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Community Bio-Circular Value Creation: An Integrative Organizational Framework for Community-Driven Circular Bioeconomy

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Abstract

Community-driven circular bioeconomy offers significant potential for transforming biological resources and organic waste into sustainable economic, social, and environmental value. However, existing organizational perspectives remain fragmented in explaining how communities mobilize biological resources, develop collective capabilities, institutionalize entrepreneurial activities, and coordinate multiple stakeholders to sustain circular value creation. This study addresses this theoretical fragmentation by developing the Community Bio-Circular Value Creation Framework (CBCVCF) as an integrative organizational framework for community-driven circular bioeconomy. Using a theory-building conceptual research design, the study synthesizes complementary insights from the Resource-Based View, Dynamic Capability Theory, Community Enterprise, Social Enterprise, Circular Business Models, and Circular Business Ecosystems. The theoretical synthesis generates three principal contributions. First, Community Bio-Circular Enterprise (CBCE) is conceptualized as a community-centered organizational platform that institutionalizes collective capability through entrepreneurship, collaborative governance, organizational learning, and circular resource management. Second, Strategic Community Value Creation (SCVC) is introduced as a multidimensional transformation process through which CBCEs generate mutually reinforcing economic, social, environmental, and institutional value. Third, these concepts are integrated within the CBCVCF, which explains the sequential transformation of strategic biological resources and community capability into multidimensional value, community prosperity, community resilience, and ultimately sustainable regional development. By repositioning communities from peripheral stakeholders or beneficiaries to strategic organizational actors, the framework extends existing firm-centered and ecosystem-level perspectives on circular value creation. The study contributes an integrative theoretical foundation for understanding community-centered circular bioeconomy and provides a basis for future empirical validation across diverse sectors, institutional settings, and geographical contexts.

Keywords: *Community Bio-Circular Value Creation; Community Bio-Circular Enterprise; Strategic Community Value Creation; Circular Bioeconomy; Community Capability; Sustainable Regional Development*

Introduction

The global transition toward sustainable development has fundamentally reshaped how biological waste and renewable biological resources are understood within contemporary economic systems. Rather than being treated merely as residual materials requiring disposal, biological resources are increasingly recognized as potential strategic assets that can support resource regeneration, circular production, livelihood creation, and sustainable regional development. This transition is particularly relevant to the circular bioeconomy, which combines circular economy principles with the sustainable utilization of renewable biological resources to maintain resource value, minimize waste, and promote regenerative production systems (Carus & Dammer, 2018; Stegmann et al., 2020). Unlike the traditional linear economic model characterized by a take–make–dispose logic, circular approaches emphasize resource recovery, reuse, recycling, cascading utilization, and valorization to generate broader economic, environmental, and societal benefits (Geissdoerfer et al., 2022; Kirchherr et al., 2017).

Although technological innovation remains essential to circular bioeconomy development, the successful transformation of biological resources cannot be explained by technology alone. Circular systems require organizations capable of recognizing resource opportunities, mobilizing capabilities, coordinating resource flows, developing viable entrepreneurial activities, and maintaining collaboration among multiple stakeholders.

Consequently, increasing attention has been directed toward the organizational and institutional mechanisms that enable circular principles to move from technological possibilities to sustained value-creating practices (Carus & Dammer, 2018; Geissdoerfer et al., 2022). This organizational challenge becomes particularly significant in decentralized bioresource systems, where biological resources are dispersed across households, farms, local businesses, and communities and therefore require collective coordination rather than firm-level resource management alone (Rezza & Simatupang, 2023).

Community-driven initiatives provide an important context for understanding this challenge. Local communities increasingly participate in organic waste recycling, composting, agricultural biomass utilization, biofertilizer production, bioenergy initiatives, and Black Soldier Fly (BSF) bioconversion. Such activities demonstrate how locally available biological resources may be transformed into productive outputs while simultaneously supporting livelihood opportunities and environmental improvement. Yet their long-term sustainability depends on more than the efficiency of biological conversion. Communities must also mobilize local knowledge, develop entrepreneurial capability, coordinate participation, establish governance arrangements, access markets, build stakeholder relationships, and adapt to changing environmental and socio-economic conditions. Thus, community-driven circular bioeconomy is fundamentally both a resource transformation challenge and an organizational capability challenge.

Existing literature offers several theoretical perspectives for explaining different dimensions of this process. The Resource-Based View emphasizes the strategic importance of valuable resources, while Dynamic Capability Theory explains how organizations renew and reconfigure resources under changing conditions (Barney, 1991; Teece, 2018). Community enterprise research emphasizes collective ownership, local participation, and community-based economic organization (Peredo & Chrisman, 2006), whereas social enterprise scholarship explains hybrid organizations that pursue economic viability alongside social and environmental missions (Battilana & Lee, 2014; Doherty et al., 2014). Circular Business Model research further explains how organizations create, deliver, and capture value through circular resource strategies (Lüdeke-Freund et al., 2018), while Circular Business Ecosystem research highlights interorganizational collaboration and ecosystem-level coordination in enabling circular value creation (Kanda et al., 2021).

Despite these advances, these theoretical perspectives remain fragmented when applied to community-driven circular bioeconomy. Strategic management theories have predominantly developed around firms; community and social enterprise perspectives emphasize collective or mission-oriented organization but provide limited explanation of biological resource circulation; and circular business model and ecosystem perspectives explain resource circulation and collaborative value creation but generally do not position communities as the central organizational actors responsible for governing local circular systems. This fragmentation is also evident in the existing manuscript's theoretical synthesis, where community enterprise, social enterprise, circular business models, and circular business ecosystems provide complementary but incomplete explanations of community-based organizational mechanisms. Consequently, existing perspectives provide substantial insight into individual components of circular bioeconomy but offer limited explanation of how biological resources, collective capability, entrepreneurial organization, collaborative governance, and multidimensional value creation interact within a unified community-centered organizational system.

This limitation reveals an important theoretical gap. The central question is not simply whether communities possess biological resources or participate in circular activities, but how communities strategically organize those resources and capabilities to generate and sustain multidimensional value over time. Addressing this question requires moving beyond firm-centered resource management and technology-centered circularity toward an organizational perspective in which communities themselves become strategic actors. Such a perspective must explain how biological resources acquire strategic value, how collective capabilities are mobilized and institutionalized, how entrepreneurial and governance mechanisms coordinate resource transformation, and how these processes generate economic, social, environmental, and institutional value that contributes to longer-term community prosperity and resilience.

To address this gap, this study develops the Community Bio-Circular Value Creation Framework (CBCVCF) as an integrative organizational framework for community-driven circular bioeconomy. The framework brings together insights from strategic management, community enterprise, social enterprise, circular business models, and circular business ecosystems to explain the transformation of biological resource potential into sustainable community value. Central to this framework are two integrative concepts. Community Bio-Circular Enterprise (CBCE) represents the organizational platform through which community capability, entrepreneurial activities, collaborative governance, organizational learning, and circular resource management are institutionalized. Strategic Community Value Creation (SCVC) represents the transformation process through which these

organizational arrangements generate mutually reinforcing economic, social, environmental, and institutional value.

Accordingly, this study addresses the following research question: ”How can communities strategically organize biological resources, collective capabilities, entrepreneurial activities, and collaborative governance to generate sustainable multidimensional value within circular bioeconomy systems?”. In answering this question, the study makes three interconnected theoretical contributions. First, it extends strategic resource and capability perspectives beyond conventional firm boundaries by conceptualizing biological resources and collective community capability as foundations of community-level strategic action. Second, it introduces CBCE as an integrative organizational platform that connects community-centered governance with circular resource transformation and entrepreneurship. Third, it develops SCVC and integrates it with CBCE within the CBCVCF, providing a sequential explanation of how strategic biological resources and community capability may ultimately contribute to community prosperity, community resilience, and sustainable regional development. In doing so, the study shifts the analytical focus from communities as beneficiaries or peripheral stakeholders toward communities as strategic organizational actors in circular bioeconomy systems.

Conceptual Framework: The Heart-First Model of School Effectiveness

Strategic Biological Resources and Community Capability

The circular bioeconomy is grounded in the principle that renewable biological resources should be continuously regenerated, circulated, and transformed into higher-value products through sustainable production systems. Unlike conventional circular economy approaches that encompass both technical and biological resource cycles, the circular bioeconomy places particular emphasis on renewable biological resources such as agricultural residues, food waste, livestock manure, forestry biomass, and other organic materials as productive inputs for sustainable development (Stegmann et al., 2020). From this perspective, biological resources are not merely environmental residues but potential strategic resources capable of supporting local entrepreneurship, waste reduction, regenerative production, and long-term community development.

However, the existence of biological resources does not automatically generate sustainable value. Their strategic potential depends on the ability of communities to identify opportunities, mobilize local assets, coordinate collective action, develop entrepreneurial initiatives, and adapt to changing environmental and market conditions. This perspective is consistent with the Resource-Based View, which emphasizes that resources contribute to sustained advantage when they are strategically valuable and effectively organized (Barney, 1991), and with Dynamic Capability Theory, which highlights the ability to sense opportunities, seize resources, and reconfigure organizational routines under changing conditions (Teece, 2018). Within community-driven circular bioeconomy systems, these strategic capabilities are not concentrated in a single firm (Haryati, 2025). Instead, they are distributed across households, community organizations, local entrepreneurs, informal networks, cooperatives, and institutional partners. Consequently, capability must be understood as a collective community-level capacity rather than solely as an internal organizational competence. This collective capability includes opportunity recognition, resource mobilization, collaborative learning, adaptive governance, social coordination, and collective problem-solving. In the draft manuscript, these mechanisms are already identified as the core processes through which communities transform biological resources into economic, social, environmental, and institutional value.

Accordingly, this study conceptualizes Community Capability as the collective strategic capacity through which communities mobilize and transform biological resources into sustainable multidimensional value. Community capability provides the enabling mechanism through which dispersed local resources are converted into organized entrepreneurial and circular activities. Yet capability alone remains insufficient. Without an organizational arrangement capable of institutionalizing collective action, coordinating stakeholders, structuring entrepreneurial activities, and maintaining circular resource flows, community capabilities may remain fragmented and difficult to sustain over time. This limitation provides the theoretical foundation for introducing Community Bio-Circular Enterprise (CBCE) as the organizational platform through which community capability is institutionalized into coordinated circular bioeconomy practices.

