This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Regenerative Business Models Across Industries: Adoption, Value Chain Stages, Barriers and Enablers

Taru Karlsson*

Tampere University of Applied Sciences, Kuntokatu 3, 33520 Tampere, Finland.
E-mail: taru.karlsson@tuni.fi

Toni Luomaranta

Tampere University of Applied Sciences, Kuntokatu 3, 33520 Tampere, Finland.
E-mail: toni.luomaranta@tuni.fi
* Corresponding author

Abstract: Regenerative business models (RBMs) aim to restore ecological and social systems while creating economic value, yet empirical understanding of their adoption across industries remains limited. This study examines the extent and forms of RBM adoption across different industries and value chain stages and identifies key barriers and enablers shaping broader implementation. The analysis draws on documented regenerative business cases across multiple sectors and applies a value chain–based analytical lens. The findings show that RBM adoption is most commonly embedded in upstream stages, particularly in ecologically dependent industries, while manufacturing and service sectors exhibit more hybrid and stage-specific adoption patterns. Barriers and enablers vary systematically by value chain position, with ecological and verification challenges dominating upstream stages and market- and governance-related factors shaping downstream adoption. The study contributes a cross-industry perspective on RBM adoption and highlights the value of a value chain approach for understanding regenerative transition pathways.

Keywords: regenerative business models; RBM adoption; value chain stages; cross-industry analysis; barriers and enablers; regenerative innovation; sustainability transitions; industry context; value chain perspective.

1 Introduction

Regenerative business models (RBMs) are a relatively novel and still limitedly adopted approach that challenges conventional linear economic models by aiming to restore natural and social systems and by creating net positive environmental and societal impacts (Glaveli et al., 2025). The currently dominant economic system is largely based on a linear take-make-dispose logic that relies on continuous resource extraction and increasing consumption levels. This model has proven to be environmentally unsustainable, as it drives overconsumption, waste generation, climate change, biodiversity loss and other forms of environmental degradation. As a result, human activities have pushed several

planetary boundaries which define the safe operating space for humanity, beyond their safe limits, thereby threatening Earth system stability and resilience (Rockström et al., 2009; Steffen et al., 2015). These developments highlight the need to identify solutions that address overconsumption and enable a transition towards more sustainable modes of production and consumption, with the aim of halting and ultimately reversing the crossing of planetary boundaries. In this context, fundamental changes are required in how economic value is created, delivered, and captured.

While RBMs share certain principles with sustainable and circular business models, they differ in their fundamental objectives and systemic perspective by actively regenerating the ecological and social systems in which they operate rather than merely reducing negative impacts (Caldera et al., 2022; Das and Bocken, 2024). This perspective builds on the broader concept of regenerative organizing, which emphasizes the embeddedness of organizations within socio-ecological systems and their role in co-evolving with natural systems rather than operating as separate entities (Muñoz and Branzei, 2021). Implementation of RBM-based businesses faces significant challenges, including coordination across multiple governmental, institutional and societal levels and navigating contested policy frameworks such as true pricing and recognition of nature and animal rights (Konietzko et al., 2023).

While most companies do not have explicit RBM strategies, some integrate RBM elements into existing business practices, generating value for multiple stakeholders, including nature, communities, employees, and customers, through co-creative partnerships and systemic wellbeing, often achieving net-positive impact alongside economic returns (Konietzko et al., 2023). The early empirical examples illustrate how companies implement RBM elements through strategies combining ecological restoration, social wellbeing, and responsible sourcing while maintaining viable business performance (Das and Bocken, 2024). Adoption is often motivated by opportunities for competitive differentiation, improved stakeholder relations, and potential long-term benefits. At the same time, the emerging literature indicates that the conditions enabling broader RBM adoption are not yet well established. Challenges discussed across conceptual work and available empirical cases include limited organizational capabilities, a lack of commonly accepted methods and metrics, regulatory ambiguity, and difficulties associated with organizational change and cross-sector coordination (Konietzko et al., 2023; Das and Bocken, 2024; Salonen et al., 2025). Despite growing conceptual and practical interest in RBMs, empirical evidence on their application across industries and value chain stages, as well as the barriers and enabling factors affecting broader adoption, remains limited.

This study addresses the gap in systematic understanding by building a structured overview to categorize industries based on their level of RBM adoption and the characteristics of their regenerative practices. The research question guiding this study is: To what extent and in what ways are regenerative business models adopted across different industries and value chain stages, and what are the main barriers and enablers affecting their broader implementation?

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

2 Literature review

Defining Regenerative Business Model

Regenerative business models (RBMs) have emerged as an extension of sustainability-oriented business model innovation. While traditional linear business models follow a "take–make–dispose" logic, sustainable business models aim to reduce negative environmental and social impacts, and circular business models focus on closing and slowing resource loops through strategies such as reuse, repair and recycling (Ellen MacArthur Foundation, n.d-a.; Geissdoerfer et al., 2018). RBMs go further by seeking to actively restore and enhance ecological and social systems, thereby generating net-positive outcomes for ecosystems, communities and stakeholders (Das and Bocken, 2024; Drupsteen & Wakkee, 2024).

Prior research emphasizes the holistic and system-based nature of RBMs, highlighting their focus on multiple impact areas and stakeholder engagement (Drupsteen and Wakkee, 2024). Rather than optimizing isolated activities, RBMs address interconnected socio-ecological systems and aim to strengthen their long-term resilience.

