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Title

Unchaining supply chains: Enabling transformative leaps towards regenerative socio-ecological systems

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Executive summary

Over the past three decades, the supply chain literature has gradually expanded to examine synergies and trade-offs between economic, operational, and socio-ecological outcomes. In 2014, Mark Pagell and Anthon Shevchenko reflected on the state of research on Sustainable Supply Chain Management (SSCM), which is focused on studying the design, organization, coordination, and control of supply chains “with the minimum expectation of a truly sustainable supply chain being to maintain economic viability, while doing no harm to social or environmental systems” (Pagell and Shevchenko, 2014, p. 45). A major conclusion they drew was that research offered “limited insight into how to create an economically viable supply chain that at a minimum creates no harm and may even have positive or regenerative impacts on social and environmental systems.” The need to go beyond a ‘no harm’ logic and move towards rethinking supply chains so that they can respectfully and harmoniously integrate with nature is more salient than ever given accelerating climate change and biodiversity loss. Now, nearly a decade after Pagell and Shevchenko’s paper, we want to take stock and reflect on the advancements made to enhance our understanding of how supply chains can go beyond minimizing harm to operate in harmony with nature by becoming regenerative. We still know little about the principles, processes, and outcomes that characterize regenerative supply chains. Yet humanity has an urgent need to advance theoretical insights and practical guidance in this direction.

Background

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Supply chains consist of complex networks of interdependent processes that allow companies to source, produce, and distribute goods and services to customers (Chen and Paulraj, 2004; Carter et al., 2015; Dooley et al., 2021). Many diverse organizations across private and public sectors are involved in the design, execution, and coordination of these processes; for this reason, supply chains can be seen as complex, dynamic forms of collective organizing (Gualandris et al., 2021; Wieland, 2021).

Research has examined how supply chains can maximize economic efficiency, responsiveness to final demand, and adaptability to exogenous shocks such as new regulations and disruptive technologies (Fisher, 1997; Lee, 2004; Kauffman et al., 2018). Modular process-product designs, contracting and negotiation capabilities, inventory control systems, just-in-time policies, and diverse governance structures that help balance power, cultivate trust, and build identity have become well established predictors of improvements in operational and organizational outcomes like throughput, queuing time, total cost of ownership, conformance and performance quality, profitability, and innovation. Yet these aspired performance improvements commonly neglect environmental outcomes and indeed sometimes hurt nature.

Over the past three decades, the supply chain literature has gradually expanded to examine synergies and trade-offs between economic, operational, and ecological outcomes. For example, Klassen and McLaughlin (1996) found significant positive (negative) financial returns for strong (weak) environmental management capabilities. Research has also found that when firms move beyond the “low hanging fruit” such as reducing energy use and avoidable waste, further environmental actions require significant investment and re-thinking to radically change business models, operational processes, and inter-organizational arrangements (Hoffman et al., 1999; Wu and Pagell 2011). Chamanara et al., (2021) tracked the multi-tier beef supply chain of Costco, an economically well-performing supply chain, to reveal where negative impacts occurred and who was affected. This study provides evidence of environmental injustice penalizing communities living near feedlots, which were poor, predominantly Latin and had increased air pollution related burdens, including asthma, heart disease and low birth weight. This body of work certainly advances our understanding of strategic synergies and trade-offs between short-term profitability and long-term environmental sustainability in traditional supply chains. But it tells us little about how regenerative supply chains could develop and function.

Another body of work has looked at innovative supply chain forms, such as closed-loop supply chains (Mutha et al., 2022; Souza, 2013), industrial symbiosis (Bansal and McKnight, 2009; Lee and Tongarlak, 2017) and surplus supply networks (Dhanorkar et al., 2019). Studies that focused on these supply chain forms illuminated the operational processes and organizational structures that can capably valorize surplus, by-product, and end-of-life materials within and across supply chains. This literature has dealt with strategic decision-making (e.g., network design, extended producer responsibility legislation, servicizing decisions), tactical issues (used product acquisition and disposition decisions) and operational issues (production planning and control to maximize profit). Yet, with rare exceptions (e.g., Sourabh and Gualandris, 2023; Howard, Hopkinson and Miemczyk, 2019; Linnenluecke and Kennedy, 2022), little is known about when and how these supply chains integrate with and positively contribute to nature.

Finally, an emergent body of work has looked at supply chains that are designed and managed by non-profit organizations to maximize ecological outcomes (Fugate et al., 2019). Gualandris and Klassen (2018) explored how international NGOs configured and leveraged their service networks to (try to) instigate and support transformational change in specific industries and societies. Bals and Tate (2018) analyzed alternative supply chain designs for social enterprises, whereas Pullman et al., (2018) and Taylor and Rosca

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(2022) explored how social enterprises managed their supply chains in the face of competing social welfare and economic logics. This emergent body of work forms a good foundation but must be expanded to consider for-profit supply chains and their symbiotic interaction with nature. Thus, there remains a pressing need to advance managerial knowledge about processes and supply chains that function regeneratively.

