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Value Chain: A Theory or a Tool for Sustainable Development?

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Abstract

This study explores whether the value chain (VC) is primarily a theory or a practical tool for sustainable development. Using the qualitative analytical approach based on thematic analysis of academic literature, institutional reports, and purposively selected global cases between 2010 and 2025, enabling cross-comparative analysis of environmental, social, and governance (ESG) dimensions shaping VC as tools for sustainable development. The findings indicate that VCs operate as practical instruments for achieving sustainable development rather than solely economic models or just a theory. Evidence across global cases shows consistent improvements in income generation, social inclusion, environmental performance, and governance coordination when VCs are formally structured and supported. This study offers a unified framework that demonstrates how VCs can drive inclusive, resilient, and sustainable development, offering strategic insights for practitioners, policymakers, and industry actors for designing inclusive and climate-resilient interventions following the triple bottom line theory and the concept of circular economy.

Keywords: Circular economy, sustainable development goals, Triple Bottom Line, value chain

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Introduction

Since the inception of the value chain VC framework by Michael Porter (1985), scholars and development practitioners have significantly applied the VC concept to examine how value is created, distributed, and captured across interconnected activities. It was originally developed as a strategic management tool to foster firm-level competitiveness, and has now developed into a multidisciplinary analytical lens used to study environmental sustainability, social inclusion, and economic upgrading (Gereffi, 2013; Schilling & Seuring, 2022). The transformation is indicative of a broader shift in developmental thinking, where systematic approaches emphasizing interconnectedness, power dynamics, and governance structures entrenched within local and global production networks replace linear models of production.

Traditionally, supply chains focus on operational and logistical efficiency (Lee & Greffi, 2015), the VC framework advances a more holistic comprehension (Huemer, 2006) of how different institutions, actors, and supporting mechanisms interact with each other to co-create value. The Sustainable Value framework and Global Value Chain (GVC) have further linked ESG dimensions (environmental, social, and governance), establishing VC as a pivotal enabler of sustainable development. Ricciotti (2020) and Rasheed et al. (2023) highlighted that in developing countries where structural transformation is still a top development goal, VC can help with improving resource efficiency, economic upgrading, and promoting social equality.

This change has been accelerated by recent technological developments. A study of Adamashvili et al. (2024) and Paramesha et al. (2024) highlights that the integration of advanced technologies, such as Artificial Intelligence (AI), Internet of Things (IoT), and blockchain, has revolutionised value chain operations, enabling real-time analytics, improved decision-making, and enhanced transparency. This technological integration represents a significant advancement in VC applications, but the empirical gap in how these technologies reshape development outcomes remains fragmented, with few prior studies focusing on comparative studies across regions and sectors.

The practical utility of VC in developing countries has become particularly noteworthy through VC-based interventions (Devaux et al., 2018; Ogbari et al., 2024; Rob & Cattaneo, 2021) to sectors like renewable energy, agriculture, tourism, and small enterprise development. These initiatives are implemented by agencies like the ADB, ASEAN, UNDP, ICIMOD, and FAO to enhance environmental stewardship, livelihoods, and strengthening market access (Rob & Cattaneo, 2021; Ogbari et al., 2024). However, all the existing evidence is largely documented on sector-specific and fails to clarify whether VC serves solely as a theoretical framework that directs analysis or as an actionable instrument that can operationalize sustainable development goals.

The knowledge and empirical gap are significant. While the theoretical framework of VC analysis is well documented, there is limited research examining whether the VC should be understood as a theoretical construct or a practical tool for sustainable development. In addition, existing research often analyzes performance, competitiveness, or sustainability in

isolation; there is limited work that synthesizes how ESG dimensions interact across diverse development contexts (Khanal, 2024). Prior studies have given priority to individual factors such as circular economy integration (Awan et al., 2022) and carbon emissions mitigation within GVCs (Chen et al., 2022; Zhang & Liu, 2023), but none provide evidence on holistic evaluation of VC as both a theoretical underpinning and a practical tool.

To address this fundamental yet underexplored area, this study explores whether VC is primarily a theory or a practical tool for sustainable development. This study clarifies its role in contemporary development policy and connects VC theory with contemporary global case evidence across diverse sectors. It also identifies in which conditions VC acts as a pragmatic instrument capable of impacting sustainable development outcomes.

Literature Review

Traditional Value Chain Theory

The origins of VC theory are grounded in Michael Porter's foundational work, *Competitive Advantage* (1985), where he conceptualised the value chain as a sequence of interconnected activities that collectively generate competitive advantage. This activity-based view marked a departure from firm-level analyses that focused solely on resources or markets. Porter's distinction between primary activities (directly creating value for customers; inbound logistics, operations, outbound logistics, marketing and sales, and procurement) and support activities (enhancing the effectiveness of primary activities; infrastructure, human resource management, procurement, and technology development) provides a systematic framework for analyzing how firms generate competitive advantage. In the 1990s, empirical research in manufacturing, retail, and agro-processing showed quantifiable increases in productivity and profitability when businesses used VC analysis to improve departmental coordination and redesign production workflows. The applicability of the VC framework was further strengthened by the rapid growth of globalization as the firms began offshoring and outsourcing operations, necessitating more advanced tools to handle cross-border coordination (Xing et al., 2021).

Although the framework was innovative for its time, recent critiques highlight its limitations, including an oversimplification of inter-firm relationships, insufficient attention to global production fragmentation, and limited relevance to sustainability and governance challenges emerging after the 2000s (Sheehan & Foss, 2009). After the 1990s, the VC concept underwent significant expansion and refinement. The integration with competitive strategy frameworks became more pronounced, with organisations using VC as diagnostic tools to identify competitive advantages through cost leadership or differentiation strategies (Simatupang et al., 2017). This period also marked the beginning of globalisation's impact on VC theory, as companies expanded internationally and needed frameworks to manage cross-border activities (Xing, et al., 2021). However, much of the early literature remained firm-centric, focusing on internal efficiencies rather than the broader socio-economic and environmental consequences of value creation. This created a theoretical

gap that later sustainability-oriented frameworks sought to address. Due this these limitations, traditional VC theory served as a springboard for the development of the GVC model, Global Production Network (GPN), and Sustainable Value Chain (SVC), all of which expanded beyond the firm to incorporate stakeholder interest and sustainability challenges.