Importantly, while sustainable and circular business models primarily aim to reduce negative impacts or optimize resource use, RBMs are distinguished by their explicit goal of generating regenerative outcomes that restore and strengthen the socio-ecological systems in which firms operate (Drupsteen and Wakkee, 2024).

Table 1 illustrates the conceptual differences between linear, sustainable, circular and regenerative business models, showing that the transition toward regeneration represents a fundamental shift from minimizing harm to actively restoring the systems on which economic activity depends.

Table 1 Comparison of Business Model types

Business Model	*Focus Areas and Value Creation Logic*	*References*
Linear Business Model	Resource extraction and production (take–make–dispose). Value created primarily through product sales and resource throughput.	Ellen MacArthur Foundation, n.d-a.
Sustainable Business Model	Reducing negative environmental and social impacts. Value created by balancing economic, environmental, and social goals.	Geissdoerfer et al., 2018.
Circular Business Model	Closing and slowing resource loops. Value created by extending product lifecycles and retaining material value.	Ellen MacArthur Foundation, n.d-b.
Regenerative Business Model	Restoring and strengthening socio-ecological systems. Value created by generating net-positive outcomes for ecosystems, communities, and stakeholders.	Das and Bocken, 2024.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Building on the distinctions outlined between different business models, this study focuses specifically on RBMs and explores their objectives, impact areas, and stakeholder roles in greater depth. Within the framework proposed by Konietzko et al. (2023), RBMs are framed as a shift from firm-centric value creation towards system-level regeneration and net positive impact. This perspective enables a deeper examination of RBMs' objectives, impact areas, and stakeholder roles in addressing interconnected ecological and social challenges.

Prior literature identifies key impact areas of RBMs, including environmental regeneration, social value creation and system-level outcomes that emerge through interactions among multiple stakeholders (Drupsteen and Wakkee, 2024; Konietzko et al., 2023). These impact areas are viewed as mutually reinforcing rather than isolated, requiring coordinated action across organizational boundaries. This perspective aligns with the concept of regenerative organizing, which highlights relational value creation and the co-evolution of organizations and socio-ecological systems (Muñoz and Branzei, 2021).

Accordingly, stakeholder involvement is a central feature of RBMs. Research emphasizes that regenerative outcomes depend on collaboration among firms, suppliers, customers, public actors, non-governmental organizations and research institutions, as no single organization can achieve system-level regeneration alone (Druspsteen and Wakkee, 2024; Ryan et al., 2023). While prior literature provides conceptual clarity on how regenerative business models differ from linear, sustainable and circular models, empirical research remains limited in explaining how these conceptual distinctions translate into observable adoption patterns across industries and organizational contexts.

Extent and ways of adoption of RBM in different industries

While regenerative business models are still at an early stage of adoption, emerging empirical studies point to their application in contexts closely connected to natural resource use and circular economy practices. Such contexts include agri-food and material-intensive sectors, where business activities are deeply embedded in socio-ecological systems (Konietzko et al., 2023; Kunttu et al., 2025).

Research further suggests that RBMs are typically adopted through incremental rather than radical business model transformation. Firms tend to integrate regenerative principles into existing sustainability or circular economy initiatives, resulting in hybrid business models that combine multiple approaches to value creation (Gervais et al., 2024; Salonen et al., 2025). Although emerging studies indicate that regenerative business models are being adopted in selected industries, existing research offers fragmented and sector-specific insights, leaving a lack of systematic cross-industry understanding of the extent and forms of RBM adoption.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Barriers and enablers

Prior literature suggests that barriers and enablers of RBM adoption are deeply interrelated and operate across multiple levels, indicating that successful implementation depends on the alignment of organizational capabilities, value chain structures and broader institutional conditions.

The adoption of RBMs is shaped by several interrelated barriers and enablers at organizational, value chain and systemic levels. Key barriers include limited knowledge and practical capabilities to implement regenerative principles, high upfront costs and uncertain returns, the lack of standardized metrics and regulatory frameworks, organizational resistance and the complexity of multi-stakeholder coordination (Drupsteen and Wakkee, 2024, Das and Bocken, 2024; Konietzko et al., 2023). Prior empirical studies illustrate how these barriers materialize in practice. For example, agricultural and fashion-sector cases highlight difficulties in verifying regenerative outcomes, while construction and packaging cases point to regulatory ambiguity and challenges in scaling context-specific practices. Several industries also report supplier dependency as a bottleneck, particularly where regenerative sourcing relies on local ecological conditions or limited material availability (Das and Bocken, 2024).

Conversely, adoption is facilitated by enablers such as multi-stakeholder collaboration and ecosystem partnerships (Konietzko et al., 2023; Geissdoerfer et al., 2018; Das and Bocken, 2024), integration of regenerative principles into existing circular or sustainable business models (Lüdeke-Freund et al., 2019; Kirchherr et al., 2017), technological development (Geissdoerfer et al., 2018), regulatory and policy support (Geissdoerfer et al., 2017; Konietzko et al., 2023), as well as market and stakeholder pressure and policy demand (Konietzko et al., 2023). Overall, overcoming barriers require systemic alignment between organizational capabilities, market conditions, and institutional frameworks, highlighting that RBM enablers operate through multi-level coordination and ecosystem engagement (Konietzko et al., 2023). These early studies have identified multiple organizational and systemic barriers and enablers influencing RBM adoption. These factors are predominantly discussed in isolation, providing limited insight into how they interact across industries and shape implementation outcomes in practice.

