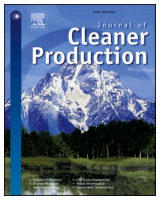
Journal of Cleaner Production 474 (2024) 143584

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro



Effective stakeholder governance in circular economy: Insights from Italian companies

Mario Minoja [a], Giulia Romano [b,*]

[a] Department of Economic and Statistical Sciences, University of Udine, Via Tomadini, 30, 33100, Udine, Italy
[b] Department of Economics and Management, University of Pisa, Via Ridolfi, 10, 56124, Pisa, Italy

ARTICLE INFO

Keywords:
Circular economy
Joint value creation
Stakeholder governance
Market incentives
Circular economy projects

ABSTRACT

Notwithstanding a growing scholarly interest in stakeholder governance, the issue of how stakeholder governance can motivate a firm's stakeholders to cooperate to the transition to circular economy (CE) is still underdeveloped. This study intends to contribute to advance knowledge in this field by investigating the comparative effectiveness of three stakeholder governance forms – hub-and-spoke, lead role, and shared governance – to motivate stakeholders of a focal company (FC) to cooperate to the development and implementation of circular business models.

Drawing on three case studies of Italian companies engaged in the transition to CE, we propose a contingent model of CE stakeholder governance. We found that the most effective stakeholder governance form at FC level depends on CE boundaries, the attitude of market forces to incentivise stakeholder cooperation to the CE, and the owners' identity of the FC. We also found that a FC can adopt different stakeholder governance forms for the diverse CE-enhancing projects it has undertaken, appropriately tailoring the governance arrangements to the nature of activities of each project and to the value, uniqueness, and complementarities of the resources held by the stakeholders involved.

This papers makes both theoretical and practical contributions. From a theoretical point of view, it advances knowledge at the intersection of stakeholder theory and governance of the CE in two main ways: first, by pointing out that the transition to the CE requires a shift from a perspective of a company responsibility to its stakeholders to that of stakeholders' responsibility to a company, a supply chain or a local community they belong to. Second, by proposing some conditions under which shared forms of stakeholder governance are likely to foster this transition. From a pratical perspective, this paper suggests how stakeholder governance can be a tool to achieve CE targets at local community, industry, supply chain or individual firm level.

1. Introduction

A focal point for sustainable development is the transition from linear to circular economy (CE), which "is a regenerative economic system which necessitates a paradigm shift to replace the 'end of life' concept with reducing, alternatively reusing, recycling, and recovering materials throughout the supply chain" (Kirchherr et al., 2023, p. 4). Such a transition makes it possible to reduce waste pollution and the use of virgin raw materials and other components, thus saving energy and other resources to produce them. The circular economy is an economic paradigm adopted by the European Union, since it 'provides opportunities to create well-being, growth and jobs, while reducing environmental pressures' (European Environmental Agency, 2016: 9). In 2015 and March 2020, the European Union established targets for its circular economy transition through an Action Plan and the Green Deal (Milios, 2020), which involved economic actors, consumers, citizens, and civil society organisations in a co-creation process, with the aim of addressing the current climate and resource crisis.

At the firm level, the transition to a circular economy occurs through the development of circular business models, a challenging task (Atasu et al., 2021) which require new materials, improved product design, rethinking of logistics, new technologies, and the active involvement and cooperation of stakeholders that hold the necessary resources and capabilities.

Hence, motivating stakeholders to cooperate during this transition is a key theoretical and practical issue that scholars have not adequately

* Corresponding author.
E-mail addresses: mario.minoja@uniud.it (M. Minoja), giulia.romano@unipi.it (G. Romano).

https://doi.org/10.1016/j.jclepro.2024.143584
Received 16 February 2024; Received in revised form 1 September 2024; Accepted 4 September 2024
Available online 5 September 2024

addressed. From individual companies' perspective, coping with this issue is also a matter of stakeholder governance (Amis et al., 2020), which is 'about the allocation of property rights (control rights and claim rights) so as to maximally support joint value creation' (Bridoux and Stoelhorst, 2022b, p. 801). Schultz et al. (2024, p. 2174) found 'a gap in contemporary circular economy scholarship regarding the lack of knowledge on how precisely functional stakeholder governance for collaboration (Köhler et al., 2022) may pave the way for a transition to circular economy as a systemic change paradigm.' A similar gap emerged in the context of circular supply chain management (Schultz et al., 2021).

To help bridge this gap, we explore how different 'stakeholders governance forms,' defined as 'the set of rules that organizes the interactions among stakeholders regardless of whether stakeholders are inside or outside the boundaries of the firm as traditionally understood' (Bridoux and Stoelhorst, 2022a, p. 219), are suitable to motivate stakeholders to cooperate to joint value creation. Our research question is as follows: which factors make each of the three stakeholder governance forms identified by Bridoux and Stoelhorst (2022a) (from now on also B&S) – namely hub-and-spoke, lead role, and shared governance – more effective than the other two in motivating stakeholders to cooperate for the development and implementation of a circular business models at the company level? To answer this question we employed a qualitative empirical study, which leads us to develop a contingent model and a set of theoretical propositions on the comparative effectiveness of different stakeholder governance models to foster the transition to circular economy.

The B&S conceptual framework is open to further extensions following the Authors' direct encouragement and it is particularly useful in addressing stakeholder governance in the context of circular economy for three main reasons. First, Bridoux and Stoelhorst are more interested in stakeholder cooperation for joint value creation, which is a key issue for circular economy, than in value creation for stakeholders. Second, they acknowledge that this cooperation occurs 'in the face of collective action problems,' that emerge when actors face situations in which there is a tension between their (short-term) self-interest and the (long term) collective interest. This type of problem is typical in the context of circular economy, where individual actors in a supply or value chain may find it more convenient in the short term to implement a linear instead of a circular business model. Third, Bridoux and Stoelhorst propose two forms of shared governance in line with the acknowledged inadequacy of bilateral or dyadic stakeholder relationships to foster cooperation at the industry or cross-industry level (Schultz et al., 2024).

Using the Gioia Methodology (GM), a qualitative research method to develop grounded theory from cases studies (Magnani and Gioia, 2023), we analyse three Italian firms that have achieved outstanding results in the transition toward a circular economy and that have adopted the three stakeholders governance forms identified by Bridoux and Stoelhorst (2022a): a firm producing nylon yarns for carpets, rugs, and garments; a waste utility involved in the collection and treatment of urban waste; and a consortium formed by paper industry companies responsible for meeting paper and cardboard recycling targets imposed by the European Union (EU).

This study makes two major contributions to existing literature. First, we apply the Bridoux and Stoelhorst (2022a) framework to the specific domain of the circular economy, with the aim to develop a contingent model of stakeholder governance for cooperation within the circular economy. Second, drawing on the case studies, we extend the Bridoux and Stoelhorst (2022a) framework by arguing that different forms of stakeholder governance may be adopted for different circular economy-enhancing projects within a given focal company, following the nature of their respective value-creation activities and critical resources. By doing so, we have taken up the challenge of Bridoux and Stoelhorst (2022a: 231) 'to further develop stakeholder theory,' in order to 'investigate the factors that, besides trust, affect the choice of a governance form.'

The rest of the paper is organised as follows: Section 2 presents a literature review on circular economy governance and briefly outlines the framework proposed by Bridoux and Stoelhorst (2022a). The proposed method is described in Section 3. Section 4 illustrates the three case studies, and Sections 5 and 6 present the results and discusses the findings. The final section concludes this paper.

2. Literature review

2.1. The circular economy and its governance

Regardless of the perspective adopted on circular economy (CE) (i.e. micro-level (individual companies), meso-level (value chains), or macro-level (a community in a geographic area) (Esposito et al., 2023; Aguinaga et al., 2018) – the transition toward CE is a complex and challenging endeavour. Such a transition, entailing a shift from a linear paradigm based on 'take, make and dispose' to a new paradigm based on practices of reducing, reusing, recycling and recovering end of life materials, requires innovations of products, processes, business models, as well as of strategic thinking (Gennari, 2023). As a type of environmental innovation, CE is characterised by 'long-term orientation and a high level of uncertainty compared with other innovations,' as well as by a high degree of complexity due to the need of 'detailed knowledge and adaptation to the socio-cultural setting' (Connelly et al., 2010; Garcés-Ayerbe et al., 2019, p. 1323). Moreover, CE projects are complex because many residual resources are scarce, suffer from a lack of scale, and are privately owned. However, they can lead to collective costs through ecosystem degradation (Patala et al., 2022).

The transition to CE implies a sustainable business model innovation, which 'is about creating superior customer and firm value through addressing societal and environmental needs' (Bocken et al., 2019, p. 1498). The issues of designing, developing, and implementing a circular business model (CBM) as a pillar of sustainability (Hina et al., 2023), are at the core of the literature on CE, and specifically, on innovation for CE (see Suchek et al., 2021, for a systematic review). The development of a new CBM requires experimentation capabilities at the institutional, strategic, and operational levels (Bocken and Konietzko, 2023), and dynamic capabilities for CE implementation (Khan et al., 2020), the development of circular manufacturing supply chains (Chari et al., 2022), and cross-sectoral collaboration in networks (Köhler et al., 2022). In turn, the development of dynamic capabilities requires firms to address organisational design issues (Coffay and Bocken, 2023).

Several drivers and barriers affect CBM innovation, with different relevance depending on the type of model, namely start-up, diversification, transformation, and acquisition (Geissdoerfer et al., 2023). Convenience of transition toward CE is not to be taken for granted: in particular, it is not economically convenient when 'the cost of inputs is low, social costs are not internalised in products, or there is no need to minimise waste, close material cycles, or reuse products or their parts' (Morseletto, 2023, p. 390). A critical, albeit constructive, approach to CE suggests that a transition should occur toward a CE which is modest, concrete, inclusive, and transparent (Corvellec et al., 2022).

The design and implementation of innovative CBM requires a great deal of resources controlled by different stakeholders to be shared to enable joint value creation: new environmental knowledge within supply chains (De Marchi et al., 2013), information from all actors involved (Arfaoui et al., 2022), and insights and challenges regarding community initiatives (Aguinaga et al., 2018). It also benefits from the co-design of CBM (Moggi and Dameri, 2021) and platforms (Meath et al., 2022). Sharing resources produces synergies between the actors and stakeholders involved (Aguinaga et al., 2018). Therefore, stakeholders' active involvement and participation, defined as 'an active process, whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits' (Aguinaga et al., 2018, p. 188), is crucial for the design and implementation of CBM. In more concise terms, 'the transition to a CE must be

supported by stakeholder collaborations' (Schultz et al., 2024, p. 2174). The latter should be achieved through stakeholder governance structures and processes (Schultz et al., 2024). Governance arrangements for CE should be designed to the purposes of (i) fostering a shared vision and mutual trust among stakeholders and between stakeholders and managers in charge of coordinating and implementing CE projects, as a pre-requisite for resource sharing and cooperation (Aguinaga et al., 2018; Garcés-Ayerbe et al., 2019; Connelly et al., 2010); (ii) encouraging all stakeholders' participation and active involvement (Arfaoui et al., 2022; Meath et al., 2022); (iii) ensuring a fair distribution of value and risks among different partners (Meath et al., 2022).

