximately Rp10,000–Rp120,000 depending on type and size. Plastic sachets were woven into bags and baskets around Rp50,000; ecobrick furniture sets could reach approximately Rp2,000,000. Liquid organic fertilizer was also produced from organic waste. These activities demonstrate a shift from material recovery to localized value creation.

However, higher product value did not guarantee stable value capture. Local demand for recycled products remained weak, and production was constrained by transportation, tools, and capacity. Thus, the empirical mechanism is conditional: community capabilities enable value creation, while market access determines whether that value can be captured and scaled.

Table 5. Observed Economic Value of Recovered and Upcycled Products

Material/product	Observed value	Interpretive significance
Raw packaging waste	Rp5,000/kg	Low-value material trading
Recycled plate	Rp10,000 – Rp15,000/unit	Localized upcycling
Upcycled basket	Rp50,000 – Rp120,000/unit	Higher-value product innovation
Sachet-woven bag	Rp50,000/unit	Skill-based value creation
Ecobrick furniture	Rp2,000,000/set	High-value circular product

Source: Empirical Fieldwork Data, 2026.

Community Empowerment through Capability, Inclusion, and Learning

The empowerment process was evident in learning, inclusion, and increased social participation. Twelve individuals with disabilities were involved in operational and production activities, integrating inclusion directly into the value-creation process rather than treating it as a separate welfare program. Participants developed practical skills in sorting, processing, design, and production, while students were taught to create products from community-collected waste rather than simply purchasing finished products for school assignments. As INF-01 explained, this approach was supported by artisans with disabilities who actively guided students, linking environmental education with practical skill transfer and inclusive knowledge production.

This practice transforms the waste bank from a collection point into a community learning institution. Empowerment therefore extends beyond financial benefits to include practical knowledge, creativity, confidence, participation, and reusable productive capabilities. The initiative also generated a behavioral shift in perceptions of waste: as INF-01 observed, people increasingly collected waste after public events because they recognized its income-generating potential. However, some participation remained primarily motivated by financial returns, indicating that environmental commitment and normative transformation were not yet fully institutionalized.

Empowerment is consequently better understood as a developing and multidimensional capability rather than a completed outcome. Income and skills can strengthen agency, but repeated participation, collective learning, inclusion, and environmental awareness determine whether this agency reinforces subsequent circular practices. The value created through the initiative can be understood across five interconnected dimensions: direct economic value from waste collection and pricing; enhanced economic value from artisan upcycling; social value from collective participation and inclusion; human-capital value from specialized production and environmental education; and environmental value from source separation and 3R practices. This multidimensional perspective prevents empowerment from being reduced to household income alone.

Tabel 6. Multidimensional Value Creation Mechanisms and Empirical Outcomes

Value Dimension	Primary Mechanism	Empirical Outcome
Direct economic	Raw-waste collection and pricing	Supplementary household savings

Enhanced economic	Artisan upcycling	Higher-margin localized revenue
Social value	Collective waste gathering and inclusion	Cohesion and inclusion of 12 people with disabilities
Human capital	Manufacturing training and eco-pedagogy	Technical skills and practical eco-literacy
Environmental	Source sorting and 3R adoption	Reduced unmanaged waste and cleaner surroundings

Source: Empirical Fieldwork Data, 2026.

Empowerment emerged through capability development, social inclusion, and behavioral transformation. Training enabled participants to learn waste classification, recycling, design, and small-scale production. Twelve individuals with disabilities were involved in operational and production activities, indicating that the enterprise embeds inclusion within value creation rather than treating inclusion as a separate program.

Ecological pedagogy was another mechanism. The waste bank taught students to make products from collected waste instead of simply selling finished items for school assignments. This learning-by-doing approach transferred practical knowledge and creativity. Residents also increasingly collected waste after public events because they recognized its value, indicating a shift toward a resource-oriented perception.

Nevertheless, a negative case qualifies this transformation: participation was not uniformly driven by ecological commitment. Some actors remained motivated primarily by financial returns. Empowerment should therefore be understood as an ongoing process in which economic incentives and emerging environmental norms coexist. Importantly, the resulting skills, trust, and collective knowledge can feed back into future participation and circular practices.

Institutional and Market Constraints

The findings reveal three interrelated constraints to grassroots circularity. First, limited transportation, processing equipment, and production tools restricted collection coverage, efficiency, and output. Second, environmental commitment was uneven, with participation remaining partly dependent on tangible economic incentives. Third, weak local demand limited the conversion of higher-value recycled and upcycled products into stable revenue, creating a gap between value creation and value capture.