Mapping value chain stages where RBMs are applied across different industries

The value chain represents the sequence of activities through which inputs are transformed into products or services, generating value for the end customer (Porter, 1985). Building on this perspective, analyzing value creation across different stages of the value chain enables the identification of where value is created, transferred or potentially lost, and provides a useful lens for examining sustainability-related interventions (Norris et al., 2021).

RBMs extend the traditional value chain perspective by aiming not only to reduce negative impacts but to actively restore ecological and social systems across multiple stages. Prior research characterizes RBMs by principles such as circular resource flows, ecosystem restoration, community value creation and long-term stewardship, implying that regenerative value creation is embedded across interconnected value chain stages rather

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

than confined to isolated activities (Drupsteen and Wakkee, 2024). Value creation is thus understood as relational and systemic, emerging through interactions among multiple actors rather than solely within firm boundaries (Muñoz and Branzei, 2021; Salonen and Mohiuddin, 2025). Studies on circular, sustainable and ESG-oriented value chains highlight how challenges related to measurement, verification, coordination and collaboration, as well as the position of practices within the value chain, shape adoption pathways and outcomes (Shirkoohi and Mohiuddin, 2025; Bag et al., 2025). Despite growing recognition of the value chain as a key analytical lens for sustainability transitions, there is limited systematic evidence on how regenerative business models are positioned across different value chain stages and how this positioning varies across industries. Together, this literature supports the use of a value chain–based analytical lens for examining how RBM adoption varies across industries and value chain stages (Dhakal and Shrestha, 2025).

The reviewed existing literature provides important insights into regenerative business model principles and adoption challenges, it lacks a structured, cross-industry understanding of how RBMs are positioned along value chains. In response, this study undertakes a systematic value chain–based analysis of documented regenerative business cases to reveal adoption patterns, implementation conditions, and barriers and enablers across industries. The following section describes the methodological approach adopted to apply this lens systematically to the empirical case material.

3 Methodology and research design

Given the fragmented and sector-specific nature of existing RBM research, this study applies a qualitative research design that combines a systematic literature review with document-based analysis of the Regenerative Business Case Database and corporate sustainability reports or websites. This approach is well suited to addressing the identified research gap, as it enables a structured, cross-industry examination of how RBMs are adopted across value chain stages and which factors influence their wider implementation.

Research design and analysis

The study employs a qualitative, step-by-step research design combining a systematic literature review (SLR) with document-based analysis of the Regenerative Business Case Database and public corporate sustainability reports (Fisch and Block, 2018; Konietzko et al., 2023). The data are analysed abductively (Tavory and Timmermans, 2014) to examine RBM adoption across industries and value chain stages, identifying recurring patterns, key barriers, and enabling factors that extend existing theory.

Step-by-step review and data collection process

Step 1: Definition of scope and research focus
The first step involved defining the scope of the review and clarifying the analytical focus. The study concentrates on regenerative business models in corporate contexts, with

particular attention to the extent and ways in which RBMs are adopted across industries and value chain stages and the barriers, bottlenecks, and enabling factors affecting their adoption. The review focuses on business model–level applications rather than purely technological or ecological regeneration initiatives.

Step 2: Identification of relevant literature
In the second step, relevant academic literature was identified through a systematic search of major scholarly databases, including Scopus, Web of Science and ScienceDirect (Elsevier), which together provide broad coverage of leading journals in sustainability and business research. These databases were selected because they provide comprehensive coverage of peer-reviewed journal articles across business, sustainability, environmental sciences and management research, which aligns with the predominantly peer-reviewed nature of the sources used in this study.

The search focused on English-language, peer-reviewed journal articles published between 2015 and 2026. Keywords related to regenerative business models, adoption and implementation, industry contexts, value chains and influencing factors were applied, with minor adjustments made to accommodate database-specific search requirements. This approach ensured the inclusion of high-quality scholarly work, such as articles published in Journal of Cleaner Production, Sustainable Production and Consumption, Business Strategy and the Environment, Journal of Business Research and Journal of Industrial Ecology.

To broaden the coverage beyond database searches, a snowballing strategy was applied. Backward and forward snowballing involved reviewing the reference lists and subsequent citations of included articles, following established guidelines for systematic literature studies (Wohlin, 2014). In addition, the Regenerative Business Case Database (Konietzko et al., 2023) was used to identify recurring industries and practices, enabling the inclusion of empirical examples, case studies and practice-oriented insights that complemented the peer-reviewed literature.

Step 3: Screening and eligibility assessment
The third step involved a structured screening process to assess the relevance of the identified literature. Titles, abstracts and article summaries were reviewed against predefined inclusion and exclusion criteria to determine whether the publications addressed regenerative business models in organisational or business contexts. To support the assessment of relevance, AI-assisted tools were used to clarify the thematic focus of articles and to verify whether they contained information pertinent to RBM adoption, barriers or enablers. Studies were excluded if they did not address business or organisational contexts, focused solely on ecological or technological regeneration without a business model perspective, or did not provide empirical or practice-oriented insights into RBM adoption, barriers, or enablers.