Governance and management are fields related to the CE, as they potentially hold 'relevant models on operating the CE' (Van Bueren et al., 2023, p. 2). Participative and bottom-up forms of governance are deemed to complement top-down approaches: among others, a polycentric governance, 'based on multiple centres of decision-making at various levels, interacting through formal collaboration and informal commitments' (Patala et al., 2022, p. 1567); a democratic governance body where no actor dominates (Moggi and Dameri, 2021); a network governance, 'which is about collaboration among actors: people who are willing to contribute to transformational change and who need each other to realize this' (Cramer, 2022, p. 2); the participation of key community stakeholders such as business leaders, entrepreneurs, NGOs and citizens (Aguinaga et al., 2018). In global value chains (VCs), a shift from 'arm's length' toward more complex governance structures is required to create and share new environmental knowledge and jointly develop innovation (De Marchi et al., 2013). These kinds of governance are conducive to mutual adjustments in activities, shared vision, information, and knowledge sharing. Yet, inadequacies and limitations still affect bottom-up CE innovation, and 'collective coordination across industries and innovative governance for cross-sector CE innovation is still lacking' (Henry et al., 2024, p. 328).

The success of CE projects requires also a valuable leadership: a 'neutral intermediary' to orchestrate broad networks of stakeholders and 'align all relevant actors and accelerate the transition process in a goal-oriented direction' (Cramer, 2022, p. 4); a facilitative leader who 'brings stakeholder together and gets them to engage with each other in a collaborative spirit" (Ansell and Gash, 2008, p. 554; Arfaoui et al., 2022, p. 11); or even a dedicated organisational form which acts 'as the orchestrator of all actors joining its CE value proposition' (Moggi and Dameri, 2021).

Although stakeholder governance is widely recognised as a potentially valuable mechanism to foster stakeholder cooperation in the transition toward a CE, much remains to be done at both the theoretical and empirical levels. Schultz et al. (2024, p. 2174) detected 'a gap in contemporary CE scholarship regarding the lack of knowledge on how precisely functional stakeholder governance for collaboration (e.g. Köhler et al., 2022) may pave the way for a transition to CE as a systemic change paradigm.' The main reason behind this gap could be what Johnson-Cramer et al. (2022, p. 1112) identify as 'the stakeholder-system divide' in the current scholarly understanding of stakeholder theory (Freeman and Reed, 1983): a 'pro-business,' company-centric focus of stakeholder management that neglects the potential of a 'collective governance mode' – that is 'stakeholders working together to co-create new governance structures that may resolve the salient conflicts of interest' (Schultz et al., 2024, p. 2174) – to lead corporations to promote systemic change or deal with societal grand challenges. The adoption of good stakeholder governance structures and practices can be an enabler of CE, or help remove barriers to its successful implementation (Kahupi et al., 2024).

As a notable exception, Schultz et al. (2021) explored governance mechanisms for both vertical and horizontal collaborations within the European polyurethane industry and how they can be integrated into supply chain management to foster CE. Furthermore, Schultz et al. (2024), in the context of the European chemicals and plastics industry, found that a systemic CE transition calls for managerial strategies that are collectively (industry or cross-industry) governance-oriented rather than company-centric.

Existing stakeholder and corporate governance (CG) theories provide theoretical insights and empirical evidence on how collective and shared forms of governance can contribute to addressing societal challenges and achieving sustainable development. Scherer and Voetglin (2020) acknowledged the innovation potential of reflexive and participative forms of CG. Garriga (2009), using a case study, argued that an focal company (FC) can promote stakeholder cooperation within its stakeholder network by playing the role of 'tertius iungens,' that is, a firm that joins, unites, or connects. Schultz et al. (2024) acknowledged that the conceptual framework of Bridoux and Stoelhorst (from now on, B&S) (2022a) on stakeholder governance to solve collective action problem can be insightfully applied to the CE domain, since 'stakeholder interactions for circularity can be illustrated as a "collective action problem" in which actors are increasingly dependent on each other' (p. 2186).

2.2. Three stakeholder governance forms to help solve collective action problems

B&S (2022a) proposed three stakeholder governance forms to solve collective action problems in joint value creation: hub-and-spoke, lead-role governance, and shared governance. The three models differ in terms of the distribution of decision-making and monitoring power, ways to achieve a fair distribution of joint value created, managers' roles, and types of trust that sustain cooperation (Fig. 1 and Table 1).

- The Hub-and-spoke form is based on dyadic firm-stakeholder relationships: managers have authority over stakeholders and claim the right to make governance-related decisions; there are few direct governance-related interactions among stakeholders; and a fair distribution of joint value created is negotiated in the stakeholder relationships. Cooperation is sustained through interpersonal trust between the firm and its managers.
- In the Lead role form, firm managers play leadership roles in governance. They are mandated by other stakeholders to make governance-related decisions on their behalf and for control measures. The distribution of jointly created value is negotiated with all stakeholders, and managers play a facilitating role in reaching an agreement.
- Shared governance is characterised by highly decentralised, bottom-up, and collective stakeholder governance; all stakeholders are connected, participate, and have a relatively equal say in governance decisions. Stakeholders rely on peer monitoring and sanctioning, and a fair distribution of the value created jointly requires agreement on the applied distributive rule (s). A manager is 'one among many' and trust is placed in the governance system.

Building on Elinor Ostrom's work, B&S (2022a) questions the hub-and-spoke form of governance as a unique solution for governing joint value creation when managing stakeholders. When stakeholders face collective action problems, that is, they are tempted to pursue their own interests at the expense of the common good, their motivation to cooperate may be enhanced by adopting different, more participative, and shared forms of governance. These are particularly important when joint value creation involves stakeholders 'outside the boundaries of the firm, as traditionally understood' (B&S, 2022a,b p. 215), such as customers, suppliers, or local communities, and when value-creation activities involve high levels of complexity and dynamism. By calling for shared governance models to motivate stakeholders to cooperate for joint value creation, B&S, 2022a,b support and extend the Barney's (2018) idea that sharing residuals (i.e., profits) can motivate stakeholders that hold key, co-specialised resources to cooperate to profit generation.

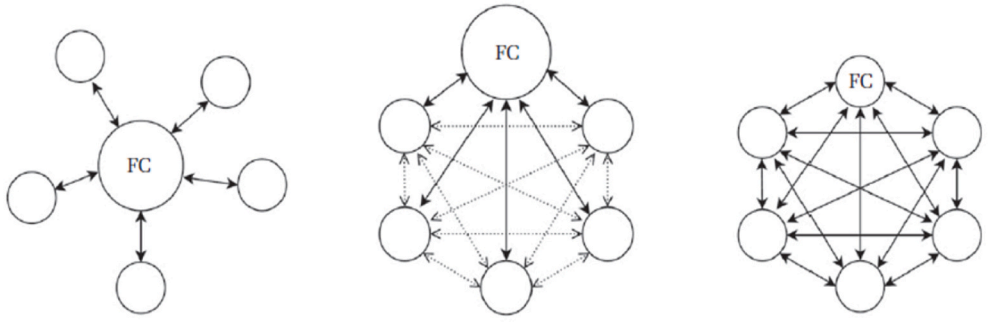


Fig. 1. The three stakeholder governance forms proposed by Bridoux and Stoelhorst (2022a).
Source: Bridoux and Stoelhorst (2022a, p. 219)

Table 1
Main characteristics of the three stakeholder governance forms.

	Hub-and-spoke governance	Lead role governance	Shared governance
Who makes governance-related decisions?	The firm's managers claim this right and stakeholders grant it because there is a legitimate basis for managers' authority	The firm's managers are mandated by the other stakeholders to make some governance-related decisions on their behalf	All stakeholders, with relatively equal say
Who monitors and sanctions non-compliance to governance rules?	The firm's managers control using graduated sanctions	The firm's managers are mandated by the other stakeholders, who also control but to a lesser extent. Sanctions are graduated	All stakeholders monitor and sanction using graduated sanctions
What is the mode of conflict resolution?	Large range of conflict resolution modes that the firm's managers can choose from to deal with different stakeholders	Leader as arbiter	Only a cooperative mode of conflict resolution
How is a fair distribution of joint value created achieved?	Negotiated in the firm-stakeholder relationships	Negotiated with all the stakeholders	Negotiated with all the stakeholders
Formal role of managers	Benevolent patriarchs	Stewards	One among many
Latitude left to the focal firm's managers	A high degree	A medium degree	A small degree
Main type(s) of trust to choose the form and sustain cooperation	Interpersonal trust in the firm and its managers	Trust in the governance systema and trust in the firm and its managers	Trust in the governance system

Source: our elaboration from B&S, 2022a,b, p. 222

3. Methodology

This study adopts a case-based approach for theory building (Yin, 1994; Eisenhardt and Graebner, 2007) by applying a multiple-case design (Bourgeois and Eisenhardt, 1988; Eisenhardt and Graebner, 2007). Case studies have provided in-depth information on social phenomena. This approach helps to reduce observer bias and increases the external validity of the research (Voss et al., 2002). We have selected three Italian firms that are pioneers in the transition to CE business models in their respective industries: Aquafil, a family-controlled, listed company, that produces yarn for carpets and garments using ever increasing amounts of nylon ('polyamide 6') from recycling processes; Contarina, a municipality-owned waste utility leader in Italy for urban waste reduction and recycling; and COMIECO, a consortium of private companies involved in recycling paper and cardboard packaging under public supervision.

These cases were selected by combining interviews with two technical experts as key informants and documentary analysis (sustainability reports, ESG rankings) with the goal of identifying three companies – one for each of the three stakeholder governance models proposed by B&S (2022a,b) – that are strongly committed to the transition to a CE. The first technical expert was the chair of the Scientific Committee of Zero Waste Europe, an international alliance aimed at promoting waste prevention, recycling, and reuse in European countries. He is one of the founders of the European Compost Network and coordinator of the Scientific Committee of the Zero Waste Research Centre in Italy. The second is a sustainability expert who plays two relevant roles: the managing director of ISVI (Institute of Firm Values: www.isvi.org), a non-profit association with the mission of highlighting and promoting firms' economically and socially responsible behaviours, and the general secretary of Sustainability Makers (www.sustainability-makers.it), an Italian association of professionals who plan and implement sustainability strategies and projects within firms.