Technological Integration and the Transformation of Value Chains (2000-2015)

The digital revolution significantly reshaped VC structures. Advancements in information technology (IT), real-time data systems, and global logistics allowed firms to integrate and coordinate activities more effectively across borders. United Nations Industrial Development Organization [UNIDO] (2009) notes that technology-enhanced communication, improved resource allocation, and increased transparency in value flows reshape how firms monitor the flows of inputs, costs, and value creation across multiple nodes.

This time period demonstrated the emergence of digitally embedded value chains, and empirical evidence from manufacturing and retail sectors highlighted substantial reductions in cycle time, logistic costs, and error rates due to digital transactions. Similarly, leading companies like Toyota, Dell, and Zara have shown how digitalized operations boost competitiveness by reducing inventory and responding quickly to changes in the market.

Theoretical extensions during this period incorporated VC analysis into performance management systems such as the Balanced Scorecard and Total Quality Management, highlighting the move from a static analytical concept to a dynamic operational framework. Yet scholars argue that early digital integration studies often overlooked inclusiveness, technology access barriers, and governance implications -issues that are critical in contemporary sustainability debates.

Contemporary Developments: Sustainability, Global Value Chains, and Resilience (2015-2025)

Recent literature reflects a major shift from traditional efficiency-oriented VC to sustainable, inclusive, and resilient frameworks. Sustainable VC research emphasises integrating environmental and social objectives alongside profitability (Gereffi, 2013; Humphrey & Sturgeon, 2005; Mena et al., 2013). This includes environmental stewardship, resource circularity, waste minimisation, and improved labor standards.

At the same time, the GVC literature expanded to address issues such as power asymmetry, social upgrading, and climate risk exposure. The COVID-19 pandemic and geopolitical instability further reinforced the need for adaptive, shock-resilient VC (Yuan & Mähönen, 2024). These studies collectively demonstrate that value chains have evolved from descriptive models to prescriptive tools with explicit sustainability and resilience objectives.

Value Chains vs Traditional Supply Chains

The distinction between VC and traditional supply chains represents a fundamental shift in how organisations approach their operations and strategic management. While both concepts are integral to business operations, they differ significantly in their core objectives, scope, and implementation approaches. Michael Porter's seminal work in 1958 laid the foundation for VC analysis, emphasizing the strategic importance of value creation through interconnected activities. This marked a departure from the traditional supply chain perspective, which primarily focused on operational efficiency and logistics management.

VCs fundamentally differ from supply chains in their strategic orientation and scope. While supply chains concentrate on the efficient movement of goods from suppliers to consumers, VC encompasses a broader spectrum of activities aimed at creating and capturing value at each step of the process. A notable example comes from the global food industry, where studies during the COVID-19 pandemic demonstrated how VC adapted through dynamic capabilities to maintain competitiveness and resilience, while traditional supply chains struggled with basic logistics and distribution challenges (Ali et al., 2022; Closs et al., 2011).

The focus on value creation represents another crucial differentiating factor. VCs emphasize continuous innovation, customer experience enhancement, and strategic partnerships for value addition. This is particularly evident in the technology and electronics sectors, where buyer-driven value chains enable large retailers and merchandisers to shape production networks based on consumer preferences and market demands (Dubey et al., 2020). In contrast, traditional supply chains primarily focus on cost reduction, inventory management, and delivery optimisation.

Actor interdependence in VCs manifests through complex relationships characterised by collaborative innovation, knowledge sharing, and joint venture initiatives. The automotive sector provides a compelling example of producer-driven VC, where transnational corporations manage extensive production networks through strategic partnerships and innovation-driven collaboration. This differs significantly from traditional supply chain relationships, which typically operate through more straightforward contractual arrangements focused on operational coordination and resource optimisation.

The distinction between VCs and traditional supply chains lies in their orientation and scope (see Table 1). Traditional supply chains focus on operational efficiency and logistics management, while value chains emphasize VCs, actor interdependence, and innovation.

Table 1

Comparison between Value Chains and Supply Chains

Aspect	Value Chains	Supply Chains
Focus	Value creation, innovation, upgrading	Efficiency, logistics, cost minimisation
Scope	Broad (economic, social, and environmental dimensions)	Narrow (operational processes)
Governance Structures	Multi-level governance, shared decision-making, upgrading pathways	Linear coordination, contractual control
Risk Management	Proactive, resilience-building, scenario-based	Reactive, disruption-focused
Measurement Metrics	Value added, social upgrading, environmental footprint, resilience indicators	Cost, delivery time, and inventory turnover
Stakeholder Engagement	Participatory, multi-actor (government, NGOs, private sector, producers)	Limited to suppliers, distributors, and logistics partners
Example	Resilient adaptation during COVID-19	Logistic disruptions during COVID-19

Note(s). Gereffi et al. (2005), Mentzer et al. (2001), Barrientos et al. (2011), and Ivanov and Dolgui (2020)

Research Methods

This study adopts an analytical approach, appropriate for examining how VC structures function as both a theoretical construct and an operational tool for sustainable development across diverse global contexts. The purpose is to synthesise, compare, and critically analyse existing theoretical, conceptual, and case-based evidence. An analytical design is suitable because the research question concerns whether the VC is primarily a theory or a practical instrument that delivers measurable sustainability outcomes. To achieve this, a thematic synthesis of secondary literature and documented global case reports was undertaken.

Data Source and Literature Selection

The analysis relies exclusively on existing literature, drawn from peer-reviewed journal articles, academic books, institutional reports, working papers, development agency guidelines, and global documentation published between 2010 and 2025. This time period captures the most significant development on sustainability-oriented VC frameworks and global governance debates.