Community Bio-Circular Enterprise (CBCE) as an Organizational Platform

Community capability provides communities with the strategic capacity to recognize opportunities, mobilize resources, coordinate collective action, and adapt to changing environmental and socio-economic conditions. However, capability represents organizational potential rather than value creation itself. Sustainable outcomes emerge when these dispersed capabilities are institutionalized through organizational arrangements that establish governance structures, coordinate production activities, facilitate learning, manage stakeholder relationships, and

organize the distribution of benefits. From this perspective, organizational arrangements function not merely as administrative structures but as institutional platforms through which community capabilities are transformed into coordinated strategic action. Community enterprise theory provides an important foundation for understanding this process. Community-based enterprises are locally embedded organizations through which communities collectively mobilize resources and undertake economic activities to address shared social and economic needs. Unlike conventional firms primarily organized around private ownership and shareholder returns, community enterprises emphasize collective participation, local control, community benefit, and locally embedded development (Peredo & Chrisman, 2006). This perspective is particularly relevant to community-driven circular bioeconomy because the management of decentralized biological resources frequently requires collective participation, locally embedded knowledge, and coordinated community action.

Social enterprise research complements this perspective by explaining how organizations combine commercial activities with explicit social and environmental objectives. Social enterprises operate through hybrid organizational logics in which economic viability supports, rather than replaces, broader societal missions (Battilana & Lee, 2014; Doherty et al., 2014). This hybrid orientation is relevant to circular bioeconomy initiatives because biological resource transformation may simultaneously generate marketable products, livelihood opportunities, environmental improvement, and community benefits. Nevertheless, social enterprise theory primarily explains organizational hybridity and mission integration rather than the specific organizational mechanisms through which communities govern biological resource circulation. Circular Business Model (CBM) research provides another complementary perspective by explaining how organizations create, deliver, and capture value through circular strategies such as reuse, recovery, recycling, cascading resource utilization, and regenerative production (Lüdeke-Freund et al., 2018). CBM scholarship therefore provides an important explanation of how circularity becomes embedded within organizational value creation. However, this literature remains predominantly firm-centered, with communities generally positioned as consumers, suppliers, resource providers, or external stakeholders rather than as the primary organizational actors responsible for governing circular resource systems. This limitation becomes particularly relevant where biological resources are decentralized across households and local communities and cannot be effectively organized through firm-level mechanisms alone.

The Circular Business Ecosystem perspective extends this organizational boundary by emphasizing that circularity depends on collaboration among interdependent actors, including firms, governments, universities, financial institutions, civil society organizations, and communities (Kanda et al., 2021). Circular value creation therefore occurs through coordinated networks in which actors combine complementary resources, knowledge, technologies, and institutional capabilities. Yet even within this ecosystem perspective, communities are generally treated as one stakeholder among many rather than as the organizational nucleus capable of initiating, governing, and sustaining locally embedded circular systems. This limitation is particularly significant in decentralized circular bioeconomy initiatives, where communities may coordinate resource collection, production, entrepreneurship, knowledge sharing, benefit distribution, and relationships with external institutional actors. Taken together, these perspectives provide complementary but incomplete explanations of community-driven circular bioeconomy. Community enterprise explains local ownership and collective governance; social enterprise explains hybrid economic, social, and environmental missions; circular business models explain circular mechanisms of value creation; and circular business ecosystems explain interorganizational collaboration. The theoretical limitation lies not in the explanatory value of these perspectives individually, but in the absence of an integrative organizational perspective explaining how these mechanisms interact when communities themselves become the central actors organizing biological resource circulation and value creation. This fragmentation is also explicitly identified in the existing manuscript as the rationale for developing a higher-order community-centered organizational perspective.

To address this theoretical gap, this study introduces the concept of Community Bio-Circular Enterprise (CBCE). CBCE is conceptualized as: “A community-centered organizational platform that strategically integrates biological resources, collective community capability, entrepreneurial activities, collaborative governance, organizational learning, and circular resource management to create and distribute sustainable economic, social, environmental, and institutional value”. CBCE therefore does not simply represent another category of community or social enterprise. Its theoretical distinctiveness lies in integrating community-centered governance with biological resource circulation and strategic multidimensional value creation. Unlike community enterprise, CBCE explicitly incorporates circular biological resource transformation into its organizational logic. Unlike social enterprise, it places regenerative resource circulation alongside hybrid economic and societal objectives. Unlike conventional circular business models, it positions communities rather than firms as the primary organizational

actors. Finally, unlike circular business ecosystems, it conceptualizes the community organization as the institutional platform through which ecosystem relationships are mobilized and coordinated.

Within the proposed framework, CBCE consequently performs four interdependent organizational functions: it institutionalizes community capability, coordinates entrepreneurial transformation of biological resources, establishes collaborative governance across multiple stakeholders, and facilitates continuous organizational learning and adaptation. Through these functions, dispersed community resources and capabilities can be transformed into coordinated circular activities capable of generating sustainable value over time. CBCE thus constitutes the organizational bridge between Community Capability and Strategic Community Value Creation (SCVC) within the Community Bio-Circular Value Creation Framework.

Table 1. Theoretical Foundations of Community Bio-Circular Enterprise

Theoretical Perspective	Primary Contribution	Limitation	Contribution to CBCE
Community Enterprise	Community participation and local governance	Limited circular perspective	Collective ownership and community governance
Social Enterprise	Hybrid economic, social, and environmental mission	Limited biological resource management	Hybrid value orientation
Circular Business Model	Circular resource utilization and regenerative production	Firm-centered perspective	Circular production and resource circulation
Circular Business Ecosystem	Multi-stakeholder collaboration	Communities viewed mainly as stakeholders	Collaborative governance and ecosystem coordination
CBCE (Proposed)	Integrated organizational platform	—	Synthesizes all perspectives into a community-centered circular bioeconomy framework

Strategic Community Value Creation (SCVC) as a Multidimensional Process

Value creation has traditionally occupied a central position in strategic management and organizational research. Conventional perspectives have primarily associated value creation with economic performance, competitive advantage, productivity, and organizational growth. The Resource-Based View, for example, explains how organizations leverage valuable resources to generate sustained competitive advantage (Barney, 1991), while subsequent strategic management perspectives increasingly recognize that organizational value extends beyond financial outcomes to include benefits generated for multiple stakeholders. Stakeholder Theory emphasizes value creation for interconnected stakeholder groups (Parmar et al., 2010), while the Creating Shared Value perspective highlights the potential for economic competitiveness and societal benefits to be pursued simultaneously (Porter & Kramer, 2018).

Sustainability scholarship has further broadened this understanding by emphasizing the simultaneous pursuit of economic, social, and environmental outcomes. Nevertheless, community-driven circular bioeconomy introduces an additional organizational challenge. Sustainable community transformation depends not only on whether economic, social, and environmental benefits are generated, but also on whether communities develop the institutional capacity required to sustain these benefits over time. Governance arrangements, organizational legitimacy, collaborative relationships, collective learning, and adaptive capability therefore become integral components of value creation rather than merely supporting conditions.

This study consequently conceptualizes community value creation as a multidimensional strategic process. Economic, social, environmental, and institutional value are treated not as isolated outcomes but as mutually reinforcing dimensions generated through the interaction of biological resources, community capability, entrepreneurial organization, and collaborative governance. This perspective differs from approaches that evaluate sustainability primarily through parallel performance dimensions because it emphasizes the organizational mechanisms through which different forms of value are continuously created, combined, and renewed. Economic value emerges when biological resources are transformed into productive activities that generate income, employment, entrepreneurial opportunities, marketable products, and improvements in local livelihoods. In community-driven circular bioeconomy, economic value therefore extends beyond organizational profitability to include the strengthening of locally embedded economic opportunities and the capacity of communities to retain a greater proportion of value within local economic systems.

Social value is generated through participation, inclusion, collective learning, trust, knowledge sharing, and strengthened relationships among community members. Community-centered circular activities frequently require collective rather than purely individual action; consequently, their sustainability depends on the ability of participants to coordinate interests, share knowledge, resolve collective problems, and maintain long-term participation. Social value therefore strengthens the relational foundations upon which collective economic and

environmental activities depend. Environmental value results from the regenerative management of biological resources through waste reduction, resource recovery, recycling, cascading utilization, nutrient circulation, and other circular production practices. Rather than treating environmental improvement as an external consequence of economic activity, the circular bioeconomy embeds resource regeneration within the value-creation process itself. Activities such as organic waste recycling, composting, biomass valorization, biofertilizer production, and BSF-based bioconversion illustrate how biological residues can be reintegrated into productive cycles while reducing environmental burdens.

The fourth dimension, institutional value, represents a particularly important extension of conventional multidimensional value perspectives. Institutional value emerges through strengthened community governance, organizational legitimacy, stakeholder coordination, collective decision-making, learning routines, and the development of durable relationships with governments, universities, markets, financial institutions, and other external actors. Institutional value matters because economic, social, and environmental achievements may remain temporary when communities lack organizational structures capable of coordinating participation, managing conflict, adapting to change, and maintaining stakeholder commitment. In this sense, institutional value provides part of the organizational infrastructure through which other dimensions of value can be sustained and renewed.

Building upon these four dimensions, this study introduces Strategic Community Value Creation (SCVC) as: "A continuous organizational process through which communities strategically combine biological resources, collective capabilities, entrepreneurial activities, collaborative governance, and organizational learning to generate and reinforce economic, social, environmental, and institutional value". The term strategic is important. SCVC does not conceptualize community value as an incidental consequence of participation in sustainability initiatives. Instead, value emerges through deliberate processes of opportunity recognition, resource mobilization, organizational coordination, stakeholder integration, learning, and adaptation. Community value creation therefore becomes strategic when communities are capable of determining which resources should be mobilized, how they should be transformed, which stakeholders should be involved, how benefits should be distributed, and how organizational capabilities should be renewed as environmental and socio-economic conditions change.

The four value dimensions are also interdependent rather than additive. Economic opportunities can strengthen participation and organizational legitimacy; social trust can reduce coordination barriers and facilitate collective entrepreneurship; environmental regeneration can improve resource availability and strengthen societal legitimacy; and institutional capacity can stabilize governance and enable subsequent cycles of economic, social, and environmental value creation. Through these reinforcing relationships, SCVC becomes a dynamic process in which previous value creation strengthens the community's capacity to generate future value.