Step 4: Extracting and structuring data
In the fourth step, relevant information was systematically extracted from the selected publications. The extraction focused on key elements such as publication details, industry context, value chain positioning, conceptualisations of regenerative business models, and descriptions of adoption practices as well as identified barriers and enablers. The extracted

data were organised in a structured format to enable comparison across industries, value chain stages and study contexts.

Step 5: Integration of complementary document-based data
To complement and contextualise insights from the academic literature, the fifth step involved the integration of secondary data from the Regenerative Business Case Database (Konietzko et al., 2023). The case database contained 79 company websites and 7 publicly available corporate sustainability reports.

These sources were used to examine how RBM elements are operationalised in business practices, where they occur within the value chain, and which challenges and enabling conditions are reported across sectors and companies. The document-based data from the database, consisting of corporate sustainability reports and company websites, were not included in the systematic search but served as supplementary material to enrich the analysis.

Document-based data were included because RBM adoption is often described in corporate sustainability reports and on their websites rather than academic publications, making them a relevant complementary source for understanding practical implementation.

Step 6: Abductive analysis
In the final step, the collected literature and document-based data were analysed using an abductive analysis (Wohlin, 2014). Themes related to RBM adoption, barriers and enablers were iteratively identified, refined and interpreted in relation to existing theory. This approach allowed for both the recognition of recurring patterns and the generation of insights that extend and enrich current theoretical understanding across industries and value chain stages.

Quality assurance and limitations and outcomes

All review stages were systematically documented to ensure transparency and reproducibility (Fisch and Block, 2018). The study is limited to English-language journal articles, potentially excluding relevant work in other languages or formats, and some concepts may appear under alternative terminology not captured by the search. The analysis produces a structured overview for comparing RBM adoption patterns, value chain stages, and industry-specific challenges, advancing understanding of factors influencing wider diffusion of regenerative business models.

4 Findings

Together, the findings address the research question by showing the extent and forms of RBM adoption across industries and value chain stages, as well as the key barriers and enablers shaping their broader implementation.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Industry-specific RBM adoption across value chain stages

Because regenerative practices vary widely across industries and value chain functions, it is essential to examine RBM adoption through both of these lenses. Mapping the cases by industry and value chain stage clarifies where regenerative approaches are emerging, where gaps persist, and how sector-specific conditions shape the feasibility and diffusion of regenerative business models in practice. Considering the associated barriers and enablers further deepens this understanding by highlighting the contextual factors that either constrain or support implementation across different settings.

To build on this analysis, Table 2 presents empirical findings on how regenerative business models are adopted across industries and value chain stages, drawing on the cases included in Das and Bocken's (2024) regenerative business strategy database. Across industries, the analysis on prior literature highlights that regenerative practices are often embedded in specific value chain stages, particularly in sourcing and production-related activities, reflecting both organizational path dependencies and the experimental nature of regenerative strategies.

Table 2. Industry-specific RBM adoption across Value Chain Stages (VCSs) (based on Das & Bocken, 2024).

Industry	RBM adoption across VCSs	Regenerative Practices	Barriers	Enablers
Agriculture	Raw materials, Primary production	Regenerative agriculture, soil restoration	Verification challenges, ecological variability	Long-term partnerships, certifications
Carbon sequestration	Raw materials, Production	Microalgae cultivation, bamboo cultivation, carbon removal services, ecosystem restoration	Lack of formalized RBM model, uncertain financial viability, scaling and logistical complexity	Natural CO_2 capture efficiency, scalable technology, strong partnerships, sustainability trends
Manufacturing: Construction	Production, Design	Circular materials, low-impact processes	Regulatory ambiguity, high upfront costs	Collaboration with regulators, CSR commitments
Service: Consultancy (agriculture-related)	Full value chain	Regenerative land-use design, farmer training, project implementation, ecosystem restoration	Scaling across regions, financing needs, local adaptation challenges	Model Farms, partner networks, digital tools for monitoring
Manufacturing: Consumer goods	Production, Sourcing	Responsible sourcing, circular production	Market acceptance, supply-chain complexity	Transparency, long-term contracts
Fashion	Raw materials, Sourcing	Regenerative fibres, circular design, low-impact materials	Limited availability of regenerative materials	Certifications, supplier agreements

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Service: Finance	Product or service: Governance, investment	Regenerative finance, impact investing	Impact verification challenges	Reporting frameworks, investor demand
Food	Raw materials, Sourcing	Biodiversity enhancement, regenerative sourcing, farmer collaboration	Limited regenerative supply, traceability gaps	Community engagement, traceability systems
Manufacturing: Furniture	Production	Local materials, circular design	Scalability, material availability	Global networks, design innovation
Service: Healthcare	Product or service: Procurement, operations	Sustainable sourcing, community health initiatives	Data availability	Strategic commitment, partnerships
Service: IT services	Product or service: Governance, operations	Renewable energy, community projects	Funding variability	User engagement, sustainability governance
Materials	Raw materials, production	Biobased materials, ecosystem restoration	Lifecycle impact tracking, scalability	Scientific partnerships, material innovation
Packaging	Production, End-of-life	Biodegradable materials, circularity	Scaling challenges, cost barriers	Biotech innovation, circular design
Retail	Supply chain	Supplier alignment, transparency	Supply-chain complexity	Digital traceability, climate commitments
Service: Tourism	Community level: Site management	Ecosystem restoration, community projects	Stakeholder coordination	Certifications, local engagement

Beyond a descriptive summary, Table 2 functions as a structured overview that organizes RBM adoption across industries by linking value chain positioning, regenerative practices, and associated barriers and enablers. By structuring the empirical evidence along these dimensions, the overview enables systematic cross-industry comparison and supports the identification of recurring adoption patterns and stage-specific implementation conditions.