The companies suggested by the technical experts were cross-checked using publicly available data, reports, and other documents. Comieco (a case of shared governance in the B&S framework) was selected from among the consortia for the recovery of packaging waste because paper is the material with the highest recycling rate (81,2% in 2022), above the EU target of 75% for 2030, as reported by the Sustainable Development Foundation.[1] In a report by Legambiente on the CE, the municipalities served by Contarina (a case of lead governance) emerged as those with the highest waste recycling rates and the lowest amounts of unsorted waste per capita.[2] Moreover, Contarina has enabled Treviso, the main city where it operates, to receive the European Green Leaf Award in 2023, owing to its ability to push boundaries in terms of sustainability. Finally, Aquafil was selected as the hub-and-

[1] https://www.fondazionesvilupposostenibile.org/wp-content/uploads/dlm_uploads/Sintesi-Riciclo-in-Italia-2023.pdf.
[2] https://ricicloni.it/media/dossier/pdf/RO-2023-1-ComuniRicicloni-LowRes-11069064205.pdf.

spoke case because it has recently been ranked first among global companies in the 'textiles' subindustry according to Morningstar Sustainalytics Esg Risk Rating and has been committed for 25 years to developing a business model increasingly focused on the CE. We also examined the financial statements of each of the three companies over the last three years to ascertain that they were economically and financially viable.

The performance of the three firms in terms of CE makes them 'extreme exemplars' (Yin, 1994; Eisenhardt and Graebner, 2007). Following Eisenhardt (1989) and Gehman et al. (2018), different data collection methods were combined to ensure triangulation: along with an in-depth analysis of archival sources (e.g. financial statements, presentations to analysts and investors, sustainability reports, and firms' websites), we realised 27 in-depth semi-structured interviews with owners and managers of the three firms (Table 2). 'Semi-structured interviews are the preferred data collection method when the researcher's goal is to better understand the participant's unique perspective rather than a generalized understanding of a phenomenon' (Adeoye-Olatunde and Olenik, 2021: 1360); moreover, they also allow interviewees to express their points of view using their own terms.

The interviewees were selected in the following ways: first, the person at the top of each company as key informants; second, the person (s) who played a key role in deciding the transition to a CE; third, the person(s) with a relevant role in shaping or revising the stakeholder governance model; fourth, the person(s) responsible for managing specific projects of special relevance for the transition to a CE; and finally, other possible stakeholders. In several cases, the same person played multiple roles, as indicated above, and was interviewed more than once.

The interviews included questions on the following topics: a brief history of the firm's transition toward CE (when and how the transition to the CE began and who were the key players); stakeholders' identity (who are the most relevant firm's stakeholders, and which ones are crucial for the company's transition toward CE), corporate (structures and composition of governance bodies and how they operate, and CG rules) and stakeholders' role in the transition toward CE; description of the business model and the most significant projects to implement, enhance, or further develop CE; and drivers of stakeholders' motivation to cooperate with the CE (types of contracts, governance rights, etc.). As suggested by Corvellec et al. (2012: 513), interviews were 'transcribed and processed together with other texts in a conventional manual manner.'

After collecting the data, we applied the Gioia Methodology (GM), a qualitative approach to developing grounded theory (Gioia and Chittipeddi, 1991; Gioia et al., 2012; Magnani and Gioia, 2023). The GM involves, first, developing a data structure that shows how the informant-based (1st-order) codes relate to researcher-based (2nd-order) themes and dimensions; second, developing an illustrative grounded model; and third, presenting convincing results, possibly in the form of storytelling. This is a form of 'abductive research,' whose steps 'constitute a creative process whereby the researcher makes inferences by combining theory and data in a way that is likely to produce novel theoretical insights' (Magnani and Gioia, 2023, p. 3). With the aim of adhering as closely as possible to the GM, we conducted a first-order analysis trying to adhere faithfully to informant terms, and then aggregated the second-order themes by combining extant theory and empirical evidence. This process was recursive to some extent, as we interviewed for the second time five informants (one from Aquafil, two from Contarina, and two from Comieco) to discuss our interpretation of the results and cross-case pattern recognition, as well as the emerging theory in the form of an illustrative grounded model. The approach we followed was similar to that adopted in previous qualitative studies involving broad CE issues (Oskam et al., 2018; Costanza, 2023).

Table 2
List of interviews with interviewees' role and interview duration.

N.	Role	Interview duration (minutes)
1	CEO and owner	70
2	CEO and owner	60
3	Communications Manager	written answers
4	Consultant	40
5	Consultant	50
6	Former Minister of the Environment	40
7	Former President	90
8	Former President	90
9	Former President and owner	80
10	Former President and owner	45
11	Former Presidents and owners	120
12	Former Vice President	50
13	General Manager	70
14	General Manager	30
15	General Manager	120
16	General Manager	60
17	General Manager	45
18	Head of Circular Economy & Sustainability	60
19	Head of Communication	60
20	Head of Communication	30
21	Head of Human Resources, Communication, Legal, Customer Network, Head of Administrative division and Head of Plants and General Services	60
22	Head of information systems, R&D, management control, secretarial and protocol	15
23	Head of IT Systems	35
24	Head of Recycling and Recovery	90
25	Head of Recycling and Recovery	90
26	Head of Research and Development and Head of Training	60
27	Manager of waste utilities	30
	Total duration	**1590**

Table 3
A summary report of the data analysis process.

Emerging categories/theory	Data analysis process	Methodological quotes
1st order themes	Informant-based (Interviews as primary sources)	"1-st order analysis should try to adhere faithfully to informants terms" (Magnani and Gioia, 2023, p. 3)
2nd order themes	Aggregation of 1st order themes in the light of extant theory and further empirical data. Main theories considered: - Stakeholder governance (e.g., Amis et al. B&S, 2022a; 2022b) - Governance of CE (e.g., Patala et al., 2022; Schultz et al., 2021, 2024) Examples of empirical evidence considered: - the process of re-municipalization of Contarina → role of ownership; - structure and dynamics of market of recycled paper, as well as historical data of the paper intermediated by Comieco → role of market incentives effectiveness	"Generating 2nd-order themes and aggregate dimensions involves a process of sorting, reducing, and aggregating 1st-order codes using increasingly abstract categories and combining extant theory and empirical evidence." (Magnani and Gioia, 2023, p. 3)
Illustrative grounded model and propositions	Inferential, recursive process of application of existing theory, adaptation of existing theory to empirical evidence, emergence of new theory, verification of new theory with the three cases' key informants.	"The overall GM analytical process develops through an inferential path that departs from an inductive-reasoning approach towards a more abductive one, developed by "systematically combining" the emerging data from the field with existing theory" (Magnani and Gioia, 2023, p. 3)

Table 3 summarizes how the analysis process occurred, and in particular how the 1st and 2nd order themes and the grounded model as well as propositions emerged.

4. Case studies

4.1. Companies' presentation

4.1.1. Aquafil

With 19 plants in three continents and eight countries and approximately 2.800 employees, Aquafil is one of the most relevant nylon yarn producers in the world, with revenues of EUR 572 million in 2023. Prompted by one of its most relevant customers (the US-based Interface) at a convention in 1998, Aquafil decided to embark on a long journey toward sustainability, which led it to develop a proprietary regeneration technology to produce sustainable fibres and polymers from nylon waste. Thanks to this technology, Aquafil has developed a product called ECONYL®, which currently accounts for approximately 49% of its revenues with a target of 60% by 2025. ECONYL®, whose functional and technical performance do not differ from those of the virgin nylon, is obtained from both end-of-life carpets or rugs and from other sources such as discarded or wasted nets for salmon phishing in Norway or Chile. ECONYL® makes it possible to reduce the use of caprolactam (a petroleum derivative), the raw material of virgin nylon, as well as to avoid waste disposal and pollution problems. Thus, Aquafil played a pioneering role in fostering circularity in the textile industry.

Key stakeholders for CE are: upstream, suppliers which use and then dismiss a variety of products containing nylon (e.g. fishing nets used for salmon fishing in Norway); downstream, manufacturers, users and recuperators of dismissed carpets and drugs, from which Aquafil extracts, treats and then reuses nylon, as well as fashion brands employing ECONYL®; other textile producers to jointly develop new, environmentally friendly, raw materials.

4.1.2. Contarina

Contarina is the waste utility responsible for the integrated management of urban waste within the province of Treviso in the Veneto region (Italy), in an area with approximately 555,000 inhabitants. It was founded in 1989 and it is owned by the 49 municipalities through the 'Consiglio di Bacino Priula' (in short, Priula), a legal entity which owns 100% of the Contarina shares (Romano et al., 2021, 2022). Contarina carries out its business through in-house delegations by municipal owners. From a legal point of view, this form produces two main effects: on the one hand, it creates a local monopoly regime, and on the other, it limits Contarina's operations outside the area of the shareholder municipalities to a small part (20%) of total revenues and prohibits the creation of shareholding direct partnerships without public tendering (Romano et al., 2021).

The company's success in the CE depends on a business model built on: i) a strong commitment to separate waste collection through a door-to-door method, which enables the firm to reduce disposal costs and get additional revenues from waste recycling and reselling; ii) a 'pay as you throw' system as a powerful incentive for citizens to minimise non-recyclable waste and accurately separate household waste; iii) lower fares to citizens, thanks to additional revenues and cost savings; iv) total reinvestment of net profits (Minoja and Romano, 2021; Romano et al., 2021).

This business model has made Contarina the leader in Italy and Europe in waste reduction and recycling. In 2022, it registered 89.9% of separate collection and production of unsorted urban waste per capita of only 40 kg per year, while the national average data were 64% and 181 kg, respectively. As a publicly-owned utility, Contarina's business model is based on 'a public service mission to organize a co-creation of value … between authorities who are legally responsible to manage waste and those in need of getting rid of waste while also protecting public health and the environment for future generations' (Corvellec et al., 2012: 516).

Citizens are key stakeholders in the CE as users of waste management services, actors directly involved in household waste separation, and suppliers of waste that Contarina transforms into secondary raw materials. A great number of initiatives (education and training projects in schools), digital (Contarina app), and physical structures (service centres, collection points) are set up to sensitise and inform citizens and facilitate waste collection and delivery.

Suppliers are key CE stakeholders because they cooperate in the co-design of bins, vehicles, recycling plants, and software customised to best support a company's business model. For example, truck producers have developed tailored arrangements for vehicles to reduce CO_2 emissions, improve drivers' working conditions and safety, and accelerate waste collection operations. Software houses collaborate in the design and continuous improvement of IT supporting the pay-as-you-throw tariff system, as well as of a tailored GPS system that optimizes routes. Contarina supports other waste utilities and municipalities in replicating its business model, even through the temporary transfer of its personnel and equipment. This support is regulated by contracts and, in some cases, is reinforced by equity stakes.