Accordingly, SCVC extends conventional value creation perspectives in two important respects. First, it relocates the locus of strategic value creation from the individual firm toward the community as a collective organizational actor. Second, it incorporates institutional value alongside economic, social, and environmental value, recognizing that sustainable community transformation requires organizational and governance capacity capable of reproducing value over time. Within the CBCVCF, SCVC hence functions as the transformation mechanism through which the organizational capabilities institutionalized within Community Bio-Circular Enterprise (CBCE) are converted into multidimensional community outcomes.

Table 2. Comparison of Conventional Value Creation Perspectives and Strategic Community Value Creation (SCVC)

Perspective	Primary Focus	Main Actor	Value Orientation	Limitation	Contribution of SCVC
Competitive Advantage	Firm performance	Firm	Economic value	Limited societal perspective	
Stakeholder Theory	Stakeholder relationships	Organization	Economic & stakeholder value	Community is not the strategic unit	
Creating Shared Value	Business and society	Firm	Economic & social value	Limited environmental and institutional integration	
Triple Bottom Line	Sustainability performance	Organization	Economic, social & environmental value	Limited organizational transformation process	
SCVC (Proposed)	Community-centered sustainable transformation	Community Bio-Circular Enterprise	Economic, social, environmental & institutional value	—	Integrated multidimensional value creation through collaborative community governance

The conceptualization of SCVC provides the missing link between organizational capability and sustainable development. While Community Bio-Circular Enterprise explains how communities organize collective resources and capabilities, Strategic Community Value Creation explains how these organizational arrangements generate integrated multidimensional value that ultimately contributes to community prosperity, resilience, and sustainable regional development. This relationship forms the foundation of the Community Bio-Circular Value Creation Framework developed in the following section.

Community Bio-Circular Value Creation Framework (CBCVCF)

The preceding theoretical perspectives suggest that community-driven circular bioeconomy cannot be adequately explained through resource availability, organizational capability, entrepreneurship, or circular production in isolation. Sustainable community transformation requires these elements to operate as an interconnected organizational system in which biological resources provide strategic potential, community capabilities enable collective action, organizational arrangements institutionalize those capabilities, and value-creation processes convert them into multidimensional outcomes. This interdependence provides the theoretical foundation for the Community Bio-Circular Value Creation Framework (CBCVCF). The CBCVCF is developed as an integrative organizational framework that explains how communities strategically transform biological resources into sustainable multidimensional value. Rather than treating communities as peripheral stakeholders within firm-led circular systems, the framework positions the community as the central organizational actor responsible for mobilizing resources, coordinating entrepreneurial activities, governing stakeholder relationships, and sustaining circular resource flows. In this respect, the CBCVCF integrates strategic management perspectives on resources and capabilities with community-centered organizational perspectives and circular approaches to regenerative value creation.

The framework begins with Strategic Biological Resources, representing renewable biological materials whose economic, social, and environmental potential can be enhanced through circular utilization. However, resource availability alone is insufficient to generate sustainable outcomes. Biological resources become strategically productive when communities possess Community Capability to recognize opportunities, mobilize local knowledge and resources, coordinate participation, learn collectively, and adapt to changing conditions. Thus, the relationship between resources and value creation is mediated conceptually by the community's capacity to organize and deploy those resources. Community capability subsequently requires organizational institutionalization. The CBCVCF therefore positions Community Bio-Circular Enterprise (CBCE) as the organizational platform through which dispersed community capabilities are converted into coordinated entrepreneurial action. CBCE integrates community governance, circular resource management, entrepreneurship, collaborative stakeholder relationships, and organizational learning. Its role is not simply to administer community activities but to provide the organizational architecture through which collective capability can be continuously mobilized and renewed.

Within this organizational platform, Strategic Community Value Creation (SCVC) functions as the principal transformation mechanism. Through SCVC, biological resources and collective capabilities are translated into four interconnected dimensions of value: economic, social, environmental, and institutional value. Economic value strengthens livelihoods and entrepreneurial opportunities; social value reinforces participation, trust, inclusion, and collective learning; environmental value supports resource regeneration and circularity; and institutional value strengthens governance, organizational legitimacy, stakeholder coordination, and adaptive capacity. These dimensions are mutually reinforcing, meaning that value creation is conceptualized as a dynamic system rather than as a collection of independent sustainability outcomes. The framework further proposes that sustained multidimensional value creation contributes to Community Prosperity. Prosperity in this context extends beyond income growth to encompass improvements in livelihoods, opportunities, social well-being, environmental quality, and institutional capacity. This broader conceptualization is important because community-centered circular bioeconomy seeks not merely to generate market value from biological resources but to retain and distribute multiple forms of value within communities.

Community prosperity, in turn, contributes to Community Resilience by strengthening the capacity of communities to anticipate, absorb, adapt to, and recover from economic, environmental, social, and institutional disturbances. Importantly, resilience within the CBCVCF is not conceptualized solely as an endpoint. Resilient communities accumulate knowledge, relationships, organizational routines, and adaptive capabilities that can subsequently strengthen future resource mobilization and value-creation processes. The framework therefore contains an implicit feedback logic, whereby accumulated value and resilience contribute to the continuous renewal of community capability. At the broader level, sustained community prosperity and resilience contribute to Sustainable Regional Development. When community-centered circular systems are replicated, connected, or

embedded within wider regional institutions and value networks, their impacts may extend beyond individual organizations or communities. Local resource circulation, entrepreneurship, employment creation, environmental regeneration, and institutional collaboration can collectively support more inclusive and resilient regional development. The CBCVCF therefore connects micro-level biological resource transformation and meso-level community organization with broader sustainability outcomes.

Taken together, the CBCVCF proposes the following theoretical sequence: Strategic Biological Resources → Community Capability → Community Bio-Circular Enterprise (CBCE) → Strategic Community Value Creation (SCVC) → Economic, Social, Environmental, and Institutional Value → Community Prosperity → Community Resilience → Sustainable Regional Development. Importantly, this sequence should not be interpreted as a rigid linear chain. Rather, it represents the dominant theoretical logic of the framework while recognizing reciprocal relationships, learning effects, and feedback mechanisms across different stages. Value creation strengthens organizational capability; institutional development improves future coordination; and community resilience enhances the capacity to mobilize biological resources under changing conditions. The CBCVCF is therefore better understood as a dynamic and recursive organizational system than as a conventional linear input–output model.

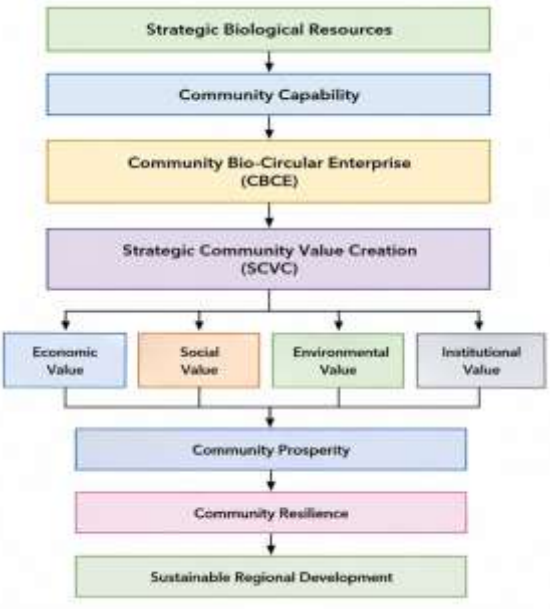


Figure 1. Community Bio-Circular Value Creation Framework (CBCVCF)

The integrative contribution of the framework lies in connecting theoretical domains that have largely developed independently. The Resource-Based View and Dynamic Capability Theory explain the strategic role of resources and adaptive capabilities; Community Enterprise and Social Enterprise perspectives explain collective and hybrid organizational arrangements; Circular Business Models explain regenerative value-creation mechanisms; and Circular Business Ecosystems explain interdependent stakeholder relationships. The CBCVCF synthesizes these insights around the community as the central organizational actor, thereby providing a higher-order explanation of how biological resource potential can be transformed into sustainable community and regional value. Accordingly, the framework advances community-driven circular bioeconomy research by shifting the analytical question from "How can biological waste be technically valorized?" toward a broader organizational question: "How can communities strategically organize biological resources, collective capabilities, entrepreneurial activities, and stakeholder relationships to continuously create and sustain multidimensional value?" This shift represents the central theoretical logic underlying the CBCVCF and establishes the foundation for the conceptual research design and theory-integration procedure presented in the following section.

Research Methodology

Research Design

This study adopts a theory-building conceptual research design to develop an integrative organizational explanation of community-driven circular bioeconomy. Conceptual research is particularly appropriate when existing knowledge is dispersed across different theoretical domains and when the research objective is to integrate previously disconnected perspectives into new constructs, relationships, and theoretical explanations rather than

to empirically test predetermined hypotheses (Jaakkola, 2020). The need for a conceptual approach arises from the fragmented theoretical foundations of community-driven circular bioeconomy. Relevant explanations are distributed across strategic management, community entrepreneurship, social enterprise, circular economy, sustainability, and ecosystem research. Although these literatures provide important insights individually, no single perspective sufficiently explains how communities combine biological resources, collective capabilities, entrepreneurial organization, collaborative governance, and circular resource management to generate sustainable multidimensional value. Accordingly, this study employs conceptual synthesis to identify theoretical complementarities and integrate them into a higher-order organizational framework.

Rather than conducting a systematic literature review aimed at exhaustive evidence mapping, the study uses a structured theory-integration approach. Literature was selected according to its theoretical relevance, conceptual significance, and capacity to explain specific components of community-driven circular bioeconomy. Seminal studies were retained where necessary to establish theoretical foundations, while contemporary circular economy, circular bioeconomy, community enterprise, and sustainability research was incorporated to capture recent theoretical developments. This approach is consistent with conceptual research in management, in which theoretical integration and construct development constitute the primary analytical objectives (Jaakkola, 2020; Snyder, 2019).

Theoretical Domain Identification and Literature Selection

The conceptual development began by identifying theoretical domains capable of explaining different components of community-driven circular bioeconomy. Six complementary perspectives were selected: Resource-Based View (RBV), Dynamic Capability Theory (DCT), Community Enterprise, Social Enterprise, Circular Business Models (CBMs), and Circular Business Ecosystems (CBEs). These perspectives were selected because each addresses a distinct theoretical requirement of the phenomenon examined. RBV provides the foundation for conceptualizing biological resources as potentially strategic assets, while Dynamic Capability Theory explains the capacity to recognize opportunities, mobilize resources, learn, and reconfigure capabilities under changing conditions. Community Enterprise theory contributes an explanation of collective ownership, locally embedded governance, and community participation, whereas Social Enterprise research provides insights into organizational hybridity and the simultaneous pursuit of economic and societal objectives. Circular Business Model research explains regenerative mechanisms of value creation through resource circulation, while Circular Business Ecosystem research extends the analysis toward multi-actor collaboration, interorganizational dependence, and ecosystem coordination.