Literature was gathered using Google Scholar, Scopus, Web of Science, FAO, ILO, IFC, ICIMOD, and World Bank document repositories. Search terms included: *"value chain analysis AND sustainable development", "global value chains AND sustainability AND governance", "sustainable value chains framework", "value chain upgrading AND environmental/social/economic outcomes", "resilient value chains", and "digital value chains agriculture".*

Inclusion and Exclusion Criteria

The following inclusion criteria were applied to maintain the methodological rigour: (i) published between 2010-2025, (ii) directly examined VC, VC governance, or upgrading, (iii) addressed at least one sustainability dimension (economic, social, environmental, governance), and (iv) contributions offering empirical, conceptual, or policy-oriented insights relevant to the development context.

Similarly, exclusion criteria include the following: (i) studies solely focusing on technical supply chain optimisation, (ii) studies focusing only on logistics without addressing VC, and (iii) sources lacking relevance to sustainability or development outcomes.

Case Selection and Sampling Strategy

To deepen analytical insights, the study incorporated global case examples spanning agriculture, textile and garments, fisheries, digital finance service, e-commerce, and renewable energy. Cases were selected purposively based on four criteria:

- Sectoral diversity: ensuring representation from different sectors.
- Explicit sustainability orientation: cases demonstrating interventions aligned with SDGs (e.g., Gender inclusion, climate resilience, environmental protection).
- Documented outcomes: availability of measurable or described improvements across sustainability dimensions.
- Temporal relevance: cases with evidence from 2020-2025 to ensure contemporary insights.

This purposive sampling approach aligns with analytical generalisation, where cases are selected not for statistical representation but for their ability to illuminate theoretical relationships and strengthen conceptual understanding.

Result and Analysis

Integration of Sustainability Dimensions: Economic Aspects, Social Considerations, Environmental Factors, and Governance Elements

The incorporation of the sustainability dimensions into VC has been identified as a crucial development in business practice, which includes factors such as the economic, social, and environmental aspects. Many development partners have come up with a framework

that defines a sustainable food value chain (SFVC) framework, which clearly indicates that sustainability factors can be incorporated into VC operations.

Economically, a sustainable VC is concerned with long-term financial sustainability, alongside the creation of shared value for different stakeholders. Fernando et al. (2022) have illustrated that when organisations are involved in sustainable VC, they are capable of improved financial performance through cost savings, as well as increased competitive advantage, especially in sectors that have complex global operations.

The social aspect of the sustainable VC includes community engagement, labor practices, and social equity. The ICIMOD's work in the Hindu Kush Himalaya (HKH) region clearly indicates that VCs can be framed in such a way that facilitates social development as well as economic viability (ICIMOD, 2024). The collaboration with FAO has also shown that agricultural sustainability can support food security, which helps communities cope with climate change.

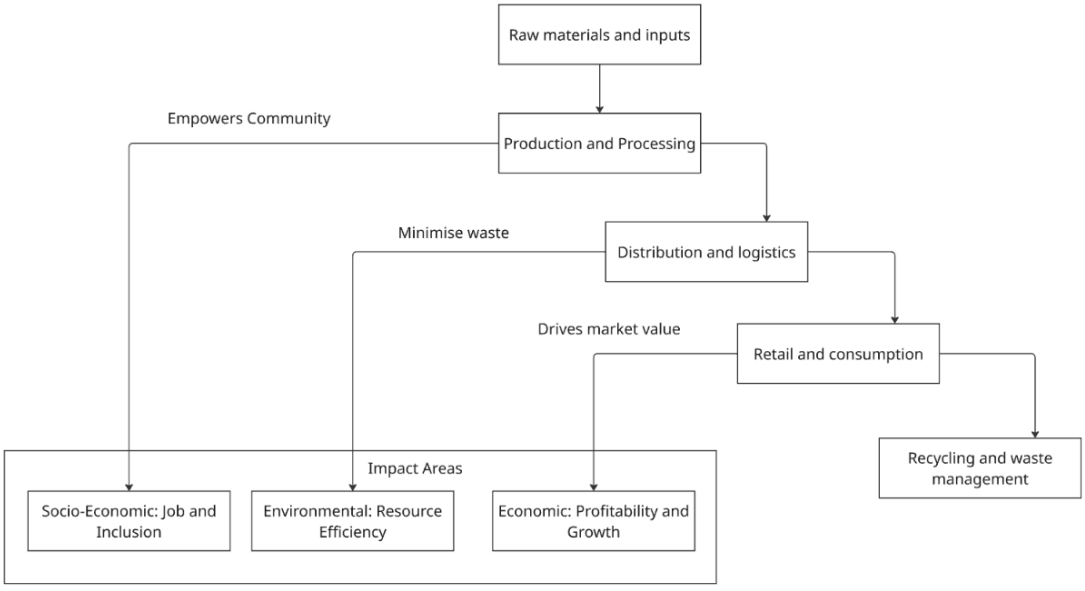
Environmentally responsible practices are becoming a core consideration within VC management, with organisations implementing circular economy principles, as well as carbon footprint reduction strategies. Malak-Rawlikowska et al. (2019) emphasized that the application of sustainable supply chain management practices has played a significant role in enhancing environmental performance. The textile industry, for instance, has shown a notable adoption of environmentally responsible elements within VCs; however, challenges still exist in balancing environmental goals with economic and social objectives.

The role of the governance elements cannot be overemphasized in the integration of sustainability elements. The literature on sustainability governance mechanisms has identified the need for a proper structure of accountability, a transparent reporting system that is transparent, and effective engagement with stakeholders (Morcillo-Bellido & Duran-Heras, 2020). All these sustainability governance measures facilitate the measurement of sustainability performance in business while ensuring operational efficiency and value creation.

The success of sustainability integration in VC is heavily dependent on leadership commitment, effective stakeholder engagement, and robust monitoring systems. Organisations such as ICIMOD and FAO are relentlessly developing frameworks and guidelines that assist businesses in dealing with the complex challenges of sustainable VC management. Success in sustainability integration is dependent on a multidimensional approach that considers all dimensions while maintaining focus on long-term VC and stakeholder benefits.