Cross-industry patterns of RBM adoption

RBMs are most frequently embedded in upstream stages, particularly in sectors where ecological processes underpin value creation. Agriculture, food, fashion, materials and carbon sequestration rely heavily on regenerative practices in raw material sourcing and primary production. These practices include regenerative agriculture, ecosystem restoration, biodiversity enhancement and carbon sequestration, which are closely linked to natural resource availability.

In manufacturing-oriented sectors such as construction, furniture, packaging and consumer goods, RBMs appear mainly in production, material innovation and facility operations, where processes and material flows are redesigned to generate ecosystem services or support circularity. Here, regenerative practices are often combined with circularity-oriented approaches and efficiency improvements.

Service-based industries, including finance, healthcare, consultancy, IT services and tourism, integrate RBMs more holistically across governance, investment decisions, operational practices and community-level activities reflecting the relationship-based and non-material nature of their value chains.

Based on the cases analyzed, the findings show systematic variation in RBM adoption across industries. Adoption is most advanced in ecologically dependent sectors such as agriculture, food, fashion, materials and carbon sequestration, where regenerative practices are embedded primarily in upstream stages including raw material sourcing and primary production. These cases demonstrate simultaneous improvements in soil health, biodiversity and community well-being, reflecting the interconnected nature of regenerative value creation.

Manufacturing sectors including construction, packaging, furniture and consumer goods adopt RBMs mainly through production-level interventions such as material innovation, circular processes and low-impact operations. Service industries such as finance, healthcare, consultancy, IT and tourism apply RBM principles more holistically across governance, investment decisions and community engagement, consistent with their relational and non-material value chains.

Across industries, RBMs are implemented in hybrid rather than fully regenerative forms. Firms typically integrate regenerative elements into existing sustainability or circular economy strategies, resulting in incremental adoption rather than radical business model redesign. This pattern is particularly visible in manufacturing and consumer-facing sectors, where regenerative practices are confined to specific value chain stages.

The results indicate that RBM adoption tends to concentrate in upstream value chain stages, whereas broader diffusion appears contingent on coordination across actors, credible measurement approaches and long-term strategic alignment.

In addition to value chain positioning, Table 2 highlights the range of regenerative practices applied in each industry, as well as the associated barriers and enablers. These dimensions provide an empirical basis for examining cross-industry adoption patterns and for analyzing how value chain position shapes the form and feasibility of regenerative business models.

While the previous analysis highlights where RBMs are embedded across industries and value chain stages, the following section examines the key barriers and enablers that shape their implementation and scaling across these contexts.

Barriers and Enablers

Across industries, RBM implementation is constrained by systemic barriers such as the lack of standardized metrics, challenges in long-term impact measurement, high upfront investment needs, supply-chain complexity and difficulties in scaling regenerative practices. Additional bottlenecks emerge at specific value chain points, including supplier

dependency, verification challenges, regulatory ambiguity, limited organizational capabilities and uncertain market uptake. These bottlenecks form critical pressure points that shape the feasibility and pace of RBM adoption.

Conversely, several enablers recur across sectors, including long-term partnerships, credible certifications such as Fair Trade, B Corp and FSC, data-driven monitoring tools and strong strategic commitment. Collaboration across public, private and scientific actors, alongside growing consumer and investor demand for transparency and sustainability, further accelerates adoption. In some cases, natural processes such as algae-based carbon capture or regenerative agriculture act as intrinsic enablers.

Barriers and enablers vary by value chain position. Upstream stages face ecological variability, verification challenges and limited availability of regenerative materials. Midstream and downstream stages are shaped by market acceptance, regulatory ambiguity and organizational resistance. Enablers across industries include long-term partnerships, credible certifications, data-driven monitoring tools and strategic commitment. Natural processes such as regenerative agriculture or algae-based carbon capture act as intrinsic enablers in ecologically dependent sectors.

Overall, the findings indicate that RBM adoption is most commonly concentrated in upstream value chain stages, while broader diffusion is shaped by coordination across actors, credible measurement approaches and sustained strategic commitment.

Table 3 synthesizes the kay barriers and enablers emerging from the empirical findings, reflecting patterns consistent with those notes in prior studies. The table consolidates the organizational and systemic conditions shaping RBM implementation, acknowledging that many factors interact across levels and therefore appear as overlapping rather than discrete categories.