Literature within these domains was selected based on three criteria: theoretical relevance, referring to its explanatory relationship with the focal constructs; conceptual influence, including seminal and widely recognized contributions that established or substantially developed the respective theoretical perspectives; and integrative relevance, referring to the capacity of a study to connect resources, capabilities, organizational arrangements, circularity, collaboration, or sustainable value creation. Priority was given to peer-reviewed academic publications, supplemented by foundational scholarly works where required for theory development. The purpose of literature selection was therefore not to generate an exhaustive bibliometric representation of each research stream but to construct a theoretically coherent knowledge base for conceptual integration. This distinction is important because the analytical objective of the study is theory construction rather than literature aggregation.

Comparative Theoretical Analysis

The selected theoretical perspectives were subsequently subjected to comparative conceptual analysis. Each perspective was examined in terms of four analytical questions: What constitutes the principal unit of analysis? What resources or capabilities does the theory emphasize? Through what organizational mechanism is value created? What dimensions of sustainable value does the perspective explain or leave underdeveloped? This comparison revealed substantial theoretical complementarity but also important explanatory boundaries. Strategic management perspectives provide robust explanations of resources and adaptive capabilities but remain predominantly firm-centered. Community Enterprise and Social Enterprise perspectives provide stronger explanations of collective organization and hybrid missions but offer limited conceptualization of circular biological resource flows. Circular Business Models explain regenerative value creation but generally privilege the firm as the organizational locus, whereas Circular Business Ecosystems explain multi-actor collaboration without fully theorizing communities as the institutional nucleus of decentralized circular systems. The comparative analysis therefore identified a common theoretical gap: the absence of an integrative organizational explanation connecting biological resources, collective community capability, entrepreneurial organization, collaborative governance, circular resource management, and multidimensional value creation. This gap became the analytical basis for subsequent construct development.

Conceptual Integration and Framework Development

Conceptual integration proceeded through a sequential theory-building process. First, insights from the Resource-Based View and Dynamic Capability Theory were extended from firm-level analysis toward the community level to conceptualize Strategic Biological Resources and Community Capability. Second, insights from Community Enterprise, Social Enterprise, Circular Business Models, and Circular Business Ecosystems were synthesized to develop Community Bio-Circular Enterprise (CBCE) as an organizational platform through which collective community capability becomes institutionalized. Third, value creation perspectives were integrated with sustainability and circularity principles to develop Strategic Community Value Creation (SCVC) as the mechanism through which CBCE generates interconnected economic, social, environmental, and institutional value. Finally, these constructs were linked with Community Prosperity, Community Resilience, and Sustainable Regional Development to form the Community Bio-Circular Value Creation Framework (CBCVCF).

The integration followed a theoretical logic of resource potential → collective capability → organizational institutionalization → multidimensional value creation → sustainable community outcomes. Relationships among the constructs were derived through theoretical reasoning and conceptual synthesis rather than statistical inference. Accordingly, the resulting framework should be understood as a set of theoretically derived relationships requiring subsequent empirical examination.

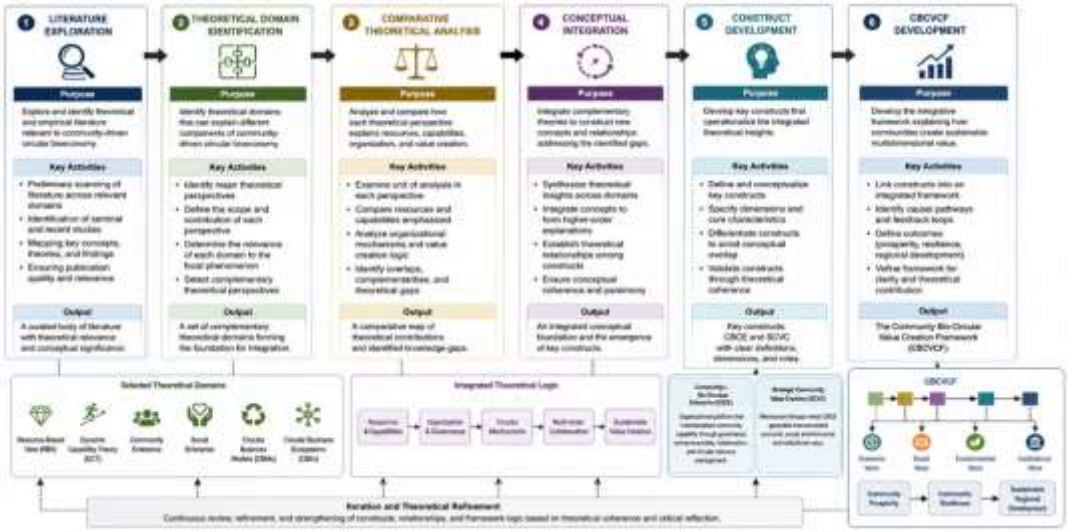


Figure 2. Theory Integration Procedure for Developing the Community Bio-Circular Value Creation Framework (CBCVCF)

Analytical Rigor and Framework Validation Logic

To enhance conceptual rigor, the framework development was guided by theoretical coherence, construct distinctiveness, explanatory complementarity, and logical consistency. Theoretical coherence was assessed by examining whether each construct could be grounded in established theoretical perspectives while contributing to the explanation of community-driven circular bioeconomy. Construct distinctiveness was maintained by differentiating the roles of resources, capabilities, organizational platforms, value-creation mechanisms, and sustainability outcomes within the proposed framework. Explanatory complementarity was evaluated by examining whether the integration of multiple theoretical perspectives provided greater explanatory capacity than any individual theory considered independently. Particular attention was given to avoiding conceptual redundancy between Community Capability, CBCE, and SCVC. Community Capability represents the collective strategic capacity to mobilize and reconfigure resources; CBCE represents the organizational platform that institutionalizes this capacity; and SCVC represents the transformation mechanism through which institutionalized capabilities generate multidimensional value. This conceptual differentiation establishes a clear theoretical sequence across the framework.

Logical consistency was further assessed by examining the proposed relationships among Strategic Biological Resources, Community Capability, CBCE, SCVC, multidimensional value, Community Prosperity, Community Resilience, and Sustainable Regional Development. The resulting framework was iteratively refined to ensure consistency between the theoretical foundations, construct definitions, proposed relationships, and intended explanatory contribution. Because this study is conceptual rather than empirical, framework validation is theoretical rather than statistical. The CBCVCF therefore represents a theory-building foundation whose

explanatory relationships require future empirical testing across different circular bioeconomy activities, community configurations, institutional environments, and geographical contexts.

Results

Community Bio-Circular Enterprise as an Integrated Organizational Platform

The first major outcome of the theoretical integration is the conceptualization of Community Bio-Circular Enterprise (CBCE) as an integrated organizational platform for community-driven circular bioeconomy. This conceptualization responds to an important limitation in existing organizational perspectives: although previous theories explain particular dimensions of community organization, entrepreneurship, circularity, and stakeholder collaboration, they do not fully explain how these dimensions can be institutionally integrated when communities themselves become the principal actors responsible for organizing decentralized biological resources. Community enterprise research provides an important starting point for this conceptual development. (Peredo & Chrisman, 2006) conceptualize community-based enterprise as an organizational arrangement in which the community acts collectively as both entrepreneur and enterprise, mobilizing local resources to pursue economic and community objectives. This perspective establishes a strong foundation for understanding collective ownership, locally embedded governance, and community participation. However, its primary theoretical concern is community entrepreneurship and local development rather than the organization of biological resource circulation within regenerative production systems. CBCE extends this perspective by explicitly incorporating biological resources and circular resource management into the strategic logic of community enterprise.

Social enterprise theory provides a second complementary foundation. Hybrid organization research demonstrates that organizations can simultaneously pursue commercial viability and broader societal missions, challenging conventional assumptions that economic and social objectives must necessarily be separated. Such organizations must continuously manage multiple institutional logics and stakeholder expectations (Battilana & Lee, 2014; Doherty et al., 2014). For community-driven circular bioeconomy, however, hybridity alone does not explain how locally dispersed biological resources are collected, transformed, circulated, and reintegrated into productive systems. CBCE therefore extends hybrid organizational reasoning by integrating economic and societal missions with regenerative biological resource transformation. A third foundation is provided by Circular Business Model research. Circular business models demonstrate how organizations can redesign value creation around repair, reuse, redistribution, recycling, cascading, repurposing, and organic feedstock utilization (Lüdeke-Freund et al., 2018). Importantly, this literature establishes that circularity requires changes in the organizational logic of value creation rather than technological efficiency alone. Nevertheless, circular business model research remains predominantly organized around the firm as the focal actor. CBCE extends this logic by asking what happens when the relevant resources are distributed across households and community actors and when the organization responsible for coordinating circularity is itself community-centered.

Circular Business Ecosystem research further broadens this perspective by demonstrating that circular value creation frequently requires collaboration among multiple interdependent actors rather than isolated business organizations (Kanda et al., 2021), for example, explicitly shift the analytical focus from individual circular business models toward circular business ecosystems. CBCE builds upon this ecosystem logic but introduces a different organizational emphasis: the community is positioned not merely as one stakeholder within the ecosystem but as a locally embedded organizational nucleus capable of mobilizing and coordinating ecosystem relationships around biological resource transformation. The integration of these theoretical perspectives consequently produces a shift in the unit of analysis. Traditional strategic management has primarily located strategic agency within firms, while circular ecosystem approaches distribute strategic action across networks of organizations. CBCE instead positions the community as a collective strategic organizational actor. Communities are therefore conceptualized as capable of recognizing opportunities embedded in biological resources, mobilizing collective capabilities, coordinating entrepreneurial activities, organizing circular resource flows, and developing relationships with governments, universities, firms, financial institutions, and civil society organizations. This represents a substantive departure from treating communities principally as beneficiaries, customers, suppliers, or supporting stakeholders.