Figure 1

Value Chain Framework for Sustainable Development



Note(s). Conceptualized by the Author

Figure 1 outlines the different stages of a VC, from raw materials to final consumption and waste management. It also highlights the three key impact areas:

- Socio-economic Impact: How VCs create jobs and social inclusion. It highlights roles of marginalised actors, such as smallholder farmers or informal workers-and ways to improve their inclusion and job creation.
- Environmental Impact: How VCs reduce waste and improve resource efficiency. It allows us to access and reduce ecological impacts.
- Economic Impact: How VCs drive profitability and business growth. It identifies inefficiencies and opportunities for income generation.

Instead of relying on theoretical models, development experts also employ the VC approach to develop interventions that are context-driven, reflecting real-world complexities.

Recent research emphasizes that VC analysis offers a systematic, multi-scale framework for sustainable development. For example, Berthet and Fusacchia (2024) emphasized that the GVC framework can "provide a systematic approach to depict and advance sustainable path options" at global, national, and local scales. Similarly, De Marchi and Gereffi (2023) argue that GVC analysis integrates firm-level and policy perspectives in a multi-actor approach, helping to "understand and combat environmental crises and to advance sustainable development".

These frameworks show that VCs are not just economic links but also vehicles for environmental and social goals. The WTO's Global Value Chain Report (2023) and joint FAO/UNIDO guidance (2024) explicitly propose "greening" VCs and enhancing inclusion: they offer analytical steps and indicators across economic, social, and environmental dimensions to assess a chain's contribution to inclusive, sustainable growth.

- **Systematic, Multi-dimensional Analysis:** The literature proposes a comprehensive evaluation of all sustainability dimensions throughout the entire chain. This is because, in fact, as Esteban-Amaro et al. (2024) demonstrate, a complete evaluation of circularity and sustainability within VCs is necessary concerning economic, environmental, social, and governance factors. They identify gaps (e.g., missing stakeholder integration) that hinder SDGs, implying VCs' analysis must be holistic. The FAO/UNIDO methodology similarly provides integrated tools (e.g., heat maps, Strengths, Weaknesses, Opportunities, and Threats (SWOT)) to score environmental and social outcomes alongside economic performance.

- **Multi-actor and Policy Integration:** The importance of connecting practices with policy has been emphasized by scholars. De Marchi and Gereffi (2023) support that the multi-actor "building blocks" (firms, governments, and NGOs) within the GVC approach are essential for an "environmental agenda". The importance of knowledge of sustainability issues, together with supplier commitment within the chain, may prevent the fulfilment of goals for the SDGs, following Dwivedi et al. (2022), implying that development is a priority within VCs. Likewise, WTO (2023) emphasizes climate resilience and inclusive policy options to "enhance" development via GVCs.

- **Empirical/Sectoral Evidence:** Moretti et al. (2023) treat VC as core units linking people and nature in rural systems. In mountain food chains, they show how different chain configurations yield distinct social, economic, and environmental outcomes, highlighting the need for "systemic, integrated" chain development strategies. In tourism and agriculture literature (e.g., Porter's VC in tourism, WTO tourism frameworks), scholars similarly trace how coordination across chain activities affects cultural, social, and ecological goals. Altogether, the literature demonstrates that VC analysis can be used to map where value (and externalities) are created and how to redesign chains to better meet SDGs.

The analysis shows that the VC has matured from a theoretical or conceptual model into a practical tool used for the purpose of guiding sustainable development. Although rooted in theoretical ideas about how value is created and distributed, its application in sustainable agriculture, climate-resilient systems, and inclusive markets demonstrates its role as a structured mechanism for diagnosing bottlenecks, coordinating actors, and designing targeted interventions. Across sustainability dimensions, the VC consistently enables long-term competitiveness, social inclusion, environmental efficiency, and accountable governance, functions that extend far beyond theoretical explanation. Taken together, these insights confirm that the VC is best understood as a theory-informed, practice-oriented tool that provides both analytical clarity and operational guidance.

Socio-Economic Impact: Empowering Communities and Reducing Inequality

One of the most compelling aspects of the VC is its ability to drive socio-economic development. This is because, by identifying the stages in the process of production, transformation, and distribution, the VC is capable of ensuring that value is identified, as well as how it is being lost. This is vital because it is essential in ensuring that marginalized communities are empowered, create jobs, and reduce inequality.

- Different governance structures shape how smallholders participate and benefit. Buyer-driven chains allow large retailers to set standards that can either marginalize or upgrade producers, while producer-driven chains give food manufacturers influence over inputs and contracts (Grabs & Carodenuto, 2021) Bilateral oligopolies reflect concentrated power on both ends of the chain, limiting negotiation space for smallholders, whereas traditional markets remain more accessible but often lack safeguards for quality and reliability (Cohen et al., 2022). Understanding these governance dynamics helps policymakers craft interventions that protect small producers and expand their bargaining power.
- Buyer-driven Chains: Large retailers set high standards and consolidate supply networks, offering both challenges and opportunities for smallholders.
- Producer-driven Chains: Food manufacturers dominate, controlling production through contracts and input specifications.
- Bilateral Oligopolies: A few powerful producers and retailers maintain tight chain coordination, limiting smallholder opportunities.
- Traditional Markets: Open markets with minimal entry barriers, allowing smallholders to participate with fewer regulations.

The VC approach promotes collaboration among stakeholders (i.e., governments, businesses, I/NGOs, and communities) towards the creation of shared value. This is fundamental in responding to systemic challenges such as gender inequality, where women often face barriers to participation in VCs.

The most significant role of the VC in supporting sustainable development lies in promoting socio-economic changes. The VC tool disaggregates the production, distribution, and exchange stages of value, giving development practitioners a tool that helps them locate where value is generated, where the bottlenecks are that serves as a constraint on development, and where upgrading can take place. This is particularly important, especially for smallholder farmers who, as a rule, obtain only a fraction of the value prices in commodities sold at the final markets.