Table 3 Key barriers and enablers for Regenerative Business Model adoption

Barriers	*Enablers*	*References*
Limited knowledge and practical capabilities to implement regenerative principles	Knowledge development, practical tools, and skill-building	Drupsteen & Wakkee, 2024; Das & Bocken, 2024.
High upfront costs and uncertain financial returns	Long-term value creation opportunities and business case development	Das & Bocken., 2024
Lack of standardized metrics and regulatory frameworks	Development of measurement frameworks, indicators, and supportive policies	Das & Bocken, 2024; Konietzko et al., 2023.
Organizational resistance and inertia	Leadership commitment and change management	Konietzko et al., 2023
Complexity of multi-stakeholder coordination	Collaboration and ecosystem partnerships	Konietzko et al., 2023;

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Challenges in integrating regenerative principles across value chains	Embedding regenerative practices into supply chains and business processes	Geissdoerfer et al., 2018; Das & Bocken, 2024
Limited market demand or unclear value proposition	Market and stakeholder pressure and policy demand	Lüdeke-Freund et al., 2019; Kirchherr et al., 2017 Konietzko et al., 2023
Lack of technological innovation or implementation tools	Adoption of technological solutions and innovation	Geissdoerfer et al., 2018

Building on the barrier and enabler landscape, table 4 summarizes the key regenerative practices associated with different value chain stages. By linking these practices to specific stages, ranging from raw material sourcing to community-level engagement, the table illustrates how regenerative business models are operationalized in practice and how implementation opportunities vary across the value chain.

Table 4 The key regenerative practices across value chain stages

Value chain stage	*Regenerative practices*	*References*
Raw materials and sourcing	Regenerative agriculture, ecosystem restoration	Drupsteen et al., 2024; Thopte et al., 2025
Supply chain	Responsible sourcing, fair supplier relationships, collaboration with suppliers	Norris et al., 2021; Muñoz & Branzei, 2021; Salonen et al., 2025; Thopte et al., 2025.
Production	Circular or nature-based production systems, waste reduction, energy efficiency	Norris et al., 2021; Drupsteen et al., 2024; Thopte et al., 2025.
Product or service	Offerings that restore ecosystems or provide social or environmental benefits	Drupsteen et al., 2024; Muñoz & Branzei, 2021.
Community level	Investment in local social and environmental initiatives and regeneration	Drupsteen et al., 2024; Muñoz & Branzei, 2021; Salonen et al., 2025; Thopte et al., 2025.

The following discussion interprets these patterns in relation to existing RBM literature, focusing on why upstream positioning and hybrid adoption recur across industries and how value chain stage helps explain variation in barriers and enablers.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

5 Discussions

This discussion returns to the study's research question concerning the extent and forms of regenerative business model adoption across industries and value chain stages, as well as the barriers and enablers shaping their implementation. The findings show that adoption is uneven and most advanced in upstream activities, while downstream stages are more strongly influenced by market dynamics, stakeholder expectations and service-level impacts. Implementation trajectories are further shaped by systemic constraints, organizational capabilities and coordination among actors. To synthesize these patterns, Figure 1 provides an overview of RBM adoption across industries, illustrating how regenerative practices are distributed across value chain stages and how these differences structure the broader landscape of RBM adoption.

Value Chain Flow →

	SOURCING	DESING/ PRODUCTION	USE/ END-OF-LIFE	COMMUNITY LEVEL/ SYSTEM LEVEL
BIO-BASED SECTOR (Food, Agriculture, Carbon)	Regenerative sourcing Biodiversity Carbon capture	Soil restoration Ecosystem restoration (incl. microalgae, bamboo)	-	Ecosystem services Farmer collaboration Carbon removal services
MANUFACTURING & MATERIALS (Construction, Consumer goods, Material, Packaging)	Responsible sourcing Circular inputs	Circular production Low-impact materials	Circularity Biodegradable design	Value chain collaboration Regulatory alignment
CONSUMER FACING (Fasion, Retail)	Regenerative fibres Traceability systems	Circular design Low-impact materials	Extended lifecycle Transparency Traceable supply chains	Supplier engagement Certifications
SERVICES (Finance, IT, Tourism, Consultancy)	Sustainable procurement	Operational sustainability (Energy efficiency, Renewable energy)	User well-being Service impact Community outcomes	Partnerships Digital toolls Impact verifications

Figure 1 Overview of RBM adoption patterns across industries.

The simultaneous improvements observed across ecological and social dimensions support prior research that conceptualizes regenerative value creation as inherently interconnected. Konietzko et al. (2023) emphasize that regenerative approaches generate value through mutually reinforcing ecological and social outcomes rather than isolated interventions, a pattern that is also evident in the cases analyzed in this study.

The strong upstream orientation of RBM adoption supports theoretical perspectives that position regenerative value creation closest to natural systems (Das & Bocken, 2024; Muñoz & Branzei, 2021). This study extends these insights by showing that ecological dependencies not only shape regenerative outcomes but also determine the strategic feasibility of adoption across industries.

The prevalence of hybrid adoption challenges idealized conceptualizations of RBMs as fully regenerative models. The findings align with research showing that sustainability-oriented business model innovation often proceeds incrementally and builds on existing structures (Lüdeke-Freund et al., 2019; Kirchherr, Reike & Hekkert, 2017).

This study contributes by demonstrating that RBMs commonly emerge through layered, path-dependent processes that combine circular, sustainable and regenerative elements.

