From Global Chains to Local Loops: How Circular Economy Territorialises Production Networks

Extended Abstract

Global value chains (GVCs) are under mounting pressure from environmental constraints and policy shifts that challenge their linear, throughput-oriented logic. Circular economy (CE) agendas—promoted through instruments such as extended producer responsibility, eco-design requirements, and forthcoming product passports—reorient production toward durability, repair, reuse, remanufacture, and high-quality recycling. These requirements place new emphasis on reverse flows, quality assurance, and liability management, all of which introduce frictions that cannot be resolved through distance alone. As a result, circularity raises a spatial question that remains insufficiently specified in the literature: how, and under what conditions, do circular practices reconfigure the geography and governance of global production networks?

Existing research offers partial answers. GVC and global production network (GPN) scholarship explains how lead firms organise internationally fragmented production through modular architectures, codified standards, and arm's-length coordination. This work highlights power asymmetries, upgrading trajectories, and strategic coupling between firms and regions, yet it largely treats territory as a context that conditions outcomes rather than as an object reshaped by changing production logics. In parallel, CE research documents the shift from linear to regenerative models, emphasising loops, extended responsibility, and industrial symbiosis. However, much of this literature focuses on firm-level innovation or policy design and pays limited attention to how circularity reorganises chain architecture and coordination across space. As a result, we still lack a systematic account of how circular practices territorialise GVCs in practice, through which actors, and with what scope conditions.

This article addresses that gap. It asks a central question: how do circular economy practices contribute to the territorialisation of global value chains? We define territorialisation as the anchoring of specific chain modules within regional systems when those modules depend on place-bound resources, infrastructures, and institutions. Rather than arguing for a general retreat from globalisation, we examine whether circularity induces selective re-regionalisation of control points within otherwise international networks.

Empirically, the article draws on a comparative qualitative study of two high-material sectors in France—construction and textiles—that differ sharply in materiality, governance traditions, and degrees of global integration. Construction is strongly anchored in place due to immobile sites, heavy materials, and short-haul logistics, yet it remains embedded in wider input networks. Textiles epitomise globally dispersed chains governed by cost-driven lead firms, but they are now subject to strong circular pressures and experimentation with repair, reuse, and re-spinning. This contrast provides a strategic lens for examining how circularity reshapes chain architecture under different spatial constraints.

The analysis is based on 77 semi-structured interviews conducted within two EU-funded research projects. In construction, 50 interviews were carried out between October 2022 and May 2024 in Toulouse Métropole and the wider Occitanie region, involving contractors, waste managers, reuse operators, laboratories, public authorities, and intermediaries. In textiles, 27 interviews were conducted in 2024, including regional actors in Occitanie and Nouvelle-Aquitaine as well as national and EU-level stakeholders, covering spinners, recyclers, retailers, certification bodies, and policy actors. Interviews were complemented with documentary sources and field observations. The material was analysed through abductive coding, combining a theory-driven framework with inductive refinement.

The article makes three core moves. First, it shows where circularity reconfigures chain architecture. Across both sectors, circular practices do not simply add end-of-life steps to existing linear chains. Instead, they reorganise production networks around four place-sensitive nodes that concentrate reverse flows and relocate coordination toward regional actors: Sorting and preparation, where heterogeneous inflows are transformed into quality-graded outflows. These activities require proximity to waste streams, storage space, and specialised equipment, making long-distance processing costly or impractical. Testing, assurance, and traceability, where laboratories, certification bodies, and data infrastructures establish performance equivalence, allocate liability, and secure claims about recycled content. Repair and second-life retail, which embed service work, logistics, and consumer interfaces in local labour markets and urban regions. Short remanufacture loops, where prepared inputs are transformed locally into components or materials for regional users, shortening loops and shifting scheduling power toward local brokers. These nodes function as territorial hinges: they convert diffuse, uncertain reverse flows into predictable, quality-assured circuits and make certain stages of the chain location-dependent.

Second, the article explains how this reconfiguration unfolds by identifying the role of territorial intermediaries. Building on work on innovation intermediation and territorial governance, we show that circular territorialisation depends on actors who translate global standards and policy requirements into workable local arrangements. These intermediaries operate through three interrelated roles: As promoters, they shape expectations, skills, and legitimacy by diffusing circular narratives, training designers and operators, and normalising reuse and remanufacture as routine options. As facilitators, they reduce fragmentation by matching supply and demand, synchronising demolition, testing, and redeployment timelines, and stabilising data and trace routines. As enablers, they align infrastructure, rules, and risk-sharing by brokering access to storage, laboratories, certification, finance, and procurement frameworks. These roles are rarely concentrated in a single organisation. Instead, clusters, social-economy operators, laboratories, certification bodies, and retailers form functional bundles. Where such bundles align, transaction costs fall, quality becomes portable across projects, and exchanges become insurable and financeable—conditions that allow circular practices to move from pilots to standard operations.

Third, the article explains why territorial anchoring succeeds in some places but not others by identifying four structural conditions, or anchors, that shape outcomes: A material anchor, reflecting mass, heterogeneity, contamination risk, and acceptable quality loss, which determines whether reverse flows can be processed economically at distance. A capability anchor, encompassing specialised skills, equipment, laboratories, and tacit know-how that are unevenly distributed across regions. A governance anchor, including standards, testing protocols, insurance arrangements, certification, and data systems that allocate liability and render circular transactions credible. A market anchor, involving predictable local demand through public procurement, second-life retail, or regional matching platforms.

Empirically, we observe a recurring scope condition that we summarise as a triptych: circular territorialisation becomes durable when (i) local capabilities are available or can be mobilised, (ii) an operational protocol settles standards and assurance, and (iii) territorial demand is predictable enough to stabilise volumes. When any leg is missing, flows tend to revert to export outlets, long-distance downcycling, or disposal.

The findings have several implications for theory. For GVC and GPN research, they qualify debates on de-globalisation and resilience by showing that circularity induces selective re-regionalisation of control points rather than wholesale retreat from global integration. Authority and value capture shift toward territorially embedded actors—laboratories, certification bodies, repair organisations—because these actors control the thresholds that make circular transactions viable. This supports a polycentric view of governance in which coordination follows place-bound nodes managing quality, liability, timing, and data.

For circular economy scholarship, the article moves beyond normative calls for localisation by specifying the mechanisms and conditions under which territorial anchoring occurs. It reframes circularity as a driver of spatial reconfiguration, not merely as an environmental add-on, and provides a portable analytical framework that can be used for comparative and quantitative research.

The analysis also has practical relevance. It shows that territorialisation is not an automatic outcome of circular intent. Policy can actively assemble the triptych by investing in preparation and assurance infrastructure, developing protocols with insurers and auditors, and aggregating demand through procurement and second-life channels. Product-passport readiness emerges as a form of territorial infrastructure rather than a purely firm-level compliance issue. For firms, recognising territorial partners within quality systems and designing products for in-place circular modules can translate regional anchorage into resilience and competitiveness.

The study is bounded by its empirical scope. It focuses on two sectors in France during a period of strong EU regulatory salience. While the anchors are intended to travel, their sequence and relative weight may differ across institutional contexts and spatial densities. The analysis does not quantify environmental or distributional outcomes; future work can connect the framework to life-cycle assessment, transport modelling, and labour-market data to assess impacts more directly.

Overall, the article shows that circular imperatives do not simply add a “green tail” to existing chains. They reorganise production networks around place-sensitive nodes and make territorial intermediation a decisive governance mechanism. Where capabilities, protocols, and demand align, circular modules become locally sticky and shift coordination toward regional actors while maintaining global integration for other stages. This provides a clear, mechanism-based account of how circular economy practices territorialise global value chains.