The improvement of agricultural trade VC systems has multiple implications, especially concerning development, such as reduced poverty, increased social inclusion, and community resilience.

Here, the VC approach fosters cooperation between governments, corporations, and development organisations, thus facilitating collective problem-solving in relation to deep-rooted challenges such as gender inequality. Inclusive VCs, which eliminate barriers for women, youth, and marginalized communities, are ideal instruments of inclusive development. The VC is, therefore, not only an analytical tool or framework but a policy instrument that promotes inclusive socio-economic transformation.

Environmental Sustainability: Minimizing Waste and Maximizing Efficiency

The VC is not merely a concept of flow; it is a critical tool for environmental sustainability. In a world grappling with climate change, resource depletion, and pollution, the call for sustainability in production and consumption has become paramount. The VC provides a distinct tool to identify negative effects on the environment, eliminating them throughout a product's lifecycle (Pahlevan et al., 2021; van Keeken et al., 2024).

For instance, Zhou et al. (2021) in manufacturing highlighted that, VC approach might clarify how to reduce energy consumption, minimize waste, and shift to renewable resources. Similarly, for agriculture, a value chain perspective informs approaches such as organic farming, water conservation, and biodiversity preservation. In this way, businesses and communities can minimise harm to the environment while enhancing productivity as well as efficiency.

There is also the concept of a circular economy, which focuses on reuse, recycling, and regeneration, within which the VC plays an important role. It is thus possible to design value chains that make systems that are not only environmentally sustainable but also economically viable.

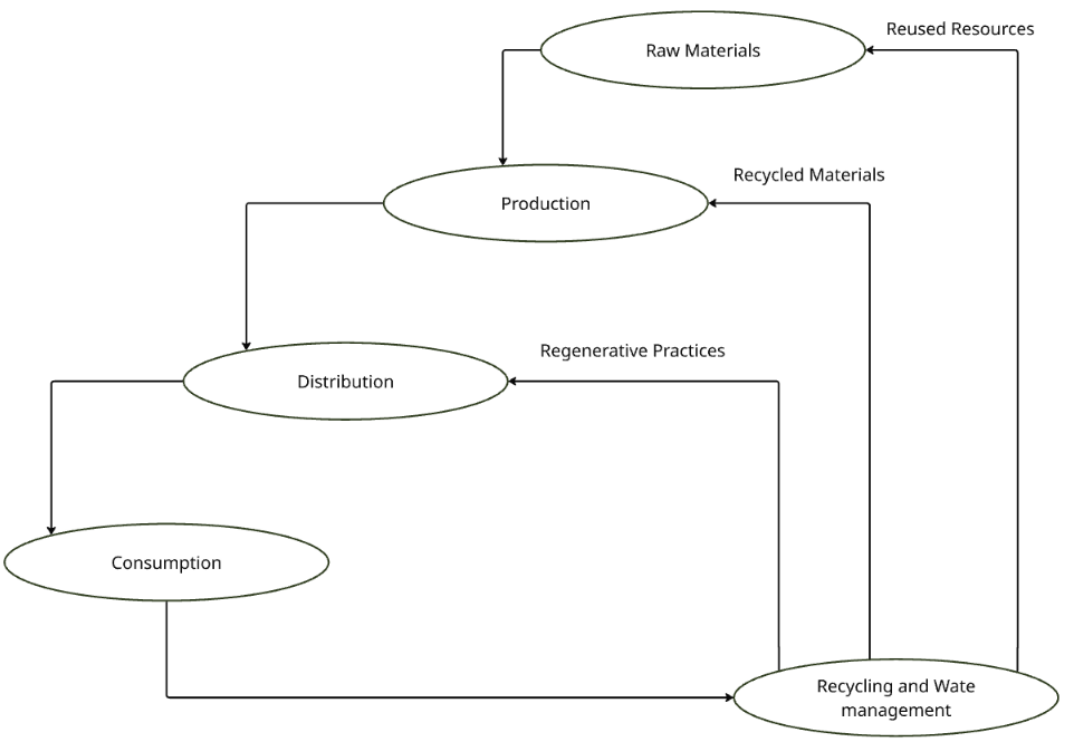
Figure 2 outlines the circular VC for environmental sustainability, illustrating how resources, production, distribution, consumption, and waste management can be organised into a regenerative, closed-loop system rather than a traditional linear flow. Each stage emphasizes opportunities to minimise waste, regenerate resources, and maximise efficiency through sustainable practices.

The VC begins with raw materials, which can originate from either virgin resources or reused materials. Incorporating reused materials at the start helps reduce resource depletion and promotes sustainability. During production, recycled materials are integrated into products alongside virgin inputs. Production efficiency can be enhanced by maximizing recycled content, reducing energy consumption, and minimizing waste generation. Following production, the distribution phase offers opportunities for regenerative practices, such as sustainable logistics or circular supply models, that further minimize environmental impact. The consumption stage focuses on extending product life and ensuring ease of recycling, which supports effective downstream recycling and waste recovery. Finally, instead of ending with one-way disposal, materials are cycled back into raw material sourcing and production as recycled or reused inputs. Advanced waste management strategies, including energy recovery from waste, further add value and reduce reliance on landfills.

The circular economy perspective on value chains illustrates how a circular economy can convert a straight line into a regenerative system through reuse, recycling, and the efficiency of resources. In addition, it draws attention to the fact that effective eco-actions imply inter-functional coordination, which means that organisational factors are also of importance. Every piece of evidence indicates that the value chain is a tool with which development can be managed sustainably.

