

RESEARCH ARTICLE

Stakeholder governance to facilitate collaboration for a systemic circular economy transition: A qualitative study in the European chemicals and plastics industry

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Abstract

Implementing the circular economy (CE) requires novel forms of stakeholder collaboration. While the contemporary literature on stakeholder theory is commonly characterized as “pro-business-oriented,” it remains ambiguous on how precisely stakeholder collaborations may pave the way for a systemic CE transition. By applying a qualitative-empirical research approach utilizing semi-structured interviews, this paper identifies three types of stakeholder governance for CE collaborations—(i) company-centric governance, (ii) industry-oriented governance, and (iii) cross-industry-oriented governance. Our contribution to stakeholder theory lies in examining how a systemic CE transition may bridge “the stakeholder-system divide.” We emphasize the unique role of innovative governance in ensuring the success of stakeholder relationships while highlighting how systemic changes of the business environment may give an impetus to stakeholder collaborations. We contribute to the CE literature by gaining the following insights into stakeholder collaborations in the European chemicals and plastics industry: (a) successful collaborations typically feature a variety of different stakeholders maintaining close mutual interactions; (b) a systemic CE transition calls for managerial strategies that are collectively governance-oriented rather than company-centric. This article thus sheds light on the criticality of stakeholder collaborations and collective-oriented governance strategies in fostering CE practices within the European chemicals and plastics industry highlighting that stakeholder collaborations for a CE need to be extended beyond immediate industrial and sectoral boundaries.

KEYWORDS

circular economy, collaboration, governance, plastics, stakeholder

Abbreviations: CE, circular economy; EU, European Union; GABEK, Ganzheitlich Bewältigung von Komplexität; PUR, polyurethanes.

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1 | INTRODUCTION

Scholars have recently highlighted the necessity to apply stakeholder theory to the circular economy (CE) concept (e.g., Castro-Lopez et al., 2023; de Jesus et al., 2021; Durán-Romero et al., 2020; Hansen & Schmitt, 2021; Jabbour et al., 2020; Jakhar et al., 2019; Köhler et al., 2022; Pinheiro et al., 2022; Schultz et al., 2021) with the aim to facilitate the systemic transition to a functional CE. Against this backdrop, two central ideas have emerged in recent scholarship. First, the transition to a CE must be supported by stakeholder collaborations¹ (Marjamaa et al., 2021; Rincón-Moreno et al., 2022; Seles et al., 2022; Tapaninaho & Heikkinen, 2022), which may be particularly wide-ranging if they stretch beyond industrial or even sectoral boundaries (De Angelis et al., 2018; Fischer & Pascucci, 2017; Schultz & Reinhardt, 2022, 2023). Second, it is widely understood that the CE paradigm entails systemic change at the macro, meso, and micro levels (e.g., Kirchherr et al., 2017; Korhonen et al., 2018,b; Prieto-Sandoval et al., 2018), evidently in view of the fact that sustainability is the ultimate objective of the systemic CE concept (Ghisellini et al., 2016; Kennedy & Linnenluecke, 2022). Therefore, various scholars consider stakeholder collaboration as a critical mechanism for the development and reinforcement of the systemic character of a CE (Ho et al., 2022; Köhler et al., 2022; Marjamaa et al., 2021; Tapaninaho & Heikkinen, 2022).

However, it appears that the CE scholarship has not yet fully examined how stakeholder collaboration that is guided by functional governance could advance the systemic character of a CE (see, e.g., Blomsma et al., 2023; de Jesus et al., 2021; Köhler et al., 2022). In this context, Johnson-Cramer et al. (2022, p. 1112) identify “the stakeholder-system divide” in the current scholarly understanding of stakeholder theory; that is, stakeholder theory is less useful for understanding how corporations promote systemic change or deal with societal grand challenges because of “the disconnection between firm and system-level needs” (ibid). Moreover, stakeholder theory is commonly characterized as “pro-business” and less concerned with broad societal and systemic impacts (Dmytriyev et al., 2021; Freeman et al., 2007, p. iii; Freeman, Phillips, & Sisodia, 2020). This indicates that while stakeholder theory is thought to have a pro-business bias, it might be possible that ultimately it will be able to shed light on the long-term possibilities for a systemic CE. As a result, we have detected a gap in the 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*.