Purpose and Aim

The purpose of this special issue is to provide a platform for a collective effort to advance knowledge about regenerative processes and inter-organizational systems that positively contribute to nature. The Anthropocene is the name of the current geological epoch, acknowledging humans' negative influence on the state of the planet (Waters et al., 2016). We need to make some significant steps forward in how supply chains are designed and managed, as the window for making meaningful change before irreparable harm is closing.

A special issue in *Organization and Environment* defines regenerative organizing as “the process of sensing and embracing surrounding living ecosystems, aligning organizational knowledge, decision-making, and actions to these systems’ structures and dynamics and acting in conjunction, in a way that allows for ecosystems to regenerate, build resilience and sustain life” (Munoz and Branzei, 2021). Regeneration is often associated with “nature-positive” approaches that put carbon mitigation, biodiversity gains and human health restoration at the heart of organizational decision-making and supply chain design (e.g., Zu Ermgassen et al., 2022; Hahn and Tampe, 2021). Regeneration aims to achieve the harmonious coexistence between humans and nature, recognizing that social and ecological systems constitute a community of life.

How does regenerative organizing apply to supply chains? What principles, processes and outcomes characterize supply chains that function in sync with natural ecosystems? How do regenerative processes in one part of the supply chain interact with and affect traditional processes and relationships in other parts of the supply chain? How do existing inter-organizational relationships and structures affect (and are affected by) emergent regenerative processes and efforts? Instead of treating nature as exogenous, there is a need to study how supply chains can adapt to integrate with nature and benefit from specific ecosystem services that, for example, sequester carbon and regulate water flows and quality (Constanza et al., 1997; Howard-Grenville and Lahnenman, 2021; Hahn and Tampe, 2021). Instead of focusing on eco-efficiency (Dutt and King, 2014; Dooley et al., 2021), how can supply chains become more eco-effective, meaning capable of constantly regenerating their natural input resources through closing diverse material loops? At what geographical and operational scales would regenerative processes and supply chains function best? Which ones of the negative impacts of pre- and post-consumption supply chains can be reversed, and how can such reversal revive endangered socio-ecological systems? How can post-consumption interventions (modularity, reusability, recyclability) prompt radical redesigns in pre-consumption supply chains and vice-versa, so pioneering organizations can develop and scale regenerative solutions through circular supply chains? How can leaps in socio-ecological system well-being be deliberately cultivated through cross-sector collaborations (e.g., Lumineau and Oliveira, 2018; Bridoux and Stoelhorst, 2022; Gatignon and Capron, 2023)?

Interesting empirical contexts for addressing these and other questions are, to name a few, regenerative agriculture and foodsheds, as well as emergent circular economies for organic materials (e.g., wood and other biomass) and inorganic materials (e.g., plastics, minerals, and construction materials). For example, [Natura & Co](#), the largest cosmetics and beauty company in Brazil, has developed a community-based

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program to help their growers of natural ingredients to restore and conserve the amazon (McGahan and Pongeluppe, 2021). McCain Foods has recently launched a [Regenerative Agriculture Framework](#) and is partnering with farmers around the world to re-imagine the way they grow, process, and distribute potatoes. In collaboration with local informal waste pickers in India and Haiti, HP and Dell have been experimenting with circular processes to collect and recycle ocean-bound plastics, reducing carbon emissions and diverting plastics from the oceans (Anupindi and Hoffman, 2018; Gualandris and Lee, 2021).

Besides large companies, we also expect that some of the most innovative examples of regeneration will be in small or micro-businesses, so we encourage studies of such. For example, [Calmura Natural Walls](#), a small company founded in 2016 in British Columbia (Canada), is developing new sourcing and production processes for natural construction materials made of cob, adobe, lime and pozzolans recovered from industrial waste. These processes promise to divert waste from landfills and absorb carbon dioxide during the curation of natural construction materials. Their innovative materials are also expected to last longer than traditional materials and, at the end of life, may be used as soil amendment to grow new biomaterial.

This special issue aims to bring together scholars interested in supply chain management, inter-organizational relationships, and stakeholder-oriented strategies to:

- Examine how the study of regeneration challenges and extends traditional management paradigms and theories, especially those concerning the design and management of inter-organizational systems.
- Advance a wide range of empirical approaches and methods (e.g., ethnography, in-depth process studies, metaphors, topic modeling, life cycle analysis, geographic information systems mapping) to describe, understand and characterize how regenerative processes and supply chains can emerge and function.
- Illuminate business models, operational processes, inter-organizational structures, stakeholder strategies, and institutional dynamics of regenerative supply chains with important managerial and policy implications.

Example topic areas of interest

Emergence of regenerative supply chains

How can traditional supply chains develop regenerative processes and features?

How does introducing regenerative processes in some components of the supply chain (e.g., regenerative farming, food residuals upcycling) affect processes and structures in other parts of the supply chain (e.g., market channels and distribution networks)?

How do managers and other stakeholders motivate the investments necessary to transform traditional processes and supply chains into regenerative ones?

How do actors decide between incremental and more transformational changes to their supply chains when seeking regeneration?

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What milestones and phases characterize the emergence and evolution of regenerative processes and supply chains?

What operational, organizational, and institutional factors prevent, hinder, or retard the development of processes and supply chains that positively contribute to nature's health and resilience?

Through what operational and organizational mechanisms do organizations' sense of time and sense of place (Mazutis et al., 2021) shape the development of regenerative processes and supply chains?

How does distributive (in)justice in a supply chain affect the development of regenerative processes and features?

What public policies catalyze (or hamper) the development of regenerative processes and supply chains?

What financial instruments and supply chain incentive structures catalyze (or hamper) the development of regenerative processes and supply chains?

How can researchers intervene to stimulate and support the development of regenerative processes and supply chains?

Structure and functioning of regenerative supply chains

When can supply chains claim to be regenerative? How do organizations, alliances and networks recognize and manage the diverse trade-offs that exist among different ecological outcomes (e.g., carbon, water, land, animal or human well-being)?

How do regenerative processes and supply chains impact the health and wealth of local communities and society at large?

What stakeholder groups (e.g., indigenous groups, citizens, scientists, investors, communities etc.) are necessary to understand and represent nature as supply chains experiment with and evolve towards regenerative processes?

What different forms and patterns of inter-organizational relationships enable regenerative supply chains to function eco-efficiently? What impact metrics are necessary to calibrate to living life-cycles and respect the limits of planetary boundaries?

What business models enable regenerative supply chains to become economically viable and how is economic viability impacting nature? How are the specific costs, risks and gains distributed across their organizational members that interact directly versus indirectly with sensitive socio-ecological systems?

What institutional logics and operating principles (Wu and Pagell, 2011) permeate regenerative supply chains? How is institutional complexity experienced and reconciled?

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How does technology interact with and enable the operational and organizational processes of regenerative processes and supply chains? How can field tracking of carbon footprint software inform and inspire ecologically sensitive solutions at different scales? How can AI platforms accelerate transformative leaps towards regenerative supply chains by accounting for unique and localized patterns of natural opportunities and constraints?

What novel measurement approaches to multi-faceted performance outcomes guide the work of regenerative supply chains?

How do regenerative supply chains leverage economies of scale and economies of scope to compete against traditional supply chains? What roles can alliances and networks play in transferring solutions across geographical and operational scales?

How do regenerative processes and supply chains integrate with global markets and trade?

Submission and Review Process

Deadline for final submission: March 1st, 2024

Idea Development Workshop: May 18th 2023, 9-11am ET

Paper Development Workshop: Late Spring – Early Summer 2024

SI Published: Late Spring 2025

The guest editors will organize two workshops as part of the call for papers. The first workshop (virtual) is an idea development workshop (IDW) before formal submissions and is intended to be held in Spring 2023. With this workshop, the guest editors will provide peer feedback on tentative ideas proposed within the scope of the call. Interested authors will be invited to submit a 500-word extended abstract to participate in the IDW. Only authors submitting an extended abstract may participate in the workshop portion.

The second workshop is a paper development workshop (PDW) for authors who are invited to revise and resubmit a manuscript in late Spring or early Summer 2024. This workshop aims to offer in-depth and constructive comments to papers that received an invitation to revise and resubmit and thus further steer and support prospective authors towards making a successful contribution to the proposed special issue and JSCM.

Both workshops will feature breakout sessions with a facilitator to discuss proposed papers and the fit with the special issue as well as receive feedback from other authors. The digital format will ensure that attendance is possible for as many authors from around the world as possible. Attendance is not a precondition for publication, nor does participation in the workshops assure acceptance of the paper in the special issue. Details about the IDW and PDW will be communicated in time.

Please submit your manuscript at <https://mc.manuscriptcentral.com/jscm> with the cover letter clearly indicating that the manuscript should be considered for the Special Issue “Unchaining supply chains: Enabling transformative leaps towards regenerative socio-ecological systems”.

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