Figure 2

Circular Economy



Note(s). Conceptualized by the Author

Balancing People, Planet, and Profit -Triple Bottom Line

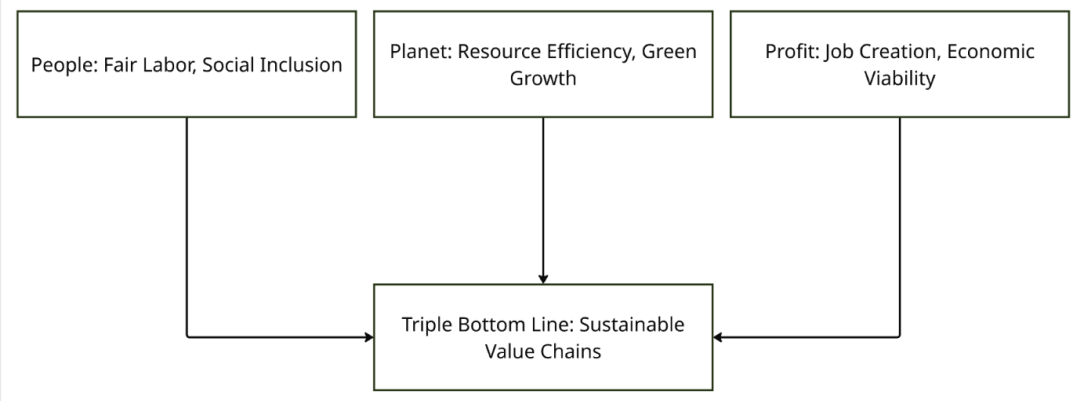
The Triple Bottom Line (TBL) concept is deeply integrated with the VC chain framework to promote sustainability across all business processes. Instead of focusing solely on profit, TBL expands the objectives to include social equity (People) and environmental stewardship (Planet) alongside economic viability (Profit). In the context of the VC, this means embedding sustainable practices at every stage, from sourcing raw materials ethically and ensuring fair labour conditions, to optimizing production methods for resource efficiency,

to implementing environmentally-conscious distribution and supporting circular economy practices in consumption and waste management. This holistic integration enhances supply chain resilience, reduces environmental impact, encourages social inclusion, and ensures long-term economic success (Tundys, 2023; Causeartist, 2025).

Figure 3 presents the TBL framework for sustainable VC, emphasizing the balance between People (fair labor, social inclusion), Planet (resource efficiency, green growth), and Profit (job creation, economic viability). Achieving sustainable development involves addressing these three pillars concurrently, ensuring that organizational decision-making aligns with social equity, environmental stewardship, and financial performance. For instance, Fletcher (2012) demonstrated that companies in the fashion industry increasingly sourced materials ethically, guarantee fair wages, and minimize environmental impacts, reflecting this triple balance. In handicrafts, empowering artisans through training and fair-trade certification fosters inclusivity and global market access, while in the energy sector, optimizing VC supports the adoption of renewables, drives green job creation, and contributes to reduced emissions, directly supporting United Nations SDGs. Thus, by integrating these principles, it not only establishes a brand trust but also secures long-term profitability and resilience.

Figure 3

Balancing People, Planet, and Profit



Note. Conceptualized by the Author

The integration of the TBL into VC frameworks extends their utility from environmental efficiency to multi-dimensional sustainability, encompassing social, ecological, and economic objectives. Furthermore, aligning TBL-informed VCs with SDGs demonstrates the policy-relevant dimension of VCS. By embedding social and environmental objectives into operational design, organisations can contribute directly to SDGs such as clean energy (SDG 7), decent work and economic growth (SDG 8), and climate action (SDG 13). This positions the value chain as a mediating mechanism between global sustainability agendas and local operational realities, reinforcing its relevance in both applied and policy contexts.

Global Case Evidence - Analytical Synthesis

VC approaches have proven adaptable worldwide, in both developed and developing countries. For example. FAO-UNIDO guidelines describe sustainable food VCs as systems integrating economic, social, and environmental goals at every stage of production. In developing countries, VC interventions can help build infrastructure, improve access to markets, and foster economic diversification. Whereas in developed countries, they can drive innovation, enhance competitiveness, and promote sustainable consumption patterns. By sharing knowledge and best practices across regions, a global network of sustainable value chains can be established, generating benefits for all stakeholders.

a) Coffee Value Chains in Developing Countries: Coffee VCs are an essential crossroads of trade, sustainability, and development, especially in developing economies, where millions of smallholder farmers depend on coffee cultivation for their livelihood. Recent statistics from 2023 to 2025 clearly indicate that sustainability has been playing a pivotal role in the coffee sector, with a marked success rate from initiatives such as Fair Trade and Rainforest Alliance initiatives showing remarkable progress in improving farmer incomes and environmental stewardship (Fairtrade International, 2023; Rainforest Alliance, 2024).

The certification programs have transformed from being solely dependent on the market system to becoming a full-fledged development solution, tackling a whole array of problems together (Global Coffee Platform, 2023). For example, the use of Fair-Trade certification has led to a 20% increase in farmer incomes while promoting eco-friendly farming practices. These initiatives have created a ripple effect throughout coffee-producing regions, improving education access, healthcare facilities, and environmental conservation efforts (Alliance of Bioversity International & CIAT, 2024). The success of these programs demonstrates how well-structured VC can serve as an effective tool for sustainable development, rather than merely functioning as a business strategy.

b) Sustainable Food Value Chains: The FAO's Sustainable Food VCs initiative has proven to be a bedrock in addressing global food security challenges, besides encouraging environmental sustainability and social equity. The implementation statistics from 2023-2025 indicate that nations that followed the strategies adopted by FAO have managed to reduce food waste by 30%, besides enhancing the food security for over 500 million people (FAO, 2023a, 2023b, 2023c). The success of this strategy is attributed to the fact that it addresses food value chains from a dimensional perspective, which includes sustainability in the environment, viability, and equity. The success with this strategy has been evident, especially within developing nations, where farmers have been accorded better markets while ensuring that agricultural practices are environmentally sustainable. This strategy has managed to transcend food production, thereby ensuring that development objectives are met, for instance, poverty, gender, and climate change.

c) Textile and Garment Industry in Bangladesh: Bangladesh's textile and garment industry exemplifies how VCs can drive national economic development while addressing crucial social and environmental challenges. Recent statistics from 2024 indicate that the sector

has achieved $50 billion in exports, representing an 8.3% increase from the previous year, while employing over 4 million workers, with women constituting 55% of the workforce (Economics Observatory, 2025). The success of the employment conditions of more than 480 factories, with a total impact of more than 1.3 million people, which has been a result of the cooperation of ILO and IFC in the implementation of the Better Work Initiative, is a great demonstration of the use of VC to increase worker satisfaction, improve quality, and increase economic growth (Better Work, 2025).