4.1.3. Comieco

Founded in 1985 in Italy to promote the separate collection and recovery of paper and cardboard during a period of raw material shortage, Comieco is still a non-profit, private consortium. Its main associates are approximately 130 paper mills, 2850 paper and cardboard packaging manufacturers, and 160 cellulosic waste selection platforms and treatment plants (Minoja and Romano, 2020). After the enactment of the 'Ronchi Decree' in 1997, aimed at implementing the European Directives on waste, hazardous waste and packaging waste, Comieco was identified as the tool to meet at national level the strict packaging recycling targets for the paper and cardboard supply chain in Italy. Therefore, it became the National Consortium for the recovery and recycling of cellulose-based packaging.

Beyond associates, all of whom belong to the value chain of paper and cardboard packaging, municipalities are key stakeholders in CE. Comieco acquires paper and cardboard waste from affiliated municipalities and waste-collecting utilities. While regulated by one-to-one conventions, the acquisition of waste paper from municipalities occurs under uniform conditions throughout the country, based on a general contractual framework concluded between the National Association of Italian Municipalities (ANCI) and the national consortium, whose associates are all producers and users of packaging of any material (CONAI). Comieco then sells paper to paper mills at controlled prices (linked to prices fixed monthly by the Chamber of Commerce of Milan) or through auctions to stimulate market competition. Paper mills transform it into pulp, which is a secondary raw material.

Paper mills are obliged to buy from Comieco the waste paper it buys from municipalities, but the Comieco price from paper mills is not always able to cover the purchase and treatment costs it incurs. To close this gap, it receives an 'environmental contribution,' a fee that individual packaging producers must pay in proportion to the total amount (number of tons) of packaging sold to users, in compliance with the principle of Extended Producer Responsibility (EPR). The higher the market prices for paper and cardboard, the lower the environmental contribution imposed on packaging producers.

Importantly, when market conditions are favourable, municipalities may decide not to subscribe to or renew agreements with Comieco because they may find it more convenient to sell the paper and cardboard they have collected directly to paper mills or treatment plants. Thus, the consortium plays a subsidiary role in the market, ensuring that recycling targets are met even when market conditions are not possible (Minoja and Romano, 2020). Also thanks to the 'Comieco system,' in 2020 Italy had already achieved the recycling target of 85% of waste paper packaging set by the EU for the year 2030.

4.2. Focal companies' corporate governance

As shown in Fig. 2, the three FCs have different CG models driven by different types of ownership.

In the case of Aquafil, governance-related decisions are firmly in the hands of the CEO (a member of the controlling family) and the rest of the family, which holds the 68.6% of voting rights and appoints eight out of nine board members. Overall, the board is comprised of three family members (including the CEO), two executives, and four independent directors (including the Chairman). No stakeholders other than shareholders are represented on the company's board. CG of Contarina is strictly linked to its indirect municipality-ownership.

- the mayors of shareholder municipalities, elected by citizens, form an assembly that governs Priula, a consortium which owns 100% of Contarina.
- Priula ensures that any disagreements or conflicts between municipalities, often due to different political orientations, are resolved outside Contarina and affect neither the harmony of its organisational context nor the efficiency of its operations. It is within Priula that mayors meet, debate, and develop ideas and proposals. Priula defines a fee for waste management services that is uniform throughout the entire area served, ensuring ex ante a shared and fair distribution of the joint value created – that is, valuable waste management services and savings allowed by the Contarina business model – among all the municipalities and citizens served.
- Priula, as the sole shareholder, appoints five board members of Contarina, who are selected based on their technical or administrative expertise. The board, which appoints a managing director, holds all the powers of ordinary and extraordinary administrations. The latter must be submitted to the Shareholders Assembly for approval.

Contarina does not distribute any dividends and its governing and managing bodies are allowed to support other municipalities (through knowledge sharing, employee transfer) to 'import' and replicate Contarina's model (Romano et al., 2021).

As far as Comieco is concerned, the consortium bodies and roles are the following.

- The assembly, which is the body responsible for making key governance decisions, such as the appointment of the board of directors and the approval of statutory changes and balance sheets, is formed by all 3.150 associates. The equity shares and voting rights of associates are proportional to the volume of paper packaging treated or sold.
- The board of directors is composed of 15 members belonging to the categories of paper mills (5 members), packaging producers (5 members), waste recuperators, and recyclers (5 members, 4 of which belong to a subset of waste treatment plants).
- The managing director, appointed by the board, is responsible for the current affairs and implementation of decisions made by the assembly or the board of directors.

The Ministry of the Environment and the Ministry of Economic Development, as representatives of the Italian Government, do not have a say in board appointments but jointly approve the bylaws of Comieco (or its amendments) deliberated by the assembly. The distributive rules of jointly created value (both costs and benefits) have all been (pre) defined by the associates: how the costs of the recovery, treatment, and recycling of packaging are allocated, and the norms regulating to whom, in which amounts, and at what prices the waste intermediated by Comieco is sold. Comieco spreads its CE innovations (such as innovative paper and cardboard packaging, more recyclables, less heavy, cheaper raw materials) to all its owners/stakeholders, in order to contribute to the enhancement of the CE approach to the whole value chain and the market.

4.3. Companies' CE projects and their governance

B&S (2022a,b) illustrate their model using a program (the Nestlé Nespresso AAA sustainable quality program) and a project (to build a new gas network in Argentina) as examples of different stakeholder governance forms. Each of the three FCs we studied was involved in several projects to enhance CE, with different objectives, time horizons, and stakeholders (some of the most significant ones are reported in Fig. 3).

These projects aim to achieve incremental or radical innovations, or innovate, extend, or replicate the FC business model in related domains. They usually have a limited duration and involve different numbers of

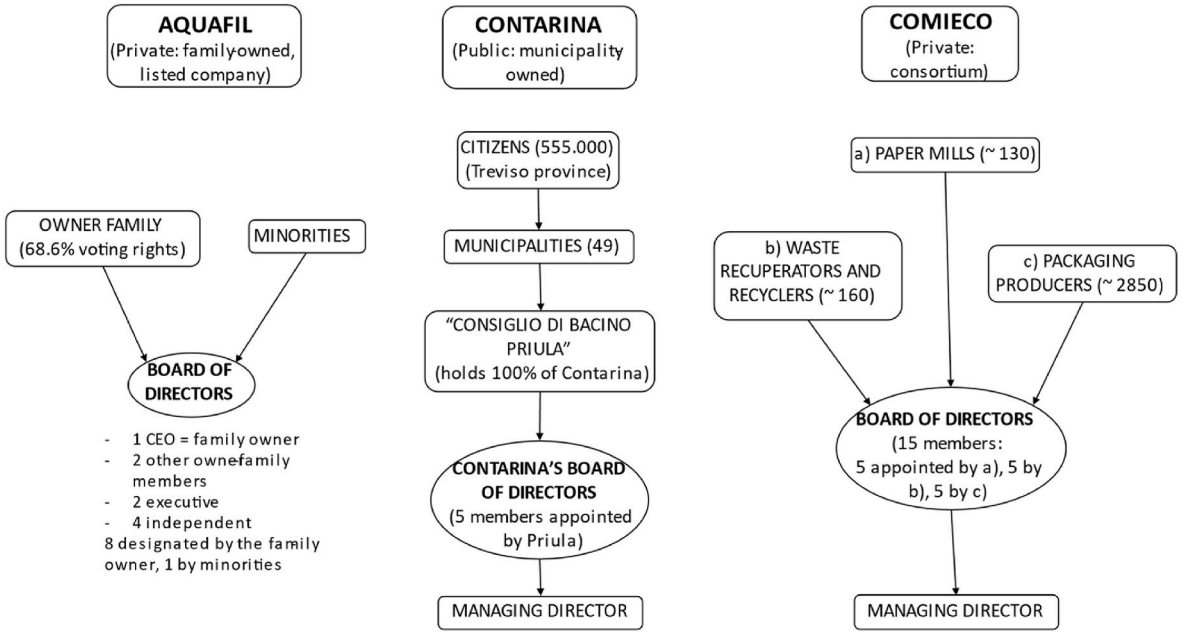


Fig. 2. The CG models of the three cases.

Projects	Objectives	Partners/stakeholders involved	Governance
Aquafil: acquisition of 32% of Nofir's equity	To have access to secondary raw material (discarded fishing and fish farming equipment)	Nofir (Norwegian company) management and other shareholders	Shared (within Nofir's assembly and board)
Aquafil: "Effective" (EU-funded research partnership – Horizon 2020)	To develop a new, bio-based raw material (bio-caprolactam)	Genomatica (a US bio-engineering firm) + Aquafil + 11 EU firms (raw material producers + fashion brands + one communication company)	Shared among all partners (general assembly + steering committee) + lead role (Aquafil as coordinator and "primus inter pares)
Contarina: equity stake of 10% of Valpe (waste management company)	To transfer the "Contarina model" of waste management to the neighboring province of Belluno	30 municipalities owners of Valpo + their respective citizens	Shared with others Valpe's municipalities shareholders in assembly and board (interlocking: one board member in common) + lead role (same managing director as Contarina)
Contarina: partnership with Fater	To develop a new technology for recovery and recycling materials from used nappies	Fater, a JV between an Italian pharmaceutical company and Procter & Gamble	Hub-and-spoke (contract-based dyadic relationship)
Comieco: collaboration with Barilla	To support Barilla in the development of more recyclable packaging for pasta and cookies	Barilla (the largest Italian producer of pasta)	Hub-and-spoke (contract-based dyadic relationship)

Fig. 3. Individual CE projects (examples) and their governance.

existing and new stakeholders. Interestingly, these projects' governance models may differ from the general stakeholder governance adopted by the FC. For instance, Aquafil has been part (2017–2022) of an EU-funded, research partnership named 'Effective,' involving Genomatica (US-based) and 12 European companies to develop a new, bio-based raw material (bio-caprolactam). Whereas Aquafil as a whole has a hub-and-spoke stakeholder governance model, this partnership has several features of both a shared (an assembly composed of one representative – with one voting right – for each participant and a two-thirds majority to make decisions) and a lead governance one: Aquafil, as coordinator and responsible of the relationships with EU Commission, plays the role of an 'orchestrator' and 'primus inter pares.' In addition to multiple on-site visits, training initiatives, and information- and knowledge-sharing meetings, Contarina provides support for transferring its model to other municipalities, waste utilities, airports, universities, etc., under contractual cooperation agreements, which may entail the temporary relocation of Contarina's managers and employees (Romano et al., 2022). However, in one case (that of a waste utility serving neighbouring municipalities), it received ownership rights and assumed governance roles in utility support. Similarly, Comieco, a case of shared governance, engages in dyadic, contract-based relationships with relevant stakeholders, such as pasta producers, to create innovative cardboard packaging.

5. Results: factors affecting stakeholder governance effectiveness

Our findings indicate that the comparative effectiveness of the three stakeholder governance forms proposed by B&S (2022a,b) depends on three elements at FC level – namely CE boundaries, owners' identity, and market incentives' effectiveness – and two elements at individual project level (Fig. 4), namely nature of business model activities and resources and capabilities controlled by stakeholders. Fig. 5 illustrates some supporting evidence (quotes from the interviews) of these elements, as they emerged from the data analysis.

5.1. The comparative effectiveness of stakeholder governance forms at a FC level

5.1.1. CE boundaries

Boundaries relate to both the scope of 'inter-organizational collaboration' (Bocken and Konietzko, 2023, p. 410) required for the development and implementation of a CBM and 'how far can (and should) its impact reach' (Bocken et al., 2019, p. 4). These boundaries correspond to the micro, meso, and macro levels (Meath et al., 2022), that is, the levels at which Aquafil, Comieco, and Contarina operate, respectively. In the latter two cases, a successful transition to CE depends on the cooperation of all members that form the 'community' (e.g. the companies of a supply chain or the citizens of a region) and is likely to produce some effects (costs and/or benefits) on all of them. Thus, all else being equal, each member is motivated to cooperate to the extent it has a say on the rules about how costs and benefits are distributed and is in a position to control that the other members do not act opportunistically but cooperate with the CE.

In communities (such as industries or supply chains) whose members share specific technical knowledge and expertise and are to some extent rival, a shared form of governance is likely to produce a better impact on their willingness to cooperate with respect to a lead role form. A former chairman of Comieco, who helped design its shared governance model, acknowledged that the law gives individual enterprises the opportunity

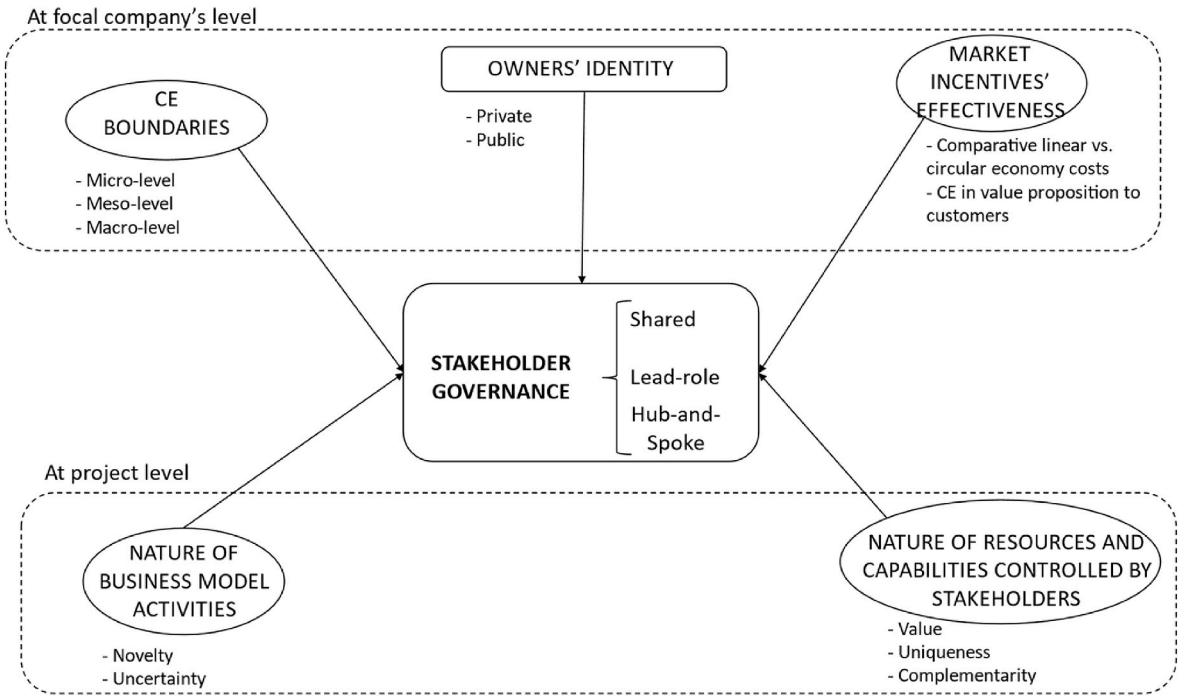


Fig. 4. The comparative effectiveness of stakeholder governance forms for the CE: a contingent model.

to independently comply with recycling requirements, but the consortium form has proven to be the most efficient one also for the largest firms and for those downstream in the supply chain.

A consortium like Comieco is able to combine economies of scale and specialised know-how related to the CE with shared rules of cost allocation (the CONAI environmental contribution) and value distribution (access to recycled raw material), which maximizes value creation for the supply chain as a whole and the perception of fairness by individual companies. It is an effective governance arrangement to lead the transition to the CE at meso level.

The lead role governance of Contarina, an operating company owned by a consortium formed by municipalities, is the solution designed to engage relatively unskilled stakeholders (the citizens) and delegate specialised managers to act on their behalf. As a mayor of a municipality (and founder of the Consortium Priula) declared, we understood one fundamental thing: the consortia of municipalities are the receivers of citizens' sensitivities, while the operating company is the one that has to implement what the municipalities want to do. The political debate takes place in the consortium, the business activity in the company. The latter must have the technicians who can implement the will of the municipalities.

Not surprisingly, the authors who call for bottom-up, shared, participative or polycentric forms of stakeholder governance generally refer to CE within industrial systems (Patala et al., 2022), industries (Schultz et al., 2021, 2024), platforms for infrastructure industry (Meath et al., 2022), or ecosystems (Moggi and Dameri, 2021). That is to say, CE at meso or macro level.

Therefore, we propose.

Proposition 1. *In comparative terms, the Hub-and-Spoke, Lead Role and Shared Governance are the most effective stakeholder governance forms in order to motivate a focal company's stakeholders to cooperate with the circular economy at micro, macro, and meso-levels, respectively.*

5.1.2. Owners' identity

Several literature contributions explain that the owners of a firm affect its CG and strategic orientation (Shleifer, 1998; Connelly et al., 2010), and environmental strategy (Tan, 2002), and 'shape the underlying motivations of the firms accordingly which then might influence the implementation of sustainability' (Ali Yawar and Kuula, 2021, p. 2). Our study suggests that a FC's owners' identity affects stakeholder governance effectiveness for the CE.

In case of privately-owned, for profit companies, the hub-and-spoke governance form is likely to be preferred since it is the least costly one. The time, effort and energies that any type of shared governance requires to listen to everyone's opinion and reach a common will are less compatible with efficiency seeking behaviours. Moreover – as in the case of Aquafil – the entrepreneur or managers are likely to prefer independent, dyadic firm–stakeholder relationships defined by contracts and agreements. This way, they can negotiate the best conditions to access resources for CE with each individual provider.

Aquafil collaborates with many different stakeholders to foster its business and its circular product ECONYL®, developing direct individual contracts and agreements to collaborate. This is the case of the digital platform bringing ECONYL® to conscious consumers; this commercial online platform is directly managed by Aquafil that invites different brands to contribute and share their products without requiring (and even fostering) direct partnerships among these fashion brands, that all concurrently contribute to increase consciousness for circular products in online shoppers, but are in competition each others to sell their products.

In a municipality-owned company like Contarina, a lead governance form ensures two key conditions for an effective transition to the CE: first, the delegation of the task to competent managers to develop a circular business model; second, the engagement of citizens (as key actors for successful separate collection of waste) through information sharing and public debate, as well as of other municipalities to exchange experience and knowledge on the CE.

A lead governance form and the engagement of citizens would be much more difficult to realize in case of private ownership of a waste management company, both because citizens would not have the same trust in a private enterprise as they have in municipalities and public bodies, and because sharing governance is costly (B&S, 2022a,b) and, thus, may negatively affect profitability. Consistent with the Contarina case, Corvellec et al. (2012) acknowledged that the raison d'être of the two Swedish, publicly-owned waste management companies they

Quotes from the interviews	First-order themes	Second-order themes
That of paper packaging is a complex value-chain. Within the consortium governance bodies conflicts among different associates emerge, but they represent an opportunity because help understand that certain choices and decisions on the CE have impacts on the entire value system and take into account their interlocking effects (manager, Comieco)	Focus on the entire value-chain	CE BOUNDARIES
The desire to have an entirely public company was a strong expression of the territory (managing director of the Consorzio Priula, owner of Contarina) The will of citizens is known through the assembly of mayors of municipalities within the Consortium that owns Contarina. So many meetings are held among the mayors of the territory on waste issues! There are constant relationships with administrators and mayors, but also direct relationships with citizens through newspapers, social networks, and information desks ("ecosportelli") located across the entire territory (vice-chairman of Contarina)	The will of the territory and of its citizens	
Citizens go to the mayor to complain when rates are raised … this cannot happen when a waste company is owned by private shareholders (owner representative, Contarina)	Private vs. public owners	OWNERS' IDENTITY
When a private shareholder had a 49% stake in our company and appointed the CEO, their goal was to build a plant, an incinerator. This would have been a more profitable form (but less circular) of waste management but is was not what the municipalities and their citizens wanted. We started a negotiation by saying that we would never build an incinerator. In June 2006 we reached 100% of the capital (former manager, Contarina)	Public ownership	
Citizens tend to transfer to Contarina and its managers the same trust they have in the municipalities where they live, which enhances the effectiveness of the multiple initiatives of sensitization, education and training on circular economy and the pay-as-you-throw tariff system (owner representative, Contarina)	Trust in municipalities	
Paradoxically, the Consortium handles a lesser amount of paper waste when its demand and price are higher. In such a case, municipalities are free to contract directly with treatment plants and paper mills. The consortium has just a subsidiary role to the market when it doesn't work (manager, Comieco)	Consortium as subsidiary to the market	*MARKET INCENTIVES EFFECTIVENESS*
The cost of regenerated product is becoming increasingly lower with respect to the virgin one, thanks to continuous, incremental technological improvements, an increasingly more efficient organization of the "reverse logistics" (i.e., the waste material recovery and transportation chain), as well as improved access to secondary raw material (the true bottle neck) through acquisitions and agreements with suppliers (owner, Aquafil)	Relative cost of regenerated products	
It is not easy to distinguish how much of the higher price depends on sustainability; in general, however, ECONYL® yarn allows us to tick off a certain price premium. We have shown that we are the only ones producing regenerated yarn, and customers appreciate it. For the same performance, customers prefer the sustainable product to the conventional one (manager, Aquafil)	CE as a driver of differentiation	
It will take 2-3 years to build a plant to produce biocaprolactam on an industrial scale, and we expect to go to market by 2028 (manager, Aquafil)	Long-term oriented, innovative, projects	*NATURE OF BUSINESS MODEL ACTIVITIES*
The key resources we transfer through the cooperation agreements with municipalities that intend to learn and adopt the "Contarina model" for CE is the know-how behind it, relating to logistics, customer relationship management, IT, vehicle and equipment selection, legal issues, and communication (owner, Contarina)	Valuable resources for CE	*NATURE OF RESOURCES AND CAPABILITIES CONTROLLED BY STAKEHOLDERS*
Developing a truly circular system is much more complicated if you don't control the whole value system. So, what do you have to have? Some value chains in Asia. Now actually, for example in Japan we have partnerships with very important Japanese companies, who actually control the whole production chain in Asia. In Asia very often the fiber producer or perhaps the garment maker has created an integrated system (manager, Aquafil)	Control of the value chain as a key resource for CE	

Fig. 5. – Quotes from the interview and their coding.

studied 'is not to maximize their own profit. Rather, it is to offer their communities socially, economically, and environmentally sustainable waste management services and even to promote local and regional development' (p. 514).

In case of private ownership, the adoption of any form of shared or multi-stakeholder governance, through which 'the allocation of strategic control is shared amongst a multiplicity of patrons, who have voice also in decisions about the allocation of surplus' (Sacchetti and Tortia, 2016), is likely to be more effective for non-profit organisations.

Given these insights, we propose.

Proposition 2. *In comparative terms, the Hub-and-Spoke, Lead Role and Shared Governance are the most effective stakeholder governance forms in order to motivate a focal company's stakeholders to cooperate with the circular economy in case of private, public, and non-profit private ownership, respectively.*

5.1.3. Market incentives' effectiveness

Our study suggests that when market incentives for the CE are effective – that is, the CE is economically more convenient than the linear one for a FC and its stakeholders – the hub-and-spoke is the best stakeholder governance form to motivate stakeholders to cooperate with the CE. Aquafil – a case of a hub-and-spoke stakeholder governance – is increasingly able to procure and process secondary raw materials at lower costs than the virgin ones thanks to contract-based, one-to-one agreements with suppliers, improved logistics, technological upgrading and increasing experience with polymer processing plants. On customer side, fashion companies have launched collections using the Econyl fabrics produced by Aquafil, with premium prices. Overall, the environmental (enhancing the CE) and economic goals are becoming increasingly aligned. In the case of Contarina, the remunicipalisation of waste management service and the adoption of a lead governance model were decided when the profit maximisation goal would have led private

owners to build an incinerator instead of developing waste selection plants and fostering recycling activities.

At times when the market price of recycled paper covers the cost of paper recycling collection, Comieco 'steps aside' from its intermediary role, and municipalities are free to sell the wasted paper they have collected directly to paper mills or treatment plants. Such a case suggests that, when market incentives work, a shared governance of a FC may be redundant even when CE is pursued at meso or macro levels.

When the circular economy is economically convenient with respect to the linear one, rivalry and profit-seeking may drive a FC's adoption of a CBM, and market contracting is sufficient to motivate stakeholders to cooperate without any need to assign them governance rights (Stoelhorst and Vishwanathan, 2024). Stakeholders cooperate with the CE achievement without 'the expenditure of resources, time, effort, and opportunities forgone in decision-making' when governance is shared (B&S, 2022a,b p. 222). Hence, the FC (or even each company involved in the CBM) can be governed through a hub-and-spoke form even when transition to the CE occurs at meso or macro level.

We thus propose.

Proposition 3. *When market incentives to the circular economy are effective, the Hub-and-Spoke stakeholder governance form is more effective than Lead Role and Shared Governance ones to motivate a focal company's stakeholders to cooperate with the circular economy. Vice versa, when market incentives to the circular economy are not effective, Lead Role and Shared Governance forms are more effective than the Hub-and-Spoke one.*

5.2. The comparative effectiveness of stakeholder governance forms of a project

B&S (2022a,b) argue that the comparative effectiveness of the three governance forms depends on the nature of value creation activities, namely the levels of complexity and dynamism that the three forms of governance 'can accommodate effectively' (2022a, p. 228). Our empirical evidence confirms this theoretical insight, but suggests that the nature of value creation activities may be different for different projects that contribute to a FC's transition toward the CE. Significantly, B&S (2022a,b), while applying their conceptual framework to a FC as a whole, illustrate a program (the Nestlé Nespresso AAA sustainable quality program) and a project (to build a new gas network in Argentina) as exemplary cases of lead role and shared governance, respectively. The logic is that each FC engaged in a transition toward the CE often implements, develops, or innovates its CBM through a bundle of projects with different stakeholder sets, whose motivation to cooperate may require different contractual and governance arrangements. Thus, stakeholder governance of individual projects may differ from that of the FC as a whole as in the example reported in Fig. 6, where a FC with a hub-and-spoke stakeholder governance manages two relevant projects for CE within it with different stakeholder governance forms. Tailoring stakeholder governance to each project increases governance flexibility and makes it possible to enhance its overall effectiveness without affecting that of the FC as a whole.

This is the case, for instance, of the 'Effective' project undertaken by Aquafil, whose results – the development and large scale production of a bio-caprolactam – are highly uncertain and expected no earlier than 2028. Whereas Aquafil is a Hub-and-Spoke case, the stakeholder governance of this project has some features of both a lead role and shared governance model. This example suggests that – in line with B&S (2022a) – in case of a project with high degree of novelty and uncertainty, 'community governance' is required to ensure all stakeholders' active involvement, cooperation and risk taking, and to prevent opportunistic behaviours and free riding. A leadership role should be entrusted to a stakeholder with the authority and legitimacy to be the 'primus inter pares' and to play the role of an 'arbiter': such legitimacy is often ensured by specialised, 'unique' resources. Shared governance should be preferred to the lead role one when relevant knowledge and capabilities are relatively equally distributed among involved stakeholders in that specific project, even if the FC has adopted a diverse, broad, stakeholder governance model.

We therefore propose.

Proposition 4. *The effectiveness of shared models of stakeholder governance of an individual project increases as the level of novelty and uncertainty of its activities increases. In other words, a Hub-and Spoke model is the*

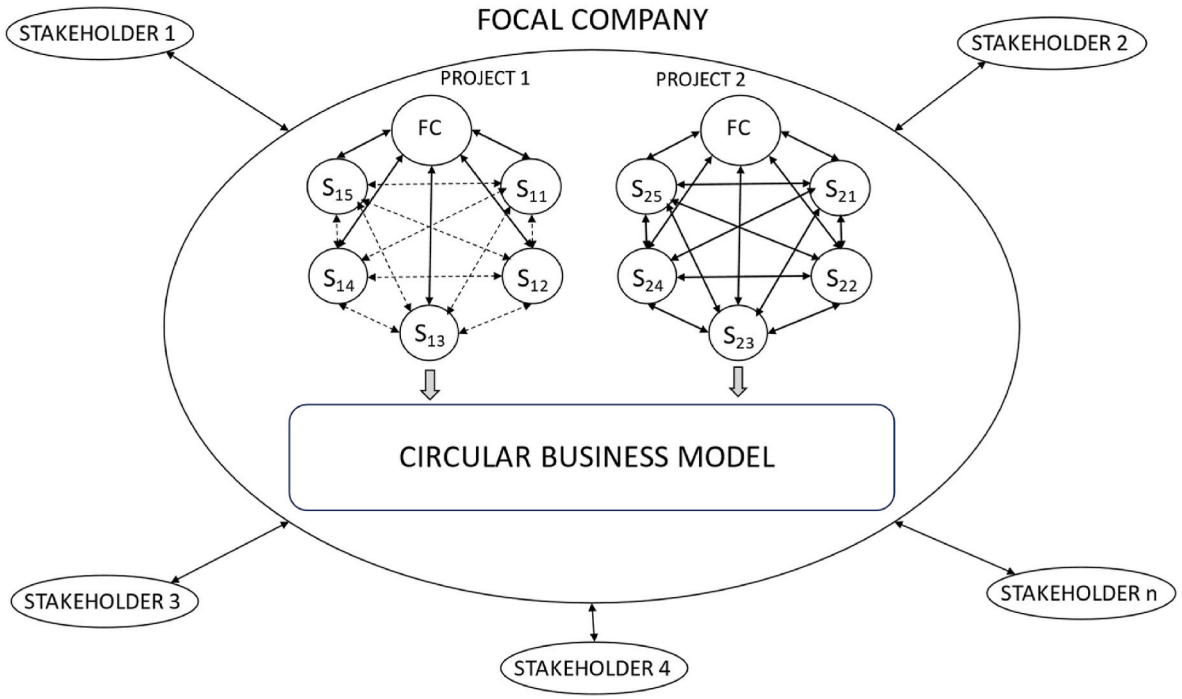


Fig. 6. – A FC with a hub-and-spoke stakeholder governance and two projects within it with different stakeholder governance forms
Note: Sij represents the stakeholder j involved in the project i.

most effective to motivate stakeholders to cooperate with the circular economy in case of low novelty and uncertainty, but shared governance is the most effective in case of high novelty and uncertainty.

Governance can be appropriately distributed in either Lead role and Shared governance form also in case of projects involving broad teams of stakeholders holding complementary, unique, potentially valuable resources for transition to the CE, when the exploitation of this potential requires some joint development activities, and all stakeholders intend to share the results of their cooperation.

This is what happened, for instance, in a few projects where Contarina has shared its know-how with other municipalities or waste companies, with the purpose of transferring its circular business model. A waste company located in a neighbouring territory that was inspired by the 'Contarina model,' shares with Contarina a board member and the managing director. Aquafil is involved in some partnerships with a Japanese company: the former brings its technological know-how related to Econyl, the latter its network of relationships with the whole production chain that it controls in Asia. In cases like the above mentioned, some kind of shared ownership and governance – typically in the form of an equity partnership (i.e. a joint venture) – disciplines the partners roles in decision making as well as the distribution of residuals, thus encouraging and facilitating the cooperation and the joint exploitation of valuable, complementary resources.

We thus propose.

Proposition 5. *The effectiveness of shared models of stakeholder governance of an individual project increases as the value, uniqueness and complementarity of resources for pursuing the circular economy controlled by the focal company and its relevant stakeholders increases*.