We bridge this gap by emphasizing the idea of innovative governance used by stakeholders involved in creating a CE. Innovative governance can be defined as the introduction of new “means by which to infuse *order*, thereby to mitigate *conflict* and realize *mutual gain*” (Williamson, 2010; p. 674, emphasis in original). While Crane et al. (2014) note that not all societally desirable tasks generate a seamless

business case, this paper follows a notion of thinking that stakeholders may devise and co-create innovative governance structures that do justice to the pro-business orientation of stakeholder theory (cf. Pies et al., 2011). Furthermore, it has been argued that insofar as stakeholder collaborations are guided by innovative governance, they can promote the transition to CE as a systemic change and thus at least partly overcome “the stakeholder-system divide” pointed out by Johnson-Cramer et al. (2022). In addressing this gap of knowledge, we applied qualitative-empirical research (Ariño et al., 2016) and conducted semi-structured interviews utilizing the inductive method GABEK-WinRelan (German acronym: “GANzzeitliche BEwältigung von Komplexität”—holistic processing of complexity) (Zelger, 2000, 2019). Our strategy is to qualitatively explore stakeholder governance types to facilitate collaboration for a CE transition in the chemicals and plastics industry in Europe and beyond.

We focus on the peculiar industry of polyurethanes (PUR) because it holds an immense and yet unrealized potential for a fully-fledged CE transition (Brice, 2019). In the European Union (EU), PUR is one of the most used polymers basically consisting of two chemicals, namely, isocyanates and polyols, with more than four million tons consumed every year (PlasticsEurope, 2020). A vast majority of PUR waste still goes to landfill (45%), accounting for around 460,000 tons annually (EC, 2019; PURESsmart, 2020), thus lasting in our ecosystems for a considerable length of time. In the PUR industry setting, this study identifies a novel distinction between three types of stakeholder governance for CE collaborations—(i) company-centric governance, (ii) industry-oriented governance, and (iii) cross-industry-oriented governance. Particularly, the two latter are characterized by collectively oriented governance structures that need to be developed through co-creation by diverse stakeholders.

Understanding the nature of these types of stakeholder governance for CE collaborations is crucial since it can reveal the prospects for the emergence of *systemic* stakeholder collaborations in the European chemicals and plastics industry and beyond. A variety of the recent literature streams discussing stakeholder collaborations in CE is concerned with stakeholder collaborations within traditional supply chain setting focusing on conventional collaboration interactions between a focal firm² and its immediate upstream suppliers or downstream customers (e.g., de Oliveira et al., 2019; Kazancoglu et al., 2018) or the level of firms' (vertical) integration for circularity (e.g., Hansen & Revellio, 2020). What has often been given less emphasis is how stakeholder governance for CE collaborations may function in a more systemic way by enabling individual corporations to operate beyond immediate industrial boundaries (see, e.g., Blomsma et al., 2023; De Angelis et al., 2018; Fischer & Pascucci, 2017; Schultz & Reinhardt, 2022; Tapaninaho & Heikkinen, 2022). Therefore, this article directly responds to the call by Fischer and Pascucci (2017, p. 19) to explore “the main challenge faced by firms engaged in CE transition,” namely, how “to arrange collaboration and business relations, whilst being constrained by an

¹Collaboration can range from simply sharing information to forming strategic alliances (cf. Soylu et al., 2006).