d) Technology and E-commerce in Agriculture: Digital innovations in agricultural VCs have revolutionized how farmers in developing countries access markets and manage their operations. Platforms like M-Pesa in Kenya and Agri Digital in Australia have demonstrated the transformative potential of digital solutions in agricultural VCs. M-Pesa has enabled over 83% of the Kenyan population to access formal financial services, including many rural and agricultural communities previously excluded from the banking system (Wachira & Njuguna, 2023), and more than 80% of farmers use mobile money, while about 15% specifically in agriculture-related payment (Parlasca et al., 2022). These technologies have significantly reduced transaction costs, improved price transparency, and enhanced market access for smallholder farmers (Wachira & Njuguna, 2023; Mattern & Rossana, 2017; Walter et al., 2017; Wolfert et al., 2017). The integration of digital solutions has led to more efficient value chains, with farmers reporting increased incomes and better market integration (Schroeder et al., 2021).

e) Fishery Value Chains in Southeast Asia: The fishery sector in Southeast Asia demonstrates the critical role of VCs in balancing economic development with environmental sustainability. Recent assessments indicate that the sector supports 88 million people's livelihoods, though fish stocks have declined to concerning levels, averaging 22% of baseline estimates. The sustainable fisheries partnership has implemented innovative VC approaches that prioritize both environmental health and community welfare (Rosales, 2017; Stobutzki et al., 2006). These initiatives have led to improved fish stock management, enhanced market access for local fishers, and the implementation of more sustainable fishing practices. The success of these programs highlights how VCs can be effectively used as tools for resource conservation while supporting economic development.

f) Digital financial Services for Small Enterprises: Digital financial services have transformed how Small and Medium Enterprises (SMEs) access capital and integrate into formal economic systems. Organizations like Kiva and Grameen Bank have pioneered innovative approaches to financial inclusion, with Kiva reaching $2 billion in total loans funded and maintaining a focus on supporting women entrepreneurs, who receive 4 out of 5 loans. The impact of such developments has been significant, proving that VCs can be used to bring people who have never been part of mainstream financial systems to gain from these services, harnessing the power of technologies such as VCs to overcome development challenges (Grameen Foundation, 2020; Kiva, 2023).

g) Value Chains for Renewable Energy: The renewable energy VC initiative, initiated by Solar Sister, is a remarkable example of how a sustainable development solution can holistically tackle energy poverty as well as gender inequality at the same time. The latest impact findings clearly indicate that this organization has been able to train more than 10,000 women entrepreneurs, with a total of 980,270 clean energy products delivered, which has collectively impacted more than four million people living in rural areas (Mahajan & Bandyopadhyay, 2021). This has proven to be a highly environmentally impactful initiative, with a notable reduction of more than 1.7 metric tons of CO2 emissions, besides providing economic opportunities to women (Solar Sister, 2025).

The cross-sectoral case studies show that the VC is not only a theoretical concept but also a pragmatic, albeit conditional, instrument of sustainable development. In coffee, textiles, agriculture, fisheries, financial innovations, and renewable energy sectors, the VC has created verifiable economic, social, and environmental value, including increased revenues for farmers, better working conditions, expanded financial inclusion, and lowered carbon pollution. This has happened because, when well-managed, VCs can harness the motivations of different actors, including marginalized actors, and embed sustainability into VC.

Discussions

Contemporary analyses indicate that classical linear VCs, with a simplistic, cost-cutting, and efficiency-oriented approach, are insufficient for dealing with modern sustainability challenges in the production and consumption system. Rather, VC is a resilient or agile system with a network of interlinked ESG dimensions, where the attributes of resilience and inclusivity arise from the interactions of diverse actors (Esteban-Amaro et al., 2023; Esteban-Amaro et al., 2025). Such a paradigm changes the focal point from optimizing a particular activity to ensuring increased robustness of a socio-ecological network within a VC setup.

Stakeholder engagement and participation are essential factors that play a pivotal role in ensuring the success of interventions. It has been documented that interventions that include small farmers, women, and informal sector members as stakeholders in decision-making are more apt to succeed in terms of adoption of sustainability practices, fair sharing of benefits, and enhancement of social capital (FAO, 2023; UNDP, 2019). On the other hand, non-participatory interventions from the top tend to face setbacks in success, which has been evident in the coffee VC projects in East Africa, where a lack of producer engagement and trust with suppliers obstructed the adoption of sustainability practices in farming (Bolwig et al., 2010).

The use of the TBL framework is a further element that helps clarify reasons for in intervention outcomes. The best use of VCs is when, together, people, planet, and profit are supported. For instance, when, in a VC, a failure to address people, planet, or profit is prioritized, there might arise trade-offs that can reduce overall resilience. On the contrary, synergies are created within interventions that are TBL-focused, which helps increase system adaptability, as well as inclusiveness (Elkington, 1997; Fletcher, 2012).

The principles of a circular economy add an extra layer of explanation. VC that promotes regenerative approaches, closed loops, and life extension exhibits improved sustainability performance (Geissdoerfer et al., 2017; Esteban-Amaro et al., 2025). It is, though, dependent on organizational capabilities, as a piecemeal approach, such as recycling programs that do not affect upstream process changes, might even breed undesired 'green wash' effects, thus emphasizing that a technical fix is not enough. Likewise, this study also points to structural and contextual factors that condition the success of interventions. The rigidity of a network, lack of sectoral power advantage, lack of financial access, and support policies can prevent innovation diffusion (Singh et al., 2017; Kushwaha & Sharma, 2016; Birkel et al., 2019). On the contrary, interventions succeed when there is a transparent structure of governance, multi-stakeholder coordination, and learning approaches that bring regular adaptation to challenges.