The theoretical synthesis identifies four interdependent organizational functions through which CBCE performs this role: community governance, community entrepreneurship, circular resource management, and collaborative governance. Community governance institutionalizes participation and collective decision-making; community entrepreneurship converts resource opportunities into economically productive activities; circular resource management organizes regenerative resource flows; and collaborative governance connects community

organizations with external knowledge, market, policy, financial, and technological actors. These four functions were already identified in the original conceptual development of CBCE as the mechanisms enabling community organizations to move beyond isolated projects toward sustained circular value creation. The important theoretical result is not merely that these four functions coexist, but that their interaction determines the organizational capacity of the community to sustain circular transformation. Entrepreneurship without community governance may create economic opportunities while weakening participation or benefit distribution. Circular resource management without entrepreneurial viability may generate environmental benefits without sufficient incentives for continuity. Community governance without external collaboration may constrain access to markets, technology, finance, and specialized knowledge. Conversely, ecosystem collaboration without strong community organization may produce dependency on external actors rather than locally embedded capability. CBCE addresses these tensions by conceptualizing the four functions as an integrated organizational system.

This finding also extends strategic resource and capability perspectives. Rather than assuming that strategically valuable resources are controlled within organizational boundaries, CBCE recognizes that community resources can be distributed and relational. Biological resources may be dispersed among households or producers, while knowledge, trust, social networks, entrepreneurial skills, legitimacy, and institutional relationships may reside across different community actors. The strategic challenge therefore becomes one of resource orchestration through collective organization, rather than ownership of resources alone. Accordingly, the concept of CBCE allows the conventional notion of competitive advantage to be reconsidered as community strategic advantage. This should not be interpreted as superiority over competing communities. Instead, it refers to the collective capacity of a community to mobilize locally embedded resources, coordinate actors, maintain collaborative relationships, learn, and adapt in ways that sustain value creation over time. The original manuscript already anticipated this theoretical extension by arguing that collective capability, institutional collaboration, and organizational learning become more relevant than individual firm performance in community-centered systems.

The resulting theoretical contribution can therefore be summarized as follows: Community Capability represents the capacity for collective strategic action, whereas CBCE represents the organizational institutionalization of that capacity. This distinction is critical. Community capability may exist through local knowledge, leadership, social networks, entrepreneurial experience, and collective learning, but without organizational institutionalization these resources may remain fragmented, temporary, or project-dependent. CBCE provides the organizational bridge through which dispersed capability becomes sustained coordinated action. Thus: "Community Capability → CBCE Institutionalization → Coordinated Community Bio-Circular Action". CBCE should therefore not be understood simply as another label for community enterprise, social enterprise, or circular business models. Its theoretical contribution lies in integrating community-centered governance, entrepreneurship, circular biological resource management, and ecosystem collaboration within a single organizational platform. This integration provides the organizational foundation upon which Strategic Community Value Creation operates.



Figure 3. Community Bio-Circular Enterprise (CBCE) as an Integrated Organizational Platform

Figure 3 illustrates this conceptual transformation by positioning Community Bio-Circular Enterprise as the organizational bridge connecting community capability with Strategic Community Value Creation. Through this

organizational platform, biological resources are no longer treated merely as environmental assets but become strategic community resources capable of generating long-term economic, social, environmental, and institutional benefits. This organizational perspective represents the principal theoretical innovation of the present study and provides the foundation for the multidimensional value creation process discussed in the following section.

Strategic Community Value Creation as a Multidimensional Transformation Process

The second major outcome of the theoretical integration is the development of Strategic Community Value Creation (SCVC) as the transformation mechanism through which CBCE converts institutionalized community capability into sustainable multidimensional value. Whereas CBCE addresses the organizational question of how collective capability becomes institutionalized, SCVC addresses the value-creation question of how that institutionalized capability is transformed into outcomes that strengthen the community over time. This distinction is central to the explanatory architecture of the CBCVCF. Existing value-creation literature provides several foundations for this conceptualization. Strategic management has traditionally associated value creation with organizational performance and competitive advantage, while Stakeholder Theory broadened this understanding by emphasizing how value is created and traded among multiple stakeholders (Parmar et al., 2010). Creating Shared Value further emphasizes the possibility of connecting economic competitiveness with societal needs (Porter & Kramer, 2011). Sustainability-oriented business model research has further broadened the value-creation perspective by explicitly integrating economic, environmental, and social dimensions within organizational business models (Joyce & Paquin, 2016). Circular Business Model research adds an important regenerative dimension to this discussion. Lüdeke-Freund et al. (2018) demonstrate that circular business model patterns can reorganize value creation through repair, reuse, recycling, cascading, repurposing, and organic feedstock utilization. However, these perspectives generally retain the organization or business model as the primary locus of value creation. SCVC extends this reasoning by repositioning the community as the collective locus of strategic value creation and asking how multiple forms of value can be generated, distributed, reinforced, and regenerated through community-centered circular organization. The conceptual synthesis identifies four interconnected dimensions of SCVC: economic, social, environmental, and institutional value. Economic value includes livelihood opportunities, employment, entrepreneurship, marketable outputs, and improved utilization of local biological resources. Social value emerges through participation, inclusion, trust, collective learning, knowledge sharing, and stronger community relationships. Environmental value is generated through waste reduction, resource recovery, circular biological resource flows, and regenerative production. Institutional value develops through stronger governance, organizational legitimacy, stakeholder coordination, collaborative relationships, collective decision-making, and adaptive learning.

The inclusion of institutional value is particularly significant. Existing sustainability frameworks commonly emphasize economic, social, and environmental dimensions. For example, the Triple Layered Business Model Canvas explicitly organizes sustainable business model analysis around economic, environmental, and social layers (Joyce & Paquin, 2016). SCVC does not reject these dimensions; rather, it argues that in community-centered circular systems they may be difficult to sustain without a fourth dimension concerning the institutional capacity to reproduce value over time. Institutional value should therefore not be interpreted merely as another sustainability indicator added to an existing three-dimensional model. Its theoretical role is different. It captures the governance arrangements, legitimacy, stakeholder relationships, organizational routines, collective learning, and adaptive capacity that enable economic, social, and environmental benefits to persist beyond individual projects or funding cycles. In other words, institutional value represents part of the reproductive capacity of community value creation.

The conceptual contribution of SCVC therefore lies less in identifying four categories of outcomes than in explaining their interdependence. Economic value may strengthen participation by creating tangible livelihood incentives. Stronger social relationships and trust may reduce coordination difficulties and support collective entrepreneurship. Environmental improvements may strengthen resource availability and enhance community legitimacy. Institutional capacity may stabilize governance, improve access to external partners, and facilitate subsequent cycles of economic, social, and environmental value creation. Value creation is therefore conceived as mutually reinforcing rather than additive. This distinction is essential because otherwise SCVC could be interpreted simply as a modified Triple Bottom Line. The proposed concept goes further by conceptualizing multidimensional value creation as a strategically orchestrated transformation process. The term strategic indicates that communities deliberately recognize resource opportunities, mobilize capabilities, select value-creating activities, coordinate stakeholders, organize benefit distribution, learn from outcomes, and adapt organizational arrangements as conditions change.

The ecosystem perspective further reinforces this argument. Kanda et al. (2021) show that circular value creation increasingly depends on interactions among interdependent actors rather than isolated firm-level activity. SCVC extends this ecosystem insight to the community level by arguing that stakeholder relationships do not merely support circular production; they participate directly in value creation. Universities may contribute knowledge, governments institutional support, firms market access and technology, financial institutions capital, and community members resources, labor, local knowledge, and legitimacy. CBCE coordinates these contributions, while SCVC explains how their interaction is translated into multidimensional community value. SCVC consequently introduces an important temporal dimension. Sustainable value creation is not treated as a single conversion of biological resources into products or income. Instead, successive cycles of value creation can accumulate knowledge, trust, organizational routines, stakeholder relationships, legitimacy, and adaptive capability. These accumulated resources can subsequently improve the community's capacity to recognize new opportunities and respond to future disturbances.

This dynamic relationship provides the conceptual bridge between SCVC and Community Prosperity. Within the CBCVCF, prosperity is broader than economic wealth alone. It reflects the cumulative improvement of livelihoods, social well-being, environmental quality, opportunities, and institutional capacity generated through multidimensional value creation. The draft framework already establishes this progression from multidimensional value toward Community Prosperity and subsequently Community Resilience. Community Prosperity, in turn, provides resources and capacities that may strengthen Community Resilience. Communities that accumulate diversified livelihoods, social trust, environmental resources, organizational knowledge, and institutional relationships are theoretically better positioned to adapt to changing economic, ecological, or institutional conditions. Importantly, resilience is not conceptualized as the final endpoint of the process. Instead, accumulated learning, relationships, and adaptive capability can feed back into renewed Community Capability, creating subsequent cycles of value creation.

The theoretical logic of SCVC can therefore be represented as: " CBCE → SCVC → Economic + Social + Environmental + Institutional Value → Community Prosperity → Community Resilience" with a recursive relationship: "Community Resilience → renewed Community Capability → subsequent SCVC cycles". This recursive logic represents an important departure from static sustainability-performance models. SCVC conceptualizes value creation as a dynamic and capability-renewing process, in which current value creation can strengthen the organizational conditions required for future value creation. Overall, SCVC contributes to existing value-creation literature in three ways. First, it shifts the locus of strategic value creation from the individual firm toward the community as a collective organizational actor. Second, it incorporates institutional value as a critical condition for sustaining economic, social, and environmental value. Third, it conceptualizes value creation as a recursive process in which multidimensional outcomes contribute to prosperity and resilience while simultaneously renewing future community capability.

Thus, CBCE and SCVC perform theoretically distinct but complementary functions within the CBCVCF: "CBCE explains how community capability becomes organized; SCVC explains how organized capability becomes sustainable multidimensional value". That sentence, in my view, is one of the most important theoretical distinctions in the entire article. An important implication of the SCVC perspective is the reconceptualization of sustainable development as a continuous organizational learning process. As Community Bio-Circular Enterprises repeatedly generate multidimensional value, communities strengthen their adaptive capability, expand stakeholder networks, improve governance quality, and accumulate organizational knowledge. These positive feedback mechanisms create a self-reinforcing cycle in which each round of value creation enhances the community's capacity to respond to future environmental, economic, and institutional challenges. Consequently, sustainable regional development becomes the cumulative outcome of continuous community learning and collaborative value creation rather than a one-time organizational achievement.

