

Titre : Facteurs d'émergence des compétitions territoriales dans l'économie circulaire

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Introduction

In order to transform and move away from traditional linear development models, an increasing number of territories are placing the circular economy at the core of their transition toward more sustainable development pathways. The circular economy is understood as an economic system that seeks to replace the concept of “end-of-life” with the reduction, reuse, recycling, and recovery of materials throughout the supply chain (Mosgaard et al., 2025), by integrating resource flow loops along the value chain.

The transition of territories toward a circular economy therefore implies a paradigm shift regarding the status of waste. Rather than being considered valueless end-of-life goods to be discarded, waste is increasingly viewed as a strategic resource at the territorial scale. The growing market value of these materials, the development of numerous recovery technologies, and the increasing demand for secondary raw materials are transforming the conditions of access to and availability of these flows (Florin, 2016). In a context of resource pressure, limited availability, and uneven geographical distribution of deposits across territories, competitive dynamics may emerge between different actors, particularly in efforts to secure resource supply or investment (Carrascal, 2009).

If not properly understood and anticipated by stakeholders, these dynamics may ultimately jeopardize the implementation of territorial circular economy strategies. Moreover, they may have lasting effects on territorial performance by generating new forms of dependency and by reinforcing social inequalities (Florin, 2016).

While the concept of “competition” is widely mobilized in the social sciences, management, and economics, often through related notions such as rivalry or market competition, it is rarely addressed in industrial and territorial ecology studies dedicated to the planning and assessment of multi-actor resource-looping systems (Tanguy et al., 2020). Indeed, these approaches primarily focus on cooperation between actors sharing resources and on the conditions that facilitate the implementation of industrial symbiosis (Maillefert & Robert, 2020; Baas & Boons, 2004). In this work, we hypothesize that competition is an inherent dynamic, and often a precursor to shared territorial resource management. If insufficiently considered in decision-making processes, it may lead to situations of latent or open conflict (Darly & Torre, 2008; Méry et al., 2010; Tall et al., 2025).

In this context, this study proposes to examine the challenges associated with the implementation of circular strategies, particularly waste recovery, through an analytical framework focused on the factors driving the emergence of competition over waste resources

at the territorial scale. The objective is to analyze the conditions under which these dynamics arise, in order to better understand them and to integrate them into territorial waste management planning models.

Méthodologie :

- Definition of the concept of “competition” for waste recovery

We analyzed eleven articles from various disciplinary fields—life sciences, social sciences, and economics—that provide definitions of this concept. In the life sciences, competition refers to the exploitation of the same resource, limited in quantity or accessibility, by two organisms, such that the presence of one reduces the availability of the resource for the other (Miquel, 2015). In economics, it also describes a situation in which several parties pursue the same objective or seek to capture a desired resource, generally resulting in the existence of a winner and a loser (Ives et al., 2020). Thus, competition can be defined as a mechanism through which economic or social actors attempt to access limited resources using cooperative or conflictual strategies. Social science and philosophical approaches further emphasize that competition constitutes both a material and social relationship, structured by resource scarcity and interactions among actors (Legeay, 2023). However, the mere coexistence of actors is not sufficient to characterize competition; an active dynamic aimed at improving one’s advantage over others is required (Linick, 2014).

In this study, resource competition is defined as a dynamic process of interactions between actors seeking to access, control, or influence the use of a resource, whose combined capture or recovery capacities exceed the quantitative, qualitative, or spatial availability of that resource within a given territory or socio-technical system.

- Identification of Factors Driving the Emergence of Competition Dynamics

A deductive method was used, starting from the literature, which was later consolidated through interviews. To better understand the initiating elements of competition, a literature analysis was conducted. For this purpose, 50 articles were reviewed. These articles were selected through searches on Google Scholar, ScienceDirect, and Web of Science using the keywords: competition, resource competition, territorial competition, use conflict, resource tension. The compilation of initiating elements highlighted 124 verbatim statements, which were grouped into 20 emergence factors.

Forms of Competition Emerging from Territories:

“Territorial competition is often analyzed as a competitive game” (Philippe-Dussine, 2001). It manifests at different geographical scales and can involve issues such as resources, infrastructure (Tanguy, 2020), or economic attractiveness (Philippe-Dussine, 2001). Competitions can oppose different actors or sectors within the same territory, at the scale of an agglomeration (Frenkel, 2012) or a city. Competitions can also occur between multiple territories. It is “a game in which local authorities seek to attract the maximum number of companies to their area in order to benefit from various advantages,” as illustrated by Tanguy (2020) in his study on the role of territorial competitions in the energy transition. In Italy, several provinces compete in implementing waste collection policies (Agovino et al., 2025). As

each province's performance is compared to others, none wants to be last or perform worse than the rest. In Denmark, competition occurs in biogas production, where several production units vie for access to the same limited biomass supply from local farmers within the same territory (Bojesen et al., 2014).

Natural resources such as soils or agricultural lands are subject to conflicts between urbanization, environmental preservation, and agricultural use, due to land pressure amplified by peri-urbanization, putting farmers, real estate developers, political authorities, associations, and citizens in competition (Darly & Torre, 2008). Competition can also be human and social, for example, regarding skilled labor in the municipal waste treatment and recovery sector (Baguelin et al., 2021). It also manifests between actors for access to the same resources, such as in waste recovery sectors where formal private operators coexist with informal actors like waste pickers, who are locally embedded and recover recyclable fractions directly at the source, generating competitive situations, including with certain municipal agents (Bertolini & Brakez, 2008). Furthermore, forms of comparative competition have been observed in waste management in Barcelona, where the city was divided into zones assigned to different companies to analyze and compare their performance (Bel & Sebő, 2020), and in Italy, where provinces are put in competition based on their collection rates and their ability to meet recycling targets set by the European Union (Agovino et al., 2025).