Notably, this assessment encourages the use of value chains as a practical approach as opposed to a theoretical discipline. The advantage of value chains is that they serve as a means of identifying inefficiencies, innovation, and applying sustainability principles toward making a positive impact on a host of sustainability dimensions. Although they are a means of identifying interdependencies, value chains are a tool with the capacity to develop interventions that can apply the principles of TBL and a circular economy.

Conclusion and Implications

The VC concept has matured from a purely economic tool into a dynamic framework for sustainable development, encompassing social and environmental imperatives essential for addressing 21st-century challenges. Its ability to integrate diverse dimensions of development and promote collaboration among stakeholders positions it as a critical instrument for inclusive growth, poverty reduction, and environmental sustainability. Hence, it occupies a hybrid position between theoretical and practical domains. While foundational theories (Porter, 1985) conceptualise value creation and inter-organisational linkages, empirical applications, particularly in environmental sustainability and TBL integration, demonstrate that VC are primarily operational tools for sustainable development.

Likewise, as a theory, the value chain framework provides a conceptual lens to understand value creation, actor interdependencies, and the socio-economic and environmental implications of production systems. However, in sustainability applications, its strength lies in theoretical abstraction and more in practical operationalisation.

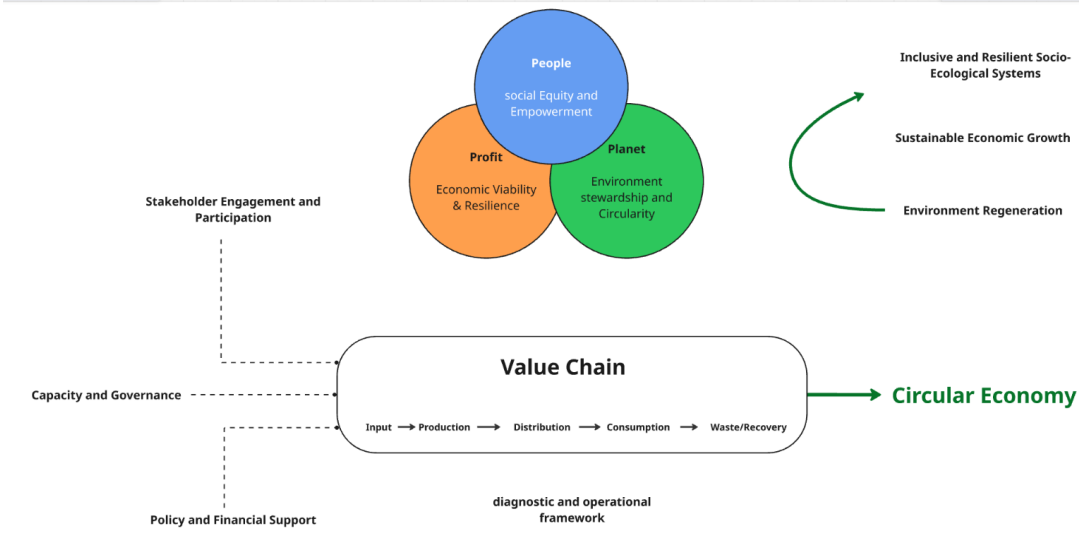
Similarly, VCs are powerful instruments for sustainable development, aligning efficiency with environmental stewardship and social equity. By embedding TBL, circular economy, and sustainability principles, they translate global imperatives into locally actionable interventions. Their impact is maximized when interventions are participatory, adaptive, and systemic, while failures often reflect weak stakeholder engagement or fragmented implementation. Far from theoretical, value chains operationalize sustainability, delivering inclusive, resilient, and measurable outcomes across diverse contexts.

Thus, VCs are not static structures but evolving ecosystems that require continual learning, adaptation, and collaboration. The global development community must reposition VC at the core of sustainable development efforts, leveraging its unique capability to connect economic prosperity with social justice and environmental sustainability. By doing so, VC can become powerful engines driving resilient, inclusive, and green growth for current and future generations. Therefore, VC is more than a theory; it's a powerful tool for sustainable development.

Following our analysis, this study proposed the following framework. This tool has recognized the fundamental role of the People, Profit, and Planet (PPP) elements that define a Value Chain within the context of a circular economy from the perspective of the bottom line that focuses on people, profit, and planet, respectively. The VC that covers the entire gamut from input to waste/recovery is impacted by critical factors such as capacity and governance, stakeholder engagement, as well as policies and financial support, which, when optimized, are bound to impact a sustainable economic growth that also enhances inclusive and resilient socio-ecological systems.

Figure 4

Proposed Framework



Note(s). Conceptualized by the Author

This study contributes to the literature by reframing the VC not merely as a theoretical construct but as a practical analytical tool for sustainable development. By synthesizing evidence across multiple sectors and integrating economic, social, environmental, and governance dimensions, the study offers a unified framework that clarifies how VCs can drive inclusive growth, resilience, and circular economy transitions. For policymakers, the study highlights leverage points for targeted regulation, investment, and climate-responsive

planning. Development practitioners gain a clearer operational guide for designing inclusive and environmentally responsible VC interventions, while private sector actors benefit from insights on upgrading, innovation, and competitiveness in evolving sustainability landscapes. For academic researchers, the study maps a refined theoretical pathway that links classic VC models with contemporary sustainability demands and identifies concrete gaps for further empirical and technological inquiry.

Thus, this study advances existing literature by connecting fragmented theoretical debates with recent practice-based evidence, offering one of the first integrative evaluations of how VCs function simultaneously as strategic frameworks and actionable development tools.

Limitations and Future Research

This study is constrained by the absence of quantitative validation and formalized frameworks. Observed outcomes may be influenced by unmeasured contextual variables, such as local market volatility, climatic shocks, or informal social networks. Furthermore, reliance on qualitative analysis limits generalizability, and the conceptual focus may oversimplify heterogeneous VC contexts. Future research should develop structured, evidence-based frameworks that integrate TBL and circularity metrics with empirical evaluation to better assess the effectiveness and scalability of interventions.

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Conflict of Interest

The Authors declare that there is no conflict of interest.

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