A key contribution of this study is the identification of value chain stage as a structural determinant of adoption conditions. While prior literature lists general barriers such as lack of metrics, regulatory gaps and high upfront costs (Das & Bocken, 2024; Konietzko et al., 2023), this study shows that these challenges manifest differently depending on where regenerative practices are embedded. Upstream constraints are ecological and verification-related, whereas downstream constraints relate to markets, regulation and organizational capabilities. This value-chain-specific perspective advances theoretical understanding of RBM implementation.

For firms, the findings highlight the need to align regenerative interventions with the ecological and relational characteristics of their value chains. For policymakers, the results underscore the importance of differentiated support mechanisms that reflect the distinct challenges of upstream and downstream adoption.

This study contributes to RBM literature by providing a cross-industry mapping of RBM adoption across value chain stages (Das & Bocken, 2024), demonstrating the hybrid and incremental nature of early-stage RBM implementation (Lüdeke-Freund et al., 2019) and introducing value chain positioning as a central analytical lens for understanding barriers and enablers (Konietzko et al., 2023). These contributions address the fragmentation of existing RBM research and offer a structured foundation for future studies on scaling regenerative practices.

6 Conclusions

This study examined the extent and forms of regenerative business model adoption across industries and value chain stages, as well as the key barriers and enablers shaping their broader implementation. The findings indicate that RBM adoption is most commonly concentrated in upstream value chain stages, particularly in ecologically dependent industries, while implementation across all sectors tends to be hybrid and incremental rather than fully transformative.

By synthesizing empirical evidence through a value chain–based analytical lens, the study contributes to RBM literature in three main ways. First, it provides a cross-industry overview of how regenerative practices are positioned along value chains. Second, it demonstrates that value chain stage acts as a structural determinant of adoption conditions, shaping both barriers and enabling mechanisms. Third, it highlights the importance of coordination, credible measurement and long-term commitment for scaling RBMs beyond early adoption stages.

For practitioners, the results underscore the need to align regenerative initiatives with the ecological and relational characteristics of their value chains, while policymakers may support RBM diffusion through differentiated, stage-specific instruments.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

Limitations and Future research

This study has several limitations. Part of the empirical material is derived from corporate sustainability reports and other publicly available sources, which may be subject to selective disclosure and positive reporting bias. The analysis is also limited to English-language publications and cases included in the Regenerative Business Case Database, which may exclude relevant practices documented elsewhere. Finally, the evolving and hybrid nature of RBMs means that categorizations across industries and value chain stages are necessarily interpretive, reflecting the early and dynamic state of RBM adoption.

Future research could examine RBM adoption longitudinally to understand how hybrid models develop over time. Comparative studies across industries and institutional contexts would deepen insights into how ecological dependencies and stakeholder configurations shape adoption pathways. Further work is also needed to develop standardized metrics and verification methods for regenerative outcomes, and to complement publicly reported information with interviews or other primary data to capture organizational processes more accurately.

Acknowledgements

This research is supported by the Tampere University of Applied Sciences Foundation.

This paper was presented at the XXXVII ISPIM Innovation Conference, held in Granada, Spain on 07 June to 10 June 2026. ISBN 978-952-65771-2-8.

References and Notes

Bag, Surajit, Muhammad Sabbir Rahman, Susmi Routray, and Reema Khurana. (2025). Regenerative supply chain orientation and coopetition in supply chain networks for ESG initiatives: A parallel mediation study. *Journal of Business Research*, 152, 115685. https://doi.org/10.1016/j.jbusres.2025.115685

Bonsu, Mandella Osei-Assibey, Ying Wang, Grace Eghe-Ikhurhe, and Katie Hyslop, K., (2025). "Does sustainability auditing lead to enhanced corporate governance, environmental performance, and financial outcomes? Empirical evidence from high-impact industries". *Business Strategy and the Environment.* https://doi.org/10.1002/bse.70503

Caldera, Savindi, Samantha Hayes, Les Dawes, and Cheryl Desha. (2022). "Moving beyond business as usual toward regenerative business practice in small and medium sized enterprises", *Frontiers in Sustainability*, 3, Article 799359. https://doi.org/10.3389/frsus.2022.799359

Das, Ankita and Nancy Bocken. (2024) "Regenerative business strategies: A database and typology to inspire business experimentation towards sustainability", *Sustainable Production and Consumption*, 49, pp. 529–544. https://doi.org/10.1016/j.spc.2024.06.024

Dhakal, Krishna and Anu Joshi Shrestha. (2025). "Value chain as a practical tool for sustainability", *The Open Journal of Environmental Design*, 12(1), pp. 45–60. Available at: https://ojed.org/jina/article/download/9538/3688/58430

Drupsteen, Linda and Ingrid Wakkee. (2024). "Exploring Characteristics of Regenerative Business Models through a Delphi-Inspired Approach". *Sustainability*, 16(7), p.3062. https://doi.org/10.3390/su16073062

Ellen MacArthur Foundation, n.d-a. What is linear economy?. https://www.ellenmacarthurfoundation.org/what-is-the-linear-economy, accessed February 2026.

Ellen MacArthur Foundation, n.d-b. Circulate products and materials: Circular economy principles. https://www.ellenmacarthurfoundation.org/circulate-products-and-materials, accessed February 2026.