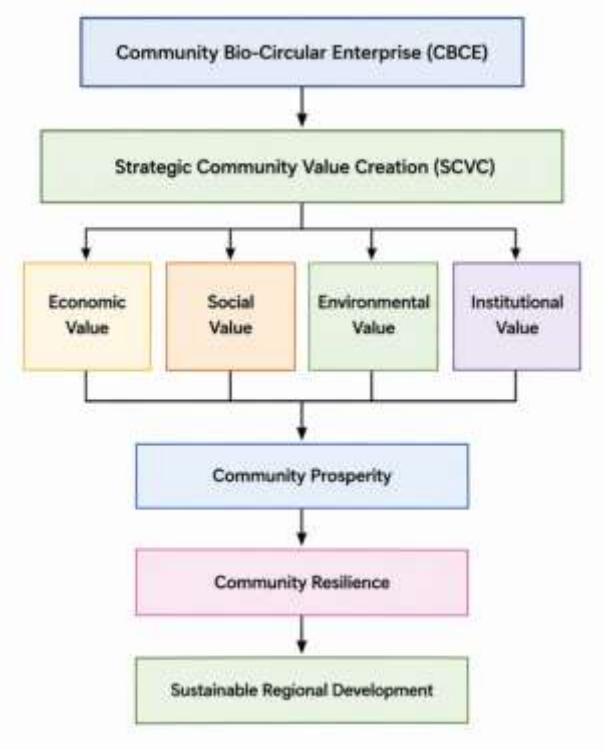


Figure 4. Strategic Community Value Creation (SCVC) Process

Overall, Strategic Community Value Creation extends existing value creation literature by positioning communities as strategic creators of integrated multidimensional value. Through the interaction of biological resources, community capability, organizational governance, and regenerative production systems, SCVC provides a comprehensive explanation of how community-centered organizations generate long-term prosperity, resilience, and sustainable regional development within circular bioeconomy systems

Table 4. Dimensions of Strategic Community Value Creation (SCVC)

Value Dimension	Strategic Contribution	Expected Community Outcomes
Economic Value	Entrepreneurship, employment, income generation	Improved local economy and household welfare
Social Value	Participation, trust, collaboration, social inclusion	Stronger social cohesion and collective action
Environmental Value	Waste reduction, resource regeneration, circular production	Improved environmental sustainability
Institutional Value	Governance, stakeholder collaboration, organizational learning	Long-term organizational resilience and continuity

Community Bio-Circular Value Creation Framework: An Integrative Organizational Perspective

The third and overarching outcome of the theory-integration process is the Community Bio-Circular Value Creation Framework (CBCVCF), which integrates Strategic Biological Resources, Community Capability, Community Bio-Circular Enterprise (CBCE), and Strategic Community Value Creation (SCVC) into a unified explanation of community-driven circular bioeconomy. The framework proposes that sustainable community transformation does not result from biological resource availability or technological valorization alone, but from a sequential and recursive organizational process through which communities recognize resource opportunities, mobilize collective capabilities, institutionalize these capabilities through organizational arrangements, and transform them into multidimensional value. This perspective extends existing circular bioeconomy research, which has established the importance of biomass utilization, cascading resource use, recycling, and the valorization of biological residues for improving resource efficiency (Stegmann et al., 2020). While these studies provide an essential explanation of what biological resources can contribute to circularity, the CBCVCF shifts attention toward how communities organize the capabilities and institutional mechanisms required to transform such resource potential into sustained community value. Thus, biological resources constitute the starting point of the framework rather than the sufficient condition for sustainable development. The first relationship within the

framework connects Strategic Biological Resources with Community Capability. This relationship extends conventional resource-based reasoning by arguing that the strategic value of biological resources depends on the collective capacity to recognize, mobilize, coordinate, and reconfigure them. At the community level, these capabilities are distributed across individuals, households, local entrepreneurs, community organizations, social networks, and institutional partners. Consequently, resource value emerges not merely from resource characteristics but from the community's ability to organize dispersed knowledge, participation, relationships, and entrepreneurial action.

The second relationship connects Community Capability with CBCE and represents a process of organizational institutionalization. This relationship is consistent with community-based enterprise research, which positions the community itself as both entrepreneur and enterprise and emphasizes the integration of economic activity with natural and social capital (Peredo & Chrisman, 2006). However, CBCVCF extends this perspective by explicitly incorporating circular biological resource management, entrepreneurial coordination, adaptive learning, and ecosystem collaboration into the organizational architecture. CBCE therefore explains how collective community capability becomes sufficiently organized to support continuous circular value creation rather than remaining dependent on temporary participation or project-based mobilization. The third relationship positions SCVC as the transformation mechanism between CBCE and multidimensional value creation. This proposition builds upon, but differs from, existing circular business model research. Circular business models explain how organizations redesign value creation, delivery, and capture around circular principles and resource circulation (Geissdoerfer et al., 2022; Lüdeke-Freund et al., 2018). The CBCVCF extends this logic by relocating the primary locus of value creation from the firm to the community organization and by conceptualizing value as the interconnected production of economic, social, environmental, and institutional outcomes.

This community-centered positioning also distinguishes CBCVCF from existing circular business ecosystem perspectives. (Kanda et al., 2021) demonstrate the limitations of relying exclusively on firm-level circular business models and emphasize the importance of broader circular business ecosystems involving interdependent actors. CBCVCF supports this movement beyond firm boundaries but advances it in a different direction. Rather than treating the community as one actor within an ecosystem, the framework conceptualizes CBCE as the locally embedded organizational nucleus through which ecosystem relationships can be mobilized and coordinated. Governments, universities, firms, financial institutions, and civil society organizations remain essential, but their contributions become connected to a community-centered process of biological resource transformation. This distinction is particularly important because community-driven circular bioeconomy involves a different governance problem from conventional firm-centered circularity. Biological resources such as household organic waste, agricultural residues, and other locally distributed biomass are often fragmented across multiple resource holders. Their effective utilization therefore requires participation, trust, coordination, knowledge exchange, and collective governance alongside technological and entrepreneurial capability. The CBCVCF consequently suggests that organizational coordination represents a critical mechanism connecting decentralized biological resources with sustained circular value creation.

The framework further proposes that the four dimensions generated through SCVC are mutually reinforcing. Economic value strengthens livelihoods and entrepreneurial viability; social value strengthens participation, trust, inclusion, and collective learning; environmental value regenerates resources and reduces ecological burdens; and institutional value strengthens governance, legitimacy, stakeholder relationships, and adaptive capacity. The inclusion of institutional value is particularly important because hybrid organizational research has demonstrated the complexity of simultaneously managing commercial and societal purposes (Doherty et al., 2014). CBCVCF extends this discussion by suggesting that durable governance and institutional capacity are themselves forms of community value because they influence whether economic, social, and environmental benefits can be reproduced over time.

The accumulation and reinforcement of these four forms of value subsequently contribute to Community Prosperity. Within CBCVCF, prosperity is deliberately conceptualized more broadly than financial or income improvement. It represents an enhanced condition in which livelihoods, social relationships, environmental quality, local opportunities, and institutional capacity improve simultaneously. This distinction enables the framework to connect circular resource utilization with community development without reducing development outcomes to either economic performance or environmental efficiency. Community Prosperity subsequently strengthens Community Resilience, representing the capacity to absorb disturbances, adapt to changing circumstances, reorganize resources, and sustain collective action. Importantly, the relationship does not terminate at resilience. The conceptual synthesis suggests a feedback mechanism through which accumulated knowledge, stakeholder relationships, organizational legitimacy, entrepreneurial experience, and adaptive routines strengthen subsequent

Community Capability. CBCVCF should therefore be understood as a recursive rather than purely linear framework.

The resulting process can be summarized as: "Strategic Biological Resources → Community Capability → CBCE → SCVC → Economic, Social, Environmental, and Institutional Value → Community Prosperity → Community Resilience → Sustainable Regional Development" with a reinforcing feedback relationship: Community Resilience → renewed Community Capability → subsequent cycles of community bio-circular value creation". At the broader level, CBCVCF proposes that sustained prosperity and resilience at the community level may contribute to Sustainable Regional Development when community bio-circular activities become connected with wider markets, policy systems, knowledge institutions, infrastructure, and regional circular economy networks. This relationship should be interpreted as a theoretically proposed pathway rather than an empirically established causal effect. Future empirical research is therefore required to examine under what institutional, geographical, and sectoral conditions community-level bio-circular value creation scales or diffuses into broader regional development outcomes.

Overall, CBCVCF extends previous research in three interrelated ways. First, it complements circular bioeconomy research by introducing an explicit organizational pathway between biological resource circulation and sustainable community outcomes. Second, it extends community enterprise perspectives by incorporating regenerative biological resource management and circular value creation into community-centered organization. Third, it advances circular business model and ecosystem perspectives by positioning the community as a strategic organizational locus through which decentralized resources, collective capability, entrepreneurship, and ecosystem collaboration are coordinated. Rather than replacing these theoretical perspectives, CBCVCF integrates their complementary explanatory strengths into a higher-order organizational framework for community-driven circular bioeconomy.

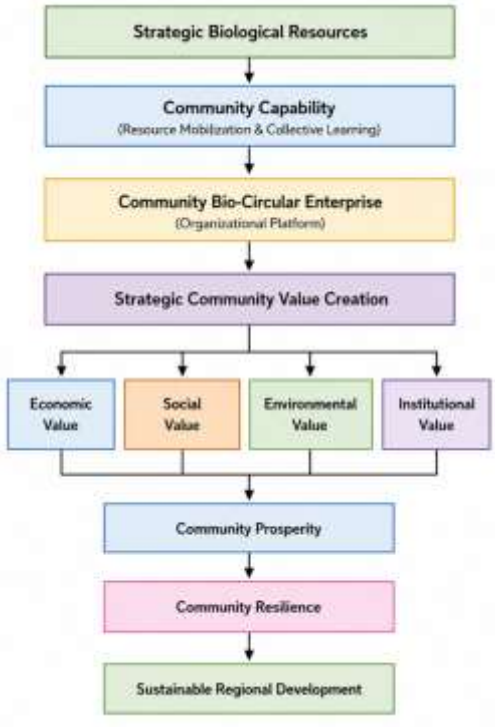


Figure 5. The Community Bio-Circular Value Creation Process

Overall, the Community Bio-Circular Value Creation Framework extends existing strategic management and sustainability literature by repositioning communities as strategic organizations capable of integrating biological resources, collective capability, entrepreneurial governance, and multidimensional value creation within a single conceptual system. This integrative perspective offers a more robust theoretical explanation of community-driven circular bioeconomy than existing organizational theories considered individually and provides a comprehensive foundation for future empirical validation across diverse institutional and geographical contexts.