²The terminology is well established in the supply chain literature (e.g., Chen & Paulraj, 2004). Further, the terminology is interchangeably used with, for example, “leading firm” (Gereffi, 1999).

institutional system that is aligned with the principles of linear economy.” This article shows that collectively developed governance structures provide chemicals and plastics industry supply chain actors with a crucial opportunity to overcome the constraints of the current (linear) institutional system. In doing so, we shed light on the practical side of how to successfully manage circular stakeholder relationships (Marjamaa et al., 2021) guided by governance in a real-world context (De Angelis et al., 2018). The article continues with situating our study in the relevant literature streams in Section 2. We delineate our applied research method in Section 3. We then present our findings in Section 4, followed by the discussion of our findings and derived implications in Section 5. Finally, conclusions are presented in Section 6.

2 | THEORETICAL BACKGROUND

2.1 | Circular economy as a systemic paradigm

The transition to a CE signifies a system-wide shift toward “high-level” circularity (e.g., Hussain & Malik, 2020; Kiefer et al., 2021) by slowing (repair, reuse, remanufacture) and closing (recycling, recovery) resource loops in such a way that the value of materials and products is maximally preserved (Bocken et al., 2017). This shift is a large-scale systemic task that requires innovation activities on the macro, meso, and micro levels (Kirchherr et al., 2017; Korhonen et al., 2018b; Kuzma et al., 2022; Prieto-Sandoval et al., 2018). These levels encompass whole socioeconomic systems (e.g., Ghisellini et al., 2016), value chains (e.g., Bressanelli et al., 2019), business models (e.g., de Sousa Jabbour et al., 2019; Jabbour et al., 2019; Julkovski et al., 2022; Linder & Williander, 2017; Pies & Schultz, 2023), and products/services (e.g., Aguiar et al., 2022). The multi-tiered structure of transitioning to a CE emphasizes the notion that a CE can be seen as a systemic concept that necessitates paradigmatic shifts from pure competition to co-opetition (e.g., Kirchherr et al., 2018). In view of its systemic nature, it appears that the CE transition is unrealistic unless it entails significantly more than incremental adaptations in the conventional company-centric management and decision-making process. In fact, incremental approaches may even deter the required transition process (Velenturf & Purnell, 2021). Simultaneously, a radical and disruptive approach toward CE faces enormous “challenges in the governance and management of ... inter-organizational and inter-sectoral material and energy flows” (Korhonen, Honkasalo, & Seppälä, 2018, p. 45). Hence, scholars are increasingly paying attention to how stakeholder collaborations can operate more successfully in meeting these challenges (e.g., Blomsma et al., 2023; Tapaninaho & Heikkinen, 2022).

The challenges of the transition to a CE are well exemplified by the case of the European PUR plastics industry. PURs include a mixture of polyols, di-isocyanates, and several additives, which may take the form of rigid foams, flexible foams, and CASEs (Coatings, Adhesives, Sealants, Elastomers). Given their broad functional scope, PURs find versatile applications (Akindoyo et al., 2016) and are used in

various end-industries, for example, building and construction, automotive, furniture and mattresses, electronics, and packaging (Simón et al., 2018). In the context of the CE's three “Rs” concept of (i) reduce, (ii) recycle, and (iii) reuse (e.g., Murray et al., 2017), fossil-based PURs can be (i) reduced by replacing polyols with bio-oils (Kurańska et al., 2020) and (ii) recycled, especially in a chemical fashion (Brice, 2019; Simón et al., 2018). While (ii) recycling can be the most promising avenue toward circularity (i.e. chemical recycling), the (iii) reuse of PUR appears quite difficult due to its complex chemical properties. Yet, it remains clear that the application of all three “Rs” to the PUR industry necessitates systemic changes that pose challenges to the traditional company-centric management and decision-making by firms (Tapaninaho & Heikkinen, 2022). The emerging scholarly debates acknowledge that stakeholder collaborations may partly advance toward meeting these challenges, yet more research is in high demand to comprehend how stakeholder collaborations may overcome the company-centric focus and thus enable functional governance of “high-level” circularity (e.g., Hussain & Malik, 2020; Kiefer et al., 2021; Schultz et al., 2021; Schultz & Reinhardt, 2022). Against this backdrop, discussions on the CE have historically tended to be general in nature, often lacking a specific focus on the various facets of major stakeholders and their collaborative efforts (e.g., de Jesus et al., 2021). Relatedly, a recent review by de Jesus et al. (2021, p. 16) emphasizes that “further research is needed to better define the role of diverse stakeholders” and to investigate stakeholder collaborations for facilitating a systemic CE transition in particular.

2.2 | In search of systemic elements in stakeholder theory

As Johnson-Cramer et al. (2022) note, current scholarship in stakeholder theory seems to be affected by “the stakeholder-system divide” that underscores the tendency of the company-centric focus of stakeholder management to sideline the issues of the desirable societal systemic change. This divide has long been acknowledged by those stakeholder theorists who pleaded for “decentering the firm in firm-stakeholder analysis” (Berman & Johnson-Cramer, 2019, p. 1370) and objected to firm-centric understandings of stakeholder collaborations (e.g., Bevan et al., 2019, p. 132; Calton & Payne, 2003; Sachs & Rühl, 2011). These firm-centric understandings are implicit in several crucial concepts used by stakeholder theorists, such as sustainable competitive advantage (Jones et al., 2018) and business case (Schaltegger et al., 2019). As Weitzner and Deutsch (2019) suggest, if stakeholder collaborations create sustainable competitive advantage for a minority of elite firms, these collaborations will likely be insufficient for promoting systemic change that must affect a certain critical mass of market actors. In a similar vein, Schaltegger et al. (2019) note that the notion of business case tends to impose a limitation on the opportunities that managers have for realizing morally desirable goals, such as sustainability, since not all of these goals are translatable into a business case.

At the same time, important scholarly initiatives have emerged on the “decentering of the firm” as pointed out by Berman and Johnson-Cramer (2019). Most relevant to the CE context, Tapaninaho and Heikkinen (2022, p. 2) argue that stakeholder relationships in a CE imply a mode of value creation that goes “beyond the traditional and dominant focus on a single company and on firm profitability and competitiveness,” and thus, it will indeed do justice to “the systemic and collective nature of a CE” (ibid). Apart from that notion of thinking, stakeholder theorists have been attempting to overcome the firm-level focus of stakeholder theorizing by advancing concepts such as stakeholder systems (Roulet & Bothello, 2021), stakeholder networks (e.g., Bevan et al., 2019; Rowley, 1997; Sachs & Rühl, 2011), and relational as well as processual models of stakeholder interaction (Bridoux & Stoelhorst, 2014; Valentinov & Chia, 2022). The ensuing paper argues that these (and similar concepts) harbor a considerable potential for revealing the contribution of stakeholder theory toward promoting systemic change. However, for this potential to get materialized, this paper questions whether stakeholder theorists may need to take into account further efforts, which would show how the promotion of systemic change contributes to resolving trade-offs that may exist between individual stakeholder interests (cf. Rincón-Moreno et al., 2022).

A key implication of the company-centric focus of economic decision-making is a concern with economic optimization, which logically implies trade-offs between conflicting objectives and interests of stakeholders (cf. Jensen, 2001). The issue of trade-offs among legitimate stakeholder interests has received attention from key stakeholder theorists (e.g., Godfrey & Lewis, 2019). Freeman et al. (2010) suggest that managers will be able to overcome such trade-offs by cultivating stakeholder mindsets which may enable “a higher consciousness ... through which they are able to see the interconnectedness and interdependence that those operating with lower levels of consciousness simply cannot see” (Freeman, Parmar, & Martin, 2020, p. 221). The concepts of the interconnectedness and interdependence are inherently rooted in a systemic understanding of business (ibid, p. 217). Building on these ideas, it is concluded that stakeholder collaborations will be able to overcome trade-offs among conflicting stakeholder interests by complementing the optimization mode of economic decision-making with the governance mode (Pies et al., 2021); operating within the governance mode, stakeholders devise and co-create the governance structures that enable the “‘win-win-win-win-win’ relationships” (Freeman et al., 2018, p. 3).³ Recently, Bridoux and Stoelhorst (2022) build on the work by Elinor Ostrom (Ostrom, 1990, 2000) with the aim to solve collective action problems. They develop a theory about how to govern stakeholder interactions by discussing three stakeholder governance forms, namely, “hub-and-spoke governance,” “lead-role governance,” and “shared governance.”⁴ A key purpose of such governance structures

is to give expression and guidance to the jointness of stakeholder interests required for a CE transition (Marjamaa et al., 2021). While Freeman et al. (2010, p. 27) have long seen this jointness as a key characteristic of stakeholder relationships, they admitted that “seeing stakeholder interests as joint rather than opposed is difficult. It is not always easy to find a way to accommodate all stakeholder interests. It is easier to trade off one versus another.” In the ensuing paper, it is argued that the co-creation and communication of innovative governance is a viable way to deal with this difficulty.

2.3 | The resulting challenges for understanding stakeholder collaborations in a CE transition

The existing literature discussing stakeholder collaborations and governance in a CE is still in its nascent stages. Most studies dealing with the important topic of stakeholder collaboration for a CE predominantly examine this subject by applying a *firm-level* or *market-level* perspective (e.g., Castro-Lopez et al., 2023; de Sousa Jabbour et al., 2022; Jabbour et al., 2020; Pinheiro et al., 2018, 2022). However, the proposed product innovation (and other types of market-related innovation) may not be radical enough to enable a fully-fledged CE (Kiefer et al., 2021). This presents a significant research opportunity to complement the dominant perspective in the literature by applying a system-level perspective on this important topic. Institutional economics provides a viable lens to analyze system-level aspects since it understands the market as a neutral mechanism that relies on collective action. In fact, it is collective action that determines the trajectory of market dynamics. However, collective action alone (without guidance) may lack effectiveness. Thus, the functionality of markets requires innovative governance, which is essential for harnessing the full potential of technological innovation that bears on market innovation (cf. Beckmann et al., 2014; Pies et al., 2009).

As a case in point, Hansen and Schmitt (2021) discuss the importance of stakeholder collaboration for CE product innovation. However, they appear to bypass the complementary aspect of governance for guiding collaboration processes. Although they discuss radical technological innovation facilitated by “promoters” who are evidently stakeholders, their typology of promoters neglects recognition of governance, which is crucial for ensuring effective collaboration among “promoters.” The study briefly touches upon governance questions concerning the utilization of expertise and prevention of power abuse, yet both aspects warrant further in-depth investigation. In fact, the authors prioritize the concepts of cohesion and trust for collaboration, which are moralistic categories, rather than discussing the role of governance for guiding collaboration. In a similar vein, Pinheiro et al. (2018) explore product innovation in a CE context and empirically identify legislation and regulation as main drivers of the CE. However, the authors bypass the analysis of the full potential of governance

³Please, see for a detailed discussion regarding the distinction between optimization and governance the studies by, for example, Pies et al. (2021); Pies and Schultz (2023); Schultz (2022).

⁴There also exist further categorizations depending on the literature foci. For instance, Hansen et al. (2002) introduced three networks of a firm applying a firm-level perspective,

namely, “business”, “regulatory”, and “knowledge” that communicate information in different ways and from different perspectives from/to the firm.

that comprises of both public ordering (1st order) and private ordering (2nd order). In a similar vein, de Sousa Jabbour et al. (2022) develop a CE research framework that predominantly focuses on the firm level. By applying a resource-based view, four types of firm performance were identified. However, this framework may not be designed (nor do justice) to the systemic nature of CE. Jabbour et al. (2020) provide and test a research framework that primarily focuses on the firm and market levels and effectively captures the imbricated and complex relations among stakeholder pressure, barriers to and motivators of the CE, circular business models, and firms' sustainable performance. Further, Castro-Lopez et al. (2023) discuss circular business models that clearly operate at the firm level.

Pinheiro et al. (2022) discuss stakeholder pressures and institutional voids. In their work, the function