Fisch, Christian and Joern Block. (2018). "Six tips for your (systematic) literature review in business and management research", *Management Review Quarterly*, 68, pp. 103–106. https://doi.org/10.1007/s11301-018-0142-x

Geissdoerfer, Martin, Sandra Naomi Morioka, Marla Monteiro de Carvalho, and Steve Evans. (2018). "Business models and supply chains for the circular economy". *Journal of Cleaner Production,* 190, pp. 712-721. https://doi.org/10.1016/j.jclepro.2018.04.159

Gervais, Florence, Philippe Coulombel, and Okeoma John-Paul Okeke. (2024). "Implementation of regenerative business models in transitioning companies – are middle managers ready for action?". *International Journal of Organizational Analysis*, 33(9), pp. 3272–3293. https://doi.org/10.1108/IJOA-03-2024-4407

Glaveli, Niki, Victoria Voulgari, Anastasia Daskalopoulou, and Ioulia Poulaki. (2025). "Rising like a phoenix: A bibliometric and content analysis of the regeneration concept in business studies", *Administrative Sciences*, 15(8), Article 316. https://doi.org/10.3390/admsci15080316

Kirchherr, Julian, Denise Reike, and Marko Hekkert. (2017). "Conceptualizing the circular economy: An analysis of 114 definitions". *Resources, Conservation & Recycling,* 127, pp. 221–232. https://doi.org/10.1016/j.resconrec.2017.09.005

Konietzko, Jan, Ankita Das, and Nancy Bocken. (2023). "Towards regenerative business models: A necessary shift?", *Sustainable Production and Consumption*, 38, pp. 372–388. https://doi.org/10.1016/j.spc.2023.04.014

Kunttu, Iivari, Kaisa Henttonen, Leena Kunttu, Jari Jussila, Anne-Mari Järvenpää, and Nina Helander. (2025). **"**Regenerative practices in circular economy SMEs". *Journal of Circular Economy*, 3(3), pp. 342–357. https://doi.org/10.55845/QOPR9934

Lüdeke-Freund, Florian, Stefan Gold, and Nancy M. P. Bocken. (2019). **"**A review and typology of circular economy business model patterns". *Journal of Industrial Ecology,* 23(1), pp. 36–61. https://doi.org/10.1111/jiec.12763

Norris, Simon, Julia Hagenbeck, and Stefan Schaltegger. (2021). **"**Linking sustainable business models and supply chains: Toward an integrated value creation framework". *Business Strategy and the Environment,* 30(8), pp. 3780-3797. https://doi.org/10.1002/bse.2851

Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin III, Eric Lambin, Timothy M. Lenton, Marten Scheffer, Carl Folke, Hans Joachim Schellnhuber, Björn Nykvist, Cynthia A. de Wit, Terry Hughes, Sander van der Leeuw, Henning Rodhe, Sverker Sörlin, Peter K. Snyder, Robert Costanza, Uno Svedin, Malin Falkenmark, Louise Karlberg, Robert W. Corell, Victoria J. Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen, and Jonathan Foley. (2009). "A safe operating space for humanity." *Nature*, 461, pp. 472–475. https://doi.org/10.1038/461472a

Muñoz, Pablo, and Oana Branzei. (2021). "Regenerative organizations: Introduction to the special issue". *Organization and environment*. https://doi.org/10.1177/10860266211055740

Porter, Michael E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

Ryan, Natalia, Laurel Beesemyer, Sarah Caulliez, Jane Waiyaki, Mandira Nayak, Rashmi Chakrabarty, Sarang K.A Kim, and Doroteya Vladimirova. (2023). "Introducing a novel framework for regenerative business". *New Business Models Conference Proceedings 2023*. Maastricht University Press. https://doi.org/10.26481/mup.2302.40

Salonen, Kirsi, Paavo Ritala, and Nancy Bocken. (2025). "Emerging Regenerative Business Paradigm: Narrative Review, Synthesis, and Research Agenda". *Journal of Circular Economy*, 3(1). https://doi.org/10.55845/DOZQ3944

Shirkoohi, Sina Mirzaye and Muhammad Mohiuddin. (2025). "Developing sustainable global value chain: role of multi-stakeholder collaborations and digitalization". *Cleaner and Circular Systems*, 5, Article 100271. https://doi.org/10.1016/j.clscn.2025.100271

Steffen, Will, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, Stephen R. Carpenter, Wim de Vries, Cynthia A. de Wit, Carl Folke, Dieter Gerten, Jens Heinke, Georgina M. Mace, Linn M. Persson, Veerabhadran Ramanathan, Belinda Reyers, and Sverker Sörlin. (2015). "Planetary boundaries: Guiding human development on a changing planet." *Science*, 347(6223), Article 1259855. https://doi.org/10.1126/science.1259855

Tavory, Iddi and Stefan Timmermans. (2014). *Abductive analysis: Theorizing qualitative research*. Chicago: University of Chicago Press.

Thopte, Ishwari, Agnes Evangelista, Rianne Jenner, and Kim Poldner. (2025). "Supporting MSMEs Transition to a Net-Positive Circular Economy". *Journal of Circular Economy, 3(1).* https://doi.org/10.55845/GQBD2542

Wohlin, Claes. (2014). "Guidelines for snowballing in systematic literature studies and a replication in software engineering". *EASE '14: Proceedings of the 18th International Conference on Evaluation and Assessment in Software Engineering*, pp.1–10. https://doi.org/10.1145/2601248.2601268