Table 5. Sequential Logic of the Community Bio-Circular Value Creation Framework

Framework Component	Strategic Function	Transformation Mechanism	Expected Outcome
Strategic Biological Resources	Provide renewable resource potential	Resource recognition and valorization	Strategic resource opportunities
Community Capability	Mobilize collective capacity	Sensing, mobilizing, learning, and adaptation	Community organizational readiness
CBCE	Institutionalize collective capability	Entrepreneurship, governance, circular resource management, collaboration	Community-centered organizational platform
SCVC	Transform capability into multidimensional value	Strategic orchestration of resources and stakeholders	Economic, social, environmental, and institutional value
Community Prosperity	Accumulate multidimensional benefits	Value reinforcement and local benefit retention	Inclusive community well-being
Community Resilience	Strengthen adaptive capacity	Learning, reconfiguration, and institutional renewal	Long-term adaptive capacity
Sustainable Regional Development	Extend community-level transformation	Network integration and regional diffusion	Inclusive and regenerative regional development
Feedback mechanism	Renew community capability	Knowledge, learning, legitimacy, and accumulated relationships	Subsequent bio-circular value-creation cycles

Theoretical and Practical Implications

Theoretical Implications

The Community Bio-Circular Value Creation Framework (CBCVCF) offers several theoretical implications for strategic management, circular bioeconomy, organizational theory, and community development. Its principal contribution does not lie in replacing established theories, but in integrating their complementary explanatory mechanisms into a community-centered organizational perspective. Existing research has separately explained strategic resources and capabilities, community-based entrepreneurship, hybrid organizational missions, circular business models, and ecosystem collaboration (Barney, 1991; Doherty et al., 2014; Kanda et al., 2021; Lüdeke-Freund et al., 2018). CBCVCF connects these previously fragmented perspectives by explaining how biological resources, collective community capability, organizational institutionalization, and multidimensional value creation interact within a recursive process of community transformation. First, the framework contributes to strategic management by extending the locus of strategic resources and capabilities beyond the conventional firm. The Resource-Based View explains how valuable organizational resources contribute to sustained competitive advantage (Barney, 1991), while Dynamic Capability Theory emphasizes the capacity to sense opportunities, seize them, and reconfigure organizational resources under changing conditions (Teece, 2007, 2018). CBCVCF extends this reasoning to community-centered settings, where strategically relevant resources may be dispersed across households, local entrepreneurs, community organizations, social networks, and institutional partners. Community Capability therefore represents a form of collective strategic capacity through which distributed resources, knowledge, relationships, and local agency can be mobilized toward shared objectives.

This extension also introduces the notion of community strategic advantage. Unlike conventional competitive advantage, community strategic advantage does not imply superiority over competing communities. Rather, it refers to the community's collective capacity to recognize locally embedded opportunities, mobilize biological and social resources, coordinate collective action, sustain stakeholder relationships, and adapt to changing conditions. The framework therefore shifts the strategic question from how firms outperform competitors toward how communities develop the organizational capacity required to continuously create and renew collective value. Second, CBCVCF contributes to community enterprise and organizational theory through the conceptualization of Community Bio-Circular Enterprise (CBCE). Community-based enterprise theory has established that communities can collectively function as entrepreneurs and enterprises, integrating economic activity with community interests and locally embedded resources (Peredo & Chrisman, 2006). CBCE builds on this foundation but extends it by explicitly incorporating circular biological resource management, entrepreneurial coordination, collaborative governance, and organizational learning. CBCE therefore provides an organizational explanation for how collective capability becomes institutionalized into sustained circular action rather than remaining dependent on temporary projects or informal participation.

This organizational contribution also complements social enterprise research. Hybrid organization scholarship demonstrates that organizations frequently combine commercial and societal missions and must manage competing

institutional logics and stakeholder expectations (Battilana & Lee, 2014; Doherty et al., 2014). CBCE extends this reasoning by embedding regenerative resource circulation within the hybrid organizational mission. Economic viability, community benefit, environmental regeneration, and institutional strengthening are consequently treated as interconnected organizational objectives rather than separate performance domains. Third, the framework contributes to circular bioeconomy research by complementing its strong emphasis on biological resource utilization, cascading, recycling, and waste valorization with an explicit organizational explanation. Circular bioeconomy research demonstrates the importance of maintaining biological resources within productive cycles and maximizing their sustainable utilization (Carus & Dammer, 2018; Stegmann et al., 2020). However, CBCVCF suggests that resource circularity becomes sustainable at the community level only when communities possess the capability and organizational arrangements required to coordinate decentralized resources, entrepreneurship, participation, learning, and stakeholder collaboration. The framework therefore shifts attention from resource circulation alone toward the organizational conditions that enable resource circulation to generate sustained community value.

Fourth, CBCVCF extends Circular Business Model and Circular Business Ecosystem perspectives. Circular Business Model research explains how organizations redesign value creation, delivery, and capture through circular resource strategies (Lüdeke-Freund et al., 2018), whereas ecosystem research demonstrates that circularity increasingly depends on networks of interdependent actors rather than individual organizations (Kanda et al., 2021). CBCVCF integrates both insights but changes the organizational locus: the community is positioned as a locally embedded strategic actor capable of coordinating circular activities and mobilizing relationships with governments, universities, firms, financial institutions, and civil society. Thus, ecosystem collaboration is incorporated into the framework without reducing the community to merely one stakeholder among many. Fifth, the introduction of Strategic Community Value Creation (SCVC) contributes to value-creation theory by conceptualizing sustainable value as a multidimensional and recursive transformation process. Stakeholder perspectives have broadened value creation beyond shareholders toward multiple stakeholder relationships (Parmar et al., 2010), while sustainability-oriented approaches increasingly incorporate economic, social, and environmental dimensions of value creation. SCVC extends these perspectives by incorporating institutional value alongside economic, social, and environmental value and by explaining how these dimensions reinforce one another over time. Institutional value, expressed through governance capacity, legitimacy, collaborative relationships, learning routines, and adaptive capability is particularly important because it contributes to the community's capacity to reproduce other forms of value across successive cycles of collective action.

Taken together, these theoretical extensions produce a higher-order explanation that distinguishes CBCVCF from its individual theoretical foundations. RBV and Dynamic Capability Theory explain strategic resources and adaptation; Community Enterprise explains collective organization; Social Enterprise explains hybrid missions; Circular Business Models explain regenerative value creation; and Circular Business Ecosystems explain multi-actor coordination. CBCVCF integrates these mechanisms around the community as the strategic organizational locus of circular bioeconomy transformation. The resulting contribution is therefore integrative rather than substitutive: the framework seeks to explain relationships that remain difficult to understand when these theories are applied independently.

Practical Implications

The framework also offers practical implications for community organizations, policymakers, local governments, universities, development agencies, and private-sector partners. Its central practical implication is that community-driven circular bioeconomy should not be approached primarily as a technological or waste-management intervention. Investments in processing technologies may be necessary, but their long-term effectiveness depends on whether communities possess the organizational capacity to mobilize resources, develop entrepreneurial activities, coordinate participation, access markets, establish governance arrangements, and maintain collaborative stakeholder relationships. For community organizations, the framework suggests that the development of circular bioeconomy initiatives should begin with the joint assessment of biological resource potential and community capability. The availability of organic waste, agricultural residues, biomass, or other biological resources does not by itself establish the viability of a community enterprise. Leadership, entrepreneurial skills, collective participation, local knowledge, governance arrangements, market access, stakeholder relationships, and adaptive learning should be developed simultaneously.

For policymakers and local governments, CBCVCF suggests a shift from short-term project assistance toward organizational and institutional capacity building. Support mechanisms should therefore extend beyond equipment provision or technical training to include entrepreneurial development, governance strengthening, market facilitation, financial access, collaborative platforms, and long-term learning mechanisms. Such an

approach can reduce the risk that community circular initiatives remain dependent on temporary external support. Universities and research institutions can contribute through technology adaptation, entrepreneurial education, knowledge transfer, impact assessment, and organizational learning. Private-sector actors can provide market access, technology, supply-chain integration, and commercial partnerships, while financial institutions and development agencies can strengthen access to capital and organizational development. Within CBCVCF, however, these actors are not substitutes for community agency; their role is to strengthen the community-centered organizational platform through which circular value is created.

The framework is potentially applicable across a range of decentralized biological resource activities, including organic waste management, composting, agricultural biomass utilization, biofertilizer production, bioenergy initiatives, and Black Soldier Fly (BSF) bioconversion. The original manuscript similarly identified BSF farming and related regenerative community enterprises as possible practical applications of the framework. Importantly, these activities should be interpreted as application contexts rather than empirical evidence validating the framework. This distinction is particularly relevant to our research origin. BSF/maggot farming remains visible here, but now its position is academically appropriate: it demonstrates one potential application of CBCVCF rather than implying that this conceptual article empirically investigates a specific BSF case.

Finally, the framework suggests that performance assessment of community circular bioeconomy initiatives should move beyond narrow indicators such as waste volume processed, production output, or income generated. Evaluation should simultaneously consider economic value, social participation and learning, environmental regeneration, institutional capacity, community prosperity, and adaptive resilience. This multidimensional assessment is more consistent with the central premise of CBCVCF: sustainable community transformation occurs when circular resource utilization strengthens not only current economic activity but also the community's long-term capacity to organize, learn, adapt, and continuously create value.

Table 6. Summary of Theoretical and Practical Contributions of the CBCVCF

Theoretical Domain	Existing Focus	CBCVCF Extension
Resource-Based View	Firm resources and competitive advantage	Strategic biological resources at community level
Dynamic Capability	Firm sensing, seizing, and reconfiguration	Collective community capability and adaptive learning
Community Enterprise	Collective entrepreneurship and local development	Circular biological resource organization through CBCE
Social Enterprise	Hybrid economic and societal missions	Regenerative resource circulation within hybrid community organization
Circular Business Models	Firm-centered circular value creation	Community-centered circular value creation
Circular Business Ecosystems	Multi-actor circular collaboration	Community as locally embedded organizational nucleus
Value Creation	Economic/stakeholder/sustainability value	SCVC integrating economic, social, environmental, and institutional value
CBCVCF	—	**Recursive pathway from biological resources to prosperity, resilience, and sustainable regional development**

Overall, the CBCVCF provides a strategic roadmap for designing community-centered circular bioeconomy systems capable of simultaneously improving local livelihoods, strengthening community resilience, regenerating biological resources, and supporting sustainable regional development. Consequently, the framework not only advances organizational theory but also provides practical guidance for implementing community-driven sustainability initiatives in emerging economies.