6. Discussion

Recent studies have emphasized that an effective transition to the CE at micro, meso, and macro levels requires some forms of shared or collective stakeholder governance, such as a polycentric (Patala et al., 2022), democratic (Moggi and Dameri, 2021), or participative (Aguinaga et al., 2018) form. The logic is that such a transition is complex and requires innovation, resource sharing and coordination among multiple actors, which, in turn, requires the active involvement and collaboration of a variety of stakeholders with different roles (technology providers, customers, suppliers, policymakers), from different organisations (companies, associations, municipalities, etc.) and from different supply or value chains. Yet, there is still a lack of scholarly contributions on how stakeholder governance can foster stakeholder cooperation to support such a transition (Schultz et al., 2024) or, more generally, firms' active involvement in dealing with the grand societal and environmental challenges. Stakeholder theory, in particular, seems to be 'firm-centric' and prioritises how to manage possible trade-offs among stakeholders rather than to mobilise them to achieve collective goals (Johnson-Cramer et al., 2022). The recent contribution of Bridoux and Stoelhorst (2022a) on stakeholder governance to solve collective action problems is helpful in filling this gap since it proposes a conceptual framework on how governance can support joint value creation rather than simply defining rules for a fair distribution of the value created. Thus, it seems particularly valuable for the domain of the CE, because the transition to the CE is a promising path toward the common good of environmental sustainability, but tensions between individual (short-term) interests and collective (long-term) goals can emerge along this path and need to be solved.

The research question we intended to answer is which factors make each of the three stakeholder governance forms proposed by B&S, 2022a,b more effective than the other two in motivating a FC's stakeholders to cooperate to the CE. We thus developed a conceptual framework with the purpose of accomplishing the three goals of a grounded model identified by Magnani and Gioia (2023) to address the research question. First, our framework *confirms* the B&S, 2022a,b idea that the effectiveness of different stakeholder governance models depends on the nature of activities – namely their level of novelty and complexity – carried out to develop and implement a circular business model. Second, it *extends* the knowledge developed by B&S, 2022a,b in that it is applied to the specific domain of the CE and is expanded from the context of a focal firm to that of individual CE projects undertaken within it. Third, it *generates* some new concepts and ideas, as it proposes CE boundaries, owners' identity, and market incentives effectiveness as new factors that are likely to affect the comparative effectiveness of the different stakeholder governance forms and, thus, may drive the decision of which of them to adopt to foster stakeholder cooperation at a FC level.

Fig. 7 provides a graphical representation of how the proposed conceptual framework – in the form of an illustrative grounded model – emerged at the end of the research process conducted in line with the GM (Magnani and Gioia, 2023). This process encompasses analysis of the main theory (B&S, 2022a,b), data analysis in the context of CE, emergence of propositions that both confirm the B&S theory and extend it in the light of empirical analysis and of extant theory on stakeholder governance and governance of the CE. The final step is a verification of emerging theory with key informants of the three cases.

This study provides two main contributions to bridge the knowledge gap on how stakeholder governance can foster the transition toward CE (Schultz et al., 2024). First, leveraging Bridoux and Stoelhorst (2022a), it proposes a contingent model that identifies the factors that influence the effectiveness of three different forms of stakeholder governance and the attitude of each model to engage and motivate a firm's stakeholders to cooperate in the transition toward CE. Second, it adds value to the B&S theoretical framework by demonstrating that different forms of stakeholder governance can be adopted at the FC and individual project levels. Indeed, each FC engaged in the transition toward a CE can implement, develop, or innovate its CBM through a bundle of projects with different stakeholder sets that may require different governance arrangements.

7. Conclusions

This paper was motivated by the challenge to understand which factors make each of the three stakeholder governance forms identified by Bridoux and Stoelhorst (2022a) more effective than the other two in motivating stakeholders to cooperate for the development and implementation of a circular business model. Following an emerging and promising research stream (Schultz et al., 2024; Castro-Lopez et al., 2023; Schultz et al., 2021), we adopted a qualitative research approach (Magnani and Gioia, 2023) that led us to develop a contingent model of CE stakeholder governance.

Our study provides both theoretical and practical contributions. From a theoretical viewpoint, this paper contributes to the advancement of knowledge at the intersection of stakeholder theory and governance of the CE. By asking which governance forms can motivate a company's stakeholders to actively collaborate in the transition to the circular economy, the paper helps to shift from a perspective of a company responsibility to its stakeholders to that of stakeholders' responsibility to a company, a supply chain or a local community they belong to (Fassin, 2012). Furthermore, it adds value to the scholarly conversation on the need of shared forms of governance for boosting CE by proposing some conditions under which these forms are likely to be beneficial. From a pratical perspective, this paper sheds light on stakeholder governance as a practical tool to achieve CE goals. Even if the focus is on companies, our study might offer useful guidelines to firm managers, local administrators, firm associations, as well as industry representatives that aim to achieve CE targets at local community, industry, supply chain or individual firm level. In case of a company committed to CE through the design and implementation of multiple CE projects, stakeholder governance can be tailored to the specific features of each project to maximize their overall effectiveness in achieving CE targets without affecting the

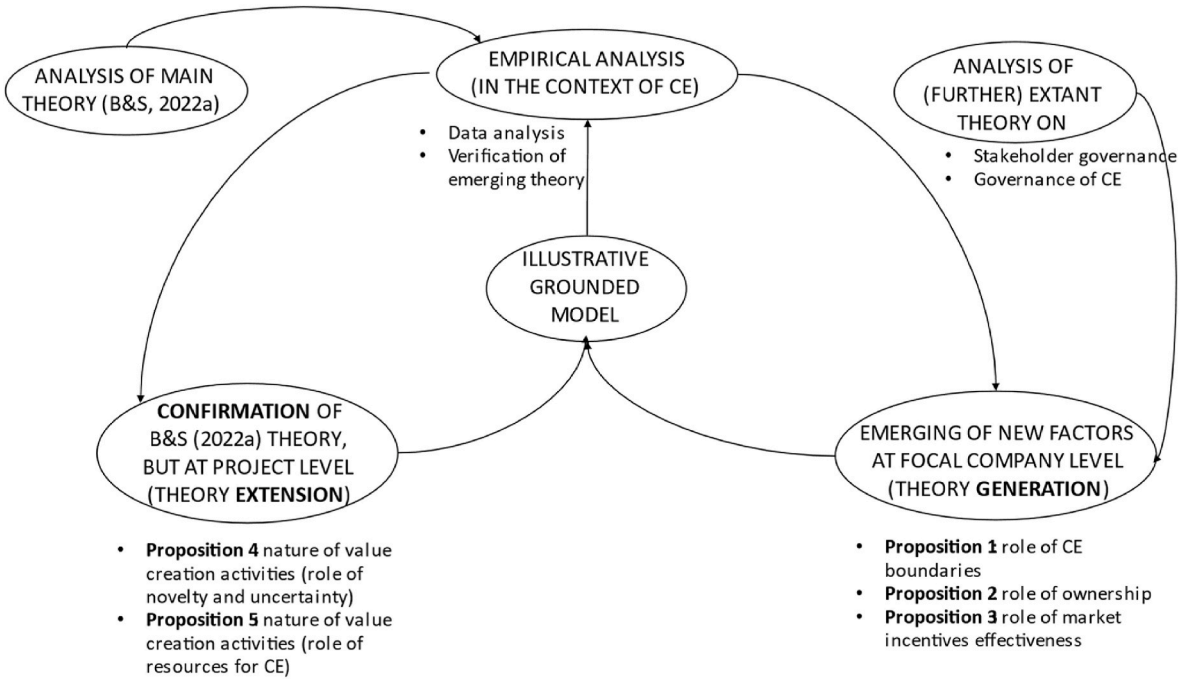


Fig. 7. A graphical representation of the process leading to the illustrative grounded model following Magnani and Gioia (2023).

whole FC's governance.

This study has several limitations. Importantly, it was built on only three Italian cases. Moreover, the comparative analysis is limited to three forms of stakeholder governance. Much remains to be done to advance both theory and managerial knowledge on a key issue of sustainability, that is, the role of stakeholder governance in supporting the transition to a CE. First, future research might want to consider and compare a wider set of institutional arrangements, including regulation, governance, and market contracting, and evaluate a wider set of governance rights encompassing decision making, advice, and information sharing (Stoelhorst and Vishwanathan, 2024). Second, scholars could further explore 'the comparative efficiency of different types of organisational forms (e.g. for-profit organisations, social enterprises, cooperatives) (…) (Cabral et al., 2019; Luo and Kaul, 2019; B&S, 2022a, b) to incentivise stakeholder cooperation in the CE. Finally, there is still much room to explore the stakeholder governance theory for CE at the meso and macro levels by considering more complex organisational forms than individual companies, such as groups, networks, and other types of organisational combinations.

CRediT authorship contribution statement

Mario Minoja: Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Giulia Romano:** Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgements

This study received funding from the European Union - Next GenerationEU - National Recovery and Resilience Plan (NRRP) - MISSION 4 COMPONENT 2, INVESTMENT N. 1.1, CALL PRIN 2022 D.D. 104 02-02-2022 - (Climbing the Waste Hierarchy: enabling factors and policies, CLIWEP) CUP N.I53D23002730006. The two authors contributed equally.

References

Adeoye-Olatunde, O.A., Olenik, N.L., 2021. Research and scholarly methods: semistructured interviews. JACCP: J. Am. Coll. Clin. Pharm. 4 (10), 1358–1367. https://doi.org/10.1002/jac5.1441.
Aguinaga, E., Henriques, I., Scheel, C., Scheel, A., 2018. Building resilience: a self-sustainable community approach to the triple bottom line. J. Clean. Prod. 173, 186–196.
Ali Yawar, S., Kuula, M., 2021. Circular economy and second-hand firms: i ntegrating ownership structures. Cleaner Logistics and Supply Chain 2, 100015.
Amis, J., Barney, J., Mahoney, J.T., Wang, H., 2020. From the editors: why we need a theory of stakeholder governance — and why this is a hard problem. Acad. Manag. Rev. 45 (3), 499–503.
Ansell, C., Gash, A., 2008. Collaborative governance in theory and practice. J. Publ. Adm. Res. Theor. 18 (4), 543–571.
Arfaoui, N., Le Bas, C., Vernier, M.-F., Vo, L.-C., 2022. How do governance arrangements matter in the circular economy? Lessons from five methanation projects based on the social-ecological system framework. Ecol. Econ. 197 (107414), 1–17.
Atasu, A., Dumas, C., Van Wassenhove, L.N., 2021. The circular business model. Harv. Bus. Rev. 1–11. July-August.
Barney, J.B., 2018. Why resource-based theory's model of profit appropriation must incorporate a stakeholder perspective. Strat. Manag. J. 39 (13), 3305–3325.
Bocken, N., Boons, F., Baldassarre, C., 2019. Sustainable business model experimentation by understanding ecologies of business models. J. Clean. Prod. 208, 1498–1512 (VSI: Sustainable Circularity).
Bocken, N., Konietzko, J., 2023. Experimentation capability for a circular economy: a practical guide. J. Bus. Strat. 44 (6), 406–414.
Bourgeois III, L.J., Eisenhardt, K.M., 1988. Strategic decision processes in high velocity environments: four cases in the microcomputer industry. Manag. Sci. 34 (7), 816–835.
Bridoux, F., Stoelhorst, J.W., 2022a. Stakeholder governance: solving the collective action problems in joint value creation. Acad. Manag. Rev. 47 (2), 214–236.
Bridoux, F., Stoelhorst, J.W., 2022b. Stakeholder theory, strategy, and organization: past, present, and future. Strat. Organ. 20 (4), 797–809, 2022.
Cabral, S., Mahoney, J.T., McGahan, A.M., Potoski, M., 2019. Value creation and value appropriation in public and nonprofit organizations. Strat. Manag. J. 40 (4), 465–475.

Chari, A., Niedenzu, D., Despeisse, M., Gonçalves Machado, C., Domingues Azevedo, J., Boavida-Dias, R., Johansson, B., 2022. Dynamic capabilities for circular manufacturing supplychains - exploring the role of Industry 4.0 and resilience. Bus. Strat. Environ. 31, 2500–2517.
Coffay, M., Bocken, N., 2023. Sustainable by design: an organizational design tool for sustainable business model innovation. J. Clean. Prod. 427, 139294.
Connelly, B.L., Hoskisson, R.E., Tihanyi, L., Certo, S.T., 2010. Ownership as a form of corporate governance. J. Manag. Stud. 47 (8), 1561–1589.
Corvellec, H., Bramryd, T., Hultman, J., 2012. The business model of solid waste management in Sweden – a case study of two municipally-owned companies. Waste Manag. Res. 30 (5), 512–518.
Corvellec, H., Stowell, A.F., Johansson, N., 2022. Critiques of the circular economy. J. Ind. Ecol. 26, 421–432.
Costanza, F., 2023. When the business is circular and social: a dynamic grounded analysis in the clothing recycle. J. Clean. Prod. 382, 135216.
Cramer, J., 2022. Effective governance of circular economies: an international comparison. J. Clean. Prod. 343, 1–12, 130874.
De Marchi, V., Di Maria, E., Micelli, S., 2013. Environmental strategies, upgrading and competitive advantage in global value chains. Bus. Strat. Environ. 22, 62–72.
EEA (European Environmental Agency), 2016. Circular economy in Europe. Developing the Knowledge Base. EEA Report No 2/2016.
Eisenhardt, K.M., 1989. Building theories from case study research. Acad. Manag. Rev. 14 (4), 532–550.
Eisenhardt, K.M., Graebner, M.E., 2007. Theory building from cases: opportunities and challenges. Acad. Manag. J. 50 (1), 25–32.
Esposito, B., Raimo, N., Malandrino, O., Vitolla, F., 2023. Circular economy disclosure and integrated reporting: the role of corporate governance mechanisms. Bus. Strat. Environ. 1–17.
Fassin, Y., 2012. Stakeholder management, reciprocity, and stakeholder responsibility. J. Bus. Ethics 109 (1), 83–96.
Freeman, R.E., Reed, D.L., 1983. Stockholders and stakeholders: a new perspective on corporate governance. Calif. Manag. Rev. 25 (3), 88–106.
Garriga, E., 2009. Cooperation in stakeholder networks: firms' 'tertius iungens' role. J. Bus. Ethics 90, 623–637.
Garcés-Ayerbe, C., Rivera-Torres, P., Suárez-Perales, I., 2019. Stakeholder engagement mechanisms and their contribution to eco-innovation: differentiated effects of communication and cooperation. Corp. Soc. Responsib. Environ. Manag. 26 (6), 1321–1332.
Gehman, J., Glaser, V.L., Eisenhardt, K.M., Gioia, D., Langley, A., Corley, K.G., 2018. Finding theory–method fit: a comparison of three qualitative approaches to theory building. J. Manag. Inq. 27 (3), 284–300.
Geissdoerfer, M., Santa-Maria, T., Kirchherr, J., Pelzeter, C., 2023. Drivers and barriers for CBM innovation. Bus. Strat. Environ. 32, 3814–3832.
Gennari, F., 2023. The transition towards a circular economy. A framework for SMEs. J. Manag. Govern. 27, 1423–1457.
Gioia, D.A., Chittipeddi, K., 1991. Sensemaking and sensegiving in strategic change initiation. Strat. Manag. J. 12, 433–448.
Gioia, D.A., Corley, K.G., Hamilton, A.L., 2012. Seeking qualitative rigor in inductive research: notes on the Gioia methodology. Organ. Res. Methods 16 (1), 15–31.
Henry, M., Kirchherr, J., Raven, R., Hekkert, M., 2024. Bottom-up dynamics in circular innovation systems. The perspective of circular start-ups. J. Ind. Ecol. 28, 320–338.
Hina, M., Chauhan, C., Sharma, R., Dhir, A., 2023. Circular economy business models as pillars of sustainability: where are we now, and where are we heading? Bus. Strat. Environ. 32, 6182–6209.
Johnson-Cramer, M.E., Phillips, R.A., Fadlallah, H., Berman, S.L., Elms, H., 2022. What we talk about when we talk about stakeholders. Bus. Soc. 61 (5), 1083–1135.
Kahupi, I., Yakovleva, N., Hull, C.E., Okorie, O., 2024. Factors affecting the adoption of circular economy in mining companies of developing economies — a Namibian stakeholder perspective. J. Environ. Manag. 361, 121214.
Khan, O., Daddi, T., Iraldo, F., 2020. Microfoundations of dynamic capabilities: insights from circular economy business cases. Bus. Strat. Environ. 29, 1479–1493.
Kirchherr, J., Yang, N.N., Schulze-Spüntrup, F., Heerink, M.J., Hartley, K., 2023. Conceptualizing the circular economy (revisited): an analysis of 221 definitions. Resour. Conserv. Recycl. 194, 107001.
Köhler, J., Sönnichsen, S.D., Beske-Jansen, P., 2022. Towards a collaboration framework for circular economy: the role of dynamic capabilities and open innovation. Bus. Strat. Environ. 31 (6), 2700–2713.
Luo, J., Kaul, A., 2019. Private action in public interest: the comparative governance of social issues. Strat. Manag. J. 40 (4), 476–502.
Magnani, G., Gioia, D., 2023. Using the Gioia Methodology in international business and entrepreneurship research. Int. Bus. Rev. 32, 102097.
Meath, C., Karlovšek, J., Navarrete, C., Eales, M., Hastings, P., 2022. Co-designing a multi-level platform for industry level transition to circular economy principles: a case study of the infrastructure CoLab. J. Clean. Prod. 347, 131080.
Milios, L., 2020. Policy Framework for Material Resource Efficiency: Pathway towards a Circular Economy. doctoral dissertation, available at: 294381_Leonidas Milios (lu.se) (last accessed 04.05.2024).
Minoja, M., Romano, G., 2020. Imprenditorialità consortile ed economia circolare nella filiera cartaria. Il Caso Comieco. Egea, Milano.
Minoja, M., Romano, G., 2021. Managing intellectual capital for sustainability: evidence from a Re-municipalized, publicly owned waste management firm. J. Clean. Prod. 279, 123213.
Moggi, S., Dameri, R.P., 2021. CBM evolution: stakeholder matters for a self-sufficient ecosystem. Bus. Strat. Environ. 30 (6), 2830–2842.
Morseletto, P., 2023. Sometimes linear, sometimes circular: states of the economy and transitions to the future. J. Clean. Prod. 390, 136138.
Oskam, I., Bossink, B., de Man, A., 2018. The interaction between network ties and business modeling: case studies of sustainability-oriented innovations. J. Clean. Prod. 177, 555–566.
Patala, S., Albareda, L., Halme, M., 2022. Polycentric governance of privately owned resources in circular economy systems. J. Manag. Stud. 59 (6), 1563–1596.
Romano, G., Marciano, C., Fiorelli, M.S., 2021. Best Practices in Urban Solid Waste Management: Ownership, Governance, Drivers of Performance in a Zero Waste Framework. Emerald Publishing, London.
Romano, G., Marciano, C., Minoja, M., 2022. Successful remunicipalization processes in Italian waste management: triggers, key success factors, and results. Int. Rev. Adm. Sci. https://doi.org/10.1177/00208523221077574.
Sacchetti, S., Tortia, E., 2016. The extended governance of cooperative firms: inter-firm coordination and consistency of values. Ann. Publ. Cooper. Econ. 87, 93–116.
Scherer, A.G., Voegtlin, C., 2020. Corporate Governance for responsible innovation: approaches to corporate governance and their implications for sustainable development. Acad. Manag. Perspect. 34 (2), 182–208.
Schultz, F.C., Everding, S., Pies, I., 2021. Circular supply chain governance: a qualitative-empirical study of the European polyurethane industry to facilitate functional circular supply chain management. J. Clean. Prod. 317, 128445.
Schultz, F.C., Valentinov, V., Kirchherr, J., Reinhardt, R.J., Pies, I., 2024. Stakeholder governance to facilitate collaboration for a systemic circular economy transition: a qualitative study in the European chemicals and plastics industry. Bus. Strat. Environ. 33, 2173–2192.
Shleifer, A., 1998. State versus private ownership. J. Econ. Perspect. 12 (4), 133–150.
Stoelhorst, J.W., Vishwanathan, P., 2024. Beyond primacy: a stakeholder theory of corporate governance. Acad. Manag. Rev. 49 (1), 107–134.
Suchek, N., Fernandes, C.I., Kraus, S., Filser, M., Sjögrén, H., 2021. Innovation and the circular economy: a systematic literature review. Bus. Strat. Environ. 30 (8), 3686–3702.
Tan, J., 2002. Impact of ownership type on environment–strategy linkage and performance: evidence from a transitional economy. J. Manag. Stud. 39 (3), 333–354.
van Bueren, B.J.A., Argus, K., Iyer-Raniga, U., Leenders, M.A.A.M., 2023. The circular economy operating and stakeholder model "eco-5HM" to avoid circular fallacies that prevent sustainability. J. Clean. Prod. 391, 136096.
Voss, C., Tsikriktsis, N., Frohlich, M., 2002. Case research in operations management. Int. J. Oper. Prod. Manag. 22, 195–219.
Yin, R.K., 1994. Case Study Research: Design and Methods. Sage, Newbury Park, CA.