Market access was particularly consequential because the initiative had demonstrated the capacity to produce differentiated products with higher unit values. The challenge was therefore not simply product innovation but the weak connection between production and reliable demand. Reaching markets beyond the immediate locality was necessary, yet distance and logistics increased transaction costs and constrained access to larger markets. As INF-01 noted, community participation often strengthens when participants perceive tangible returns, while limited transportation and production facilities remain significant barriers.

These findings establish an important boundary condition of grassroots innovation. Internal community capabilities can generate environmental, social, and economic value, but they cannot independently overcome infrastructure deficits, weak markets, or limited institutional support. Peripheral households may generate insufficient waste to offset collection costs, while dependence on financial returns can weaken sustained participation when incentives are inadequate. Government and external partners therefore need to complement local capabilities through infrastructure, technical assistance, incentives, market facilitation, and broader partnerships. The case ultimately reveals a tension between strong local agency and a comparatively weak enabling ecosystem, which limits the sustainability and scalability of grassroots circular enterprises.

DISCUSSION

From Waste Recovery to Capability-Based Circular Value Creation

The findings distinguish material recovery from **capability-based value creation**. While circular economy (CE) emphasizes keeping resources in use, the case shows that the economic value of recovered materials depends on human and socially embedded capabilities, including

craftsmanship, ecological knowledge, collective learning, and organizational coordination. Thus, the findings extend CE from a focus on material flows toward the social organization of value retention.

The case also qualifies a purely internal Resource-Based View (RBV) explanation. Community capabilities are necessary but insufficient for sustained economic returns because value ultimately depends on market connectivity. Weak local demand demonstrates that communities may possess valuable capabilities without achieving stable returns. Importantly, waste itself is not a rare strategic resource; differentiation arises from local craftsmanship, accumulated know-how, social networks, and collective learning that enable product redesign and innovation (Barney, 1991; Hart, 1995).

This finding complements CE scholarship on value retention and resource efficiency (Geissdoerfer et al., 2017; Kirchherr et al., 2017) by shifting attention toward capability formation and value capture. Grassroots circularity therefore requires not only collection infrastructure but also skills, design capabilities, organizational learning, and market channels. Circularity is consequently both a material process and a community capability-development process.

Social Entrepreneurship as the Organizing Mechanism

The evidence refines the role of social entrepreneurship (SE) by showing that entrepreneurial agency is distributed across community networks rather than concentrated in a single entrepreneur. Managers, artisans, students, community participants, and persons with disabilities contribute to mobilization, skills development, product creation, and environmental action. This reflects a collective form of social entrepreneurship in which entrepreneurial capability is embedded in community relationships.

The case further demonstrates that SE organizes hybrid value creation through everyday practices: waste-saving generates economic value, upcycling creates product value, inclusion generates social value, and ecological education builds human capital. SE therefore connects environmental purpose with economic activity, mobilizes participation, coordinates resources, and distributes opportunities (Mair & Martí, 2006; Saebi et al., 2018). This explains why CE practices alone are insufficient to account for empowerment: SE provides the organizational mechanism through which circular practices are translated into broader social, economic, and environmental value.

The theoretical implication is that SE should not be understood merely as adding a social mission to circular activities, but as an organizing mechanism that connects CE with community empowerment. By coordinating collection, training, product development, inclusion, and market activities, distributed entrepreneurial agency enables communities to transform environmental action into hybrid value and collective capability.

Empowerment as Outcome and Reinforcing Capability

The findings show that empowerment is both an outcome of circular activities and a reinforcing capability for subsequent circularity. Skills and knowledge improve sorting and production, inclusion broadens participation, environmental awareness strengthens collection behavior, and social cohesion facilitates collective action. Thus, circular practices generate empowerment, while accumulated capabilities simultaneously improve and reproduce circular practices over time, establishing a recursive feedback loop.

This reciprocal process also clarifies the complementary roles of RBV and Institutional Theory. From an RBV perspective, skills, knowledge, inclusion, and social cohesion constitute socially embedded community capabilities that accumulate through practice. Institutional Theory explains how repeated behaviors develop cognitive and normative legitimacy, enabling new practices to become socially accepted and sustained. Together, the two perspectives explain how communities develop the capacity to act while the surrounding social and institutional environment supports the reproduction and normalization of circular practices.

Institutional Alignment as the Boundary Condition of Scale

The institutional findings challenge a purely celebratory view of grassroots innovation. Although Bank Sampah Flores demonstrates strong local agency, infrastructure deficits, weak

demand, limited buyers, and insufficient government support constrain the conversion of created value into sustained organizational growth. Institutional Theory frames this as an alignment problem between local innovation and the surrounding regulatory, normative, and market environment (Scott, 2014; Suchman, 1995).

The distinction between value creation and value capture explains the coexistence of environmental and social value creation with economic vulnerability. Community capabilities enable value creation from waste, whereas institutional and market arrangements determine whether this value can be captured consistently and scaled. Thus, local initiatives may generate social and environmental benefits despite weak formal support, while transport costs, limited equipment, inadequate demand, and weak partnerships constrain sustained economic returns.

The findings further show that incentive-dependent participation reflects incomplete institutionalization of environmental responsibility. Policy interventions should therefore integrate financial incentives with environmental education, infrastructure development, market access, and multi-stakeholder partnerships. Internal capabilities and external institutions are complementary: communities initiate and innovate, while institutions provide infrastructure, legitimacy, partnerships, and market access.

Overall, grassroots circularity operates through a feedback process in which environmental pressure triggers collective action, CE transforms waste into resources, SE organizes hybrid value creation, and empowerment develops capabilities that reinforce circular practices. However, this cycle remains embedded within institutional conditions that ultimately determine its continuity, value capture, and scalability.

Theoretical Contribution: Dynamic Community Empowerment Model

The Dynamic Community Empowerment Model advances a dynamic rather than linear input–output explanation of grassroots circularity. Environmental pressure triggers collective action; circular economy (CE) structures resource transformation; social entrepreneurship (SE) organizes hybrid value creation; and empowerment develops skills, knowledge, inclusion, trust, and environmental agency that reinforce subsequent circular participation, innovation, and responsibility. Institutional conditions surround and shape the cycle, determining its continuity and scalability.

The model also distinguishes local agency from institutional dependence. Communities can initiate sorting, develop production skills, and create differentiated products with limited formal infrastructure, but sustained scaling requires external conditions, including transportation, equipment, reliable market demand, partnerships, and supportive policy implementation that local actors cannot easily generate alone. Thus, community capabilities operate within an enabling or constraining institutional environment.

Within this cycle, SE functions relationally rather than as an independent driver of empowerment. It mobilizes participation, coordinates resources, supports product innovation, and connects environmental purpose with economic exchange. Consequently, the empowerment effects of similar circular practices may vary according to organizational capacity to mobilize participation and distribute value.

The model extends the Resource-Based View (RBV) by locating strategic resources at the community level and extends Institutional Theory by showing that endogenous capabilities interact with legitimacy, infrastructure, and market conditions. Its central theoretical contribution is therefore a feedback mechanism in which locally embedded capabilities are repeatedly converted into value and reinforced by enabling institutional and market conditions, explaining both grassroots resilience and the structural limits to scalability.

CONCLUSION

Across the four themes, the findings reveal a coherent mechanism in which environmental pressure motivates collective action; circular practices provide operational routines for resource transformation; social entrepreneurship organizes participation and hybrid value creation; and community empowerment builds skills, inclusion, trust, and environmental agency that reinforce subsequent circular practices. Infrastructure, incentives, legitimacy, and market demand function

as enabling or constraining conditions within this cycle.

The study contributes beyond demonstrating the coexistence of circular economy (CE) and social entrepreneurship (SE) by explaining how their interaction operates in practice. CE provides the operational architecture for resource transformation, SE organizes participation and hybrid value creation, while community empowerment accumulates capabilities that reinforce circular practices. Institutional conditions determine whether this cycle can be sustained and scaled. Accordingly, empowerment is conceptualized not as a terminal outcome but as a recursive and reinforcing capability. The resulting Dynamic Community Empowerment Model therefore extends a linear input–output perspective by emphasizing feedback-driven grassroots circular transformation.

The findings also identify an important boundary condition. Community capabilities can generate localized social, economic, and environmental value despite resource constraints; however, long-term sustainability depends on institutional alignment and market access. Infrastructure, incentives, legitimacy, and market demand influence whether locally created value can be captured, sustained, and scaled, explaining why grassroots innovation may coexist with persistent structural vulnerability.

This study is context-specific and draws on five information-rich informants; therefore, it does not claim statistical generalization. Future research should test the portability of the Dynamic Community Empowerment Model through comparative studies across Indonesian regions and other emerging economies, examine its feedback mechanism longitudinally, and use mixed methods to assess how changes in community capabilities, participation, market access, and institutional support influence circular outcomes and household economic benefits. Such research could refine the model while identifying the institutional arrangements most conducive to sustaining and scaling grassroots circular enterprises.

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