Conceptual Propositions and Future Research Agenda

Conceptual Propositions

The Community Bio-Circular Value Creation Framework (CBCVCF) proposes that sustainable community transformation emerges through a sequential but recursive process connecting biological resources, collective capability, organizational institutionalization, multidimensional value creation, prosperity, and resilience. Because the present study is conceptual, the relationships proposed within the framework should be interpreted as theoretically derived propositions rather than empirically established causal relationships. Formulating these relationships explicitly provides a foundation for subsequent empirical examination across different community-driven circular bioeconomy contexts. The first relationship concerns the strategic transformation of biological

resources. Resource-Based View research emphasizes that resources do not generate strategic advantage merely because they exist; their contribution depends on how they are recognized, organized, and deployed (Barney, 1991). Dynamic Capability Theory similarly emphasizes organizational capacities for sensing opportunities, seizing them, and reconfiguring resources under changing conditions (Teece, 2007, 2018). CBCVCF extends this reasoning to the community level. Biological resources such as organic waste, agricultural residues, and locally available biomass therefore acquire strategic significance when communities possess the collective capacity to recognize their potential and mobilize them through coordinated action.

Proposition 1 (P1) : *The stronger a community's capability to recognize, mobilize, and reconfigure locally available biological resources, the greater its capacity to transform those resources into strategic opportunities for circular bioeconomy activities.*

However, Community Capability alone may not generate sustained value creation. Community enterprise research demonstrates the importance of collective organization in transforming locally embedded resources into coordinated entrepreneurial activities (Peredo & Chrisman, 2006). CBCVCF extends this argument by proposing that collective capabilities require organizational institutionalization through CBCE. Without appropriate governance structures, entrepreneurial routines, circular resource management, and stakeholder coordination, community capability may remain fragmented or dependent on temporary initiatives.

Proposition 2 (P2) : *The institutionalization of Community Capability through Community Bio-Circular Enterprise (CBCE) strengthens the community's capacity to sustain coordinated entrepreneurial and circular resource-management activities.*

The third relationship concerns the internal organizational architecture of CBCE. The theoretical synthesis indicates that community governance, entrepreneurship, circular resource management, and collaborative governance should not operate independently. Circular business model research emphasizes organizational redesign for circular value creation(Lüdeke-Freund et al., 2018), while circular ecosystem research highlights the importance of interdependent stakeholder relationships for implementing circularity beyond individual organizational boundaries (Kanda et al., 2021).Accordingly, CBCVCF proposes that the effectiveness of CBCE depends on the integration of its organizational functions.

Proposition 3 (P3): *Greater integration among community governance, community entrepreneurship, circular resource management, and collaborative governance enhances the organizational effectiveness of CBCE in coordinating community-driven circular bioeconomy activities.*

CBCE subsequently provides the organizational conditions through which Strategic Community Value Creation (SCVC) can occur. The framework proposes that coordinated resources, capabilities, entrepreneurship, governance, and stakeholder relationships enable communities to generate multiple forms of value rather than economic outcomes alone. This reasoning extends stakeholder and sustainability-oriented value-creation perspectives by positioning value creation as a collective organizational process rather than solely a firm-level outcome (Parmar et al., 2010; Porter & Kramer, 2011).

Proposition 4 (P4): *Effective CBCE organization positively enables Strategic Community Value Creation by transforming institutionalized community capabilities into economic, social, environmental, and institutional value.*

A central theoretical feature of SCVC is that these four value dimensions are mutually reinforcing. Economic benefits can strengthen incentives for participation; social trust can facilitate coordination and collective entrepreneurship; environmental regeneration can improve resource availability and legitimacy; and institutional capacity can stabilize governance and stakeholder relationships. Consequently, CBCVCF differs from approaches in which sustainability dimensions are treated primarily as parallel performance categories.

Proposition 5 (P5): *The mutually reinforcing interaction among economic, social, environmental, and institutional value strengthens the overall sustainability of Strategic Community Value Creation.*

The framework further proposes that multidimensional value contributes to Community Prosperity. Prosperity is conceptualized broadly, encompassing livelihoods, social well-being, environmental quality, opportunities, and institutional capacity. This distinction is necessary because a community initiative may generate income without necessarily strengthening social relations, environmental regeneration, or institutional capacity. Sustainable prosperity therefore depends on the accumulation and distribution of multiple forms of community value.

Proposition 6 (P6): *Higher levels of multidimensional value generated through SCVC contribute positively to Community Prosperity.*

CBCVCF subsequently connects prosperity with Community Resilience. Communities that accumulate economic opportunities, social trust, environmental resources, organizational knowledge, and institutional relationships should be better positioned to respond and adapt to disturbances. This relationship is consistent with the framework's original logic, in which Community Prosperity precedes Community Resilience rather than being treated as the final development outcome.

Proposition 7 (P7): *Community Prosperity generated through sustained multidimensional value creation strengthens Community Resilience by increasing the community's capacity to absorb, adapt to, and respond to changing socio-economic and environmental conditions.*

The final relationship introduces the recursive logic of CBCVCF. Resilience does not represent a terminal state. Through repeated experience, communities may accumulate knowledge, legitimacy, stakeholder relationships, entrepreneurial competence, and adaptive routines that strengthen subsequent Community Capability. This feedback mechanism transforms CBCVCF from a linear input–output model into a dynamic organizational framework.

Proposition 8 (P8): *Higher levels of Community Resilience reinforce subsequent Community Capability through accumulated learning, organizational experience, stakeholder relationships, and adaptive capacity, thereby enabling successive cycles of community bio-circular value creation.*

Taken together, these propositions establish the theoretical sequence: "Strategic Biological Resources → Community Capability → CBCE → SCVC → Multidimensional Value → Community Prosperity → Community Resilience → renewed Community Capability". while sustained and interconnected community-level transformations are expected to contribute more broadly to Sustainable Regional Development.

Future Research Agenda

The propositions above establish several directions for future empirical research. First, future studies should develop and validate measurement scales for the principal constructs introduced in the framework, particularly Community Capability, CBCE, SCVC, institutional value, Community Prosperity, and Community Resilience. Establishing construct validity is particularly important for CBCE and SCVC because these represent newly integrated theoretical constructs rather than established measurement models. Second, empirical research should examine the relationships proposed in CBCVCF using quantitative, qualitative, and mixed-method designs. Quantitative studies could test the direct, mediating, and reinforcing relationships among Community Capability, CBCE, SCVC, multidimensional value, prosperity, and resilience. Longitudinal designs would be particularly valuable because the framework proposes that value creation and capability development occur recursively over time rather than through a single linear transformation.

Third, comparative case studies could investigate how CBCVCF operates across different institutional and geographical contexts. Community governance structures, access to markets, public policy support, social capital, technological infrastructure, and stakeholder relationships may influence the effectiveness of community-driven circular bioeconomy initiatives. Cross-regional and cross-country studies would therefore help identify the contextual conditions under which the proposed relationships become stronger or weaker. Fourth, future studies should examine CBCVCF across different forms of biological resource transformation. Potential empirical settings include organic waste valorization, composting, agricultural biomass utilization, biofertilizer production, bioenergy, and BSF/maggot-based bioconversion. Comparative analysis across these activities would reveal whether the organizational mechanisms proposed by CBCVCF remain stable across different technological and resource configurations.

This fourth agenda is particularly relevant to the broader research context from which this conceptual development emerged. Community-based maggot/BSF cultivation can become one empirical setting for testing the framework, rather than being treated as empirical evidence within the present conceptual article. In a subsequent empirical study, for example, CBCVCF could be examined through community-based BSF initiatives to determine how household organic waste, Community Capability, organizational arrangements, SCVC, and household/community prosperity interact in practice. Finally, future research should examine the broader relationship between community-level bio-circular value creation and Sustainable Regional Development. The framework proposes that locally generated prosperity and resilience may contribute to regional sustainability when community initiatives become connected through markets, policy systems, knowledge institutions, infrastructure, and wider circular economy networks. However, the mechanisms through which community-level value scales,

diffuses, or becomes institutionalized at regional level remain empirically unresolved. This represents an important boundary condition and research opportunity for further development of CBCVCF.

Conclusions

This study develops the Community Bio-Circular Value Creation Framework (CBCVCF) as an integrative organizational framework for explaining how communities transform biological resources into sustainable multidimensional value. The framework addresses the fragmentation of existing perspectives by integrating strategic resources and capabilities, community and social enterprise, circular business models, and circular business ecosystems within a community-centered perspective. CBCVCF proposes a theoretical pathway linking Strategic Biological Resources, Community Capability, Community Bio-Circular Enterprise (CBCE), Strategic Community Value Creation (SCVC), multidimensional value, Community Prosperity, Community Resilience, and Sustainable Regional Development. The framework makes two central conceptual contributions. First, CBCE conceptualizes the community as a strategic organizational actor that institutionalizes collective capability through entrepreneurship, community and collaborative governance, circular resource management, and organizational learning. Second, SCVC explains how these institutionalized capabilities generate mutually reinforcing economic, social, environmental, and institutional value. Together, these concepts establish the central logic of CBCVCF: Community Capability provides the capacity to act, CBCE provides the organizational platform, and SCVC provides the mechanism through which organized capability is transformed into sustainable multidimensional value. This community-centered perspective extends existing community enterprise and circular organization research (Kanda et al., 2021; Lüdeke-Freund et al., 2018; Peredo & Chrisman, 2006).

CBCVCF further proposes that multidimensional value contributes to Community Prosperity and Community Resilience, while accumulated learning, stakeholder relationships, organizational experience, and adaptive capability can reinforce subsequent Community Capability. The framework should therefore be understood as a dynamic and recursive organizational process rather than a linear resource-to-outcome model. In this way, the study shifts attention from the technical question of how biological resources can be valorized toward the organizational question of how communities can continuously organize resources, capabilities, and stakeholder relationships to create sustainable value. As a conceptual framework, CBCVCF requires empirical validation. Future research should operationalize its constructs and test the proposed relationships across different geographical, institutional, and circular bioeconomy contexts. Potential applications include organic waste valorization, agricultural biomass, composting, biofertilizer, bioenergy, and BSF/maggot bioconversion. Ultimately, the framework argues that sustainable community bio-circular transformation depends not simply on the availability of biological resources, but on the organizational capacity through which those resources are strategically transformed: biological resources provide the opportunity, Community Capability provides the capacity, CBCE provides the organizational platform, and SCVC provides the value-creation mechanism.

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