Factors Driving the Emergence of Competitions

Among the factors driving the emergence of competition at the territorial level, several are linked to the characteristics of resources and their management. First, the unequal geographic distribution of resource deposits (Tanguy, 2020). Some territories have limited quantities of secondary resources, thereby intensifying competition for the available deposits. For other flows, such as biowaste, which is now diverted from landfilling, the quantity available creates new valorization opportunities that attract various actors and promote the emergence of competitive dynamics for access to this resource. Resource quality is also an important emergence factor. In the case of municipal waste, for example, poor sorting practices degrade the quality of collected materials and reduce their valorization potential, thereby increasing competition for access to better-sorted flows.

Moreover, rising prices of secondary materials on the markets make certain flows more attractive and fuel the interest of a large number of actors (Bernard et al., 2012). De Beir et al. (2023) note that competition between recycling companies and mining companies is strongly shaped by macroeconomic factors such as virgin raw material prices and overall market conditions. Florin (2016) explains how economic profitability and high demand for recycled waste, particularly cardboard, led the public authorities in Istanbul to appropriate recoverable waste and privatize the sector, thereby generating competition with informal waste collectors.

Finally, competition dynamics are not solely the result of economic constraints or resource availability; they also appear to emerge from the coexistence, within the same territory, of multiple actors such as local authorities, economic operators, or industrial players, who need the same resource but not necessarily for the same use (Tall et al., 2025). Each territory constitutes a space where different actors undertake actions aimed at strengthening their

strategic advantages, capturing resources, attracting investment, or securing supply. Tanguy's work (2020) illustrates this dynamic, showing that in response to ecological and energy transition challenges, each port area develops its own strategy. These choices aim to differentiate from other actors and generate competitive situations, for example, regarding access to investments, pilot projects, or infrastructure.

Some territories tend to imitate the strategies of their neighbors in circular economy practices, considered more effective, to avoid being marginalized and losing competitiveness. For some local elected officials, this can be a matter of political survival if neighboring territories are considered more advanced because political actors have deployed more effective strategies (Agovino et al., 2024). Far from reducing competition, such mimicry can actually intensify it. Thus, several typologies of factors driving the emergence of competition over territorial resources have been identified and are presented in Table 1.

Tableau 1: Typology of Emergence Factors of Competition from the Literature

Categories of Emergence Factors	Resource Concerned
Limited physical access to the resource	Water, soil
Increase in resource value Coexistence of actors (at least two)	Waste (paper, cardboard)
Coexistence of actors (at least two)	Water, waste, soil
Land-use change (reallocation)	Soil
Coexistence of uses (at least two)	Water, soil
Higher cost of conventional resource	Minerals
High production cost (recycling) Low market price of conventional resource	Minerals
High/low production cost (recycling)	Waste (recycling)
High/low transport costs (recycling)	Waste (recycling)
Better resource quality Increasing resource quantity	Biowaste
Low market price of conventional resource	Energy, waste-to-energy
Higher market price of the resource	Waste (textiles)
Degraded resource quality	Waste (plastic), soil
Limited resource quantity	Green waste, land
Limited resource quantity (influence on prices)	Energy (gas)
Limited resource quantity Degraded resource quality	Water, waste
Unequal geographic distribution of the resource	Waste
Unequal geographic distribution of the resource Increasing resource demand	Minerals, oil
Unequal geographic distribution of the resource Seasonality of the resource	Water, waste, nutrients, water
Strategy of a leading actor	Waste
Political strategy	Water, soil

Conclusion

The circular economy model, in contrast to the linear model, is often presented as an alternative that enables a transition toward more sustainable economic development. It promotes reducing dependence on primary raw materials and therefore pressure on primary resources, optimizing the use of secondary resources, and creating waste valorization chains. However, its implementation at the territorial level requires institutional, organizational, and economic transformations. These transformations are accompanied by factors that can give rise to competitive dynamics between actors and territories. These can be categorized into several typologies of emergence factors: factors related to the resource itself, such as the unequal geographic distribution of deposits, limited quantities of secondary resources, degradation of resource quality, and the coexistence of multiple uses on the same resource; the coexistence of multiple actors within a territory and their strategies to secure access to deposits; and finally, emergence factors linked to rising market prices, increasing demand for raw materials, and production and collection costs, which affect the attractiveness and profitability of secondary resources.

To consolidate this work on the emergence factors identified in the literature, it would be relevant to confront our results with the perspectives of different territorial actors through interviews. These interviews would validate the existence of the identified factors or reveal other factors not documented in the literature. They would also allow us to capture actors' perceptions of competition, its impacts, and their responses. Finally, combining bibliographic results with interview findings will enable the development of indicators capable of assessing the level of competition at the territorial scale. This approach will allow a shift from a theoretical concept of territorial competition to a practical tool to guide territorial planning strategies in the circular economy.

Thus, while collaboration remains the fundamental principle of interactions between actors in circular economy strategies, competitive dynamics over resources also emerge. Considering the existence of these dynamics is essential for a more realistic and sustainable territorial transition toward the circular economy. Better identifying and characterizing the factors driving competition would allow them to be anticipated and facilitate the development of cooperation and collaboration between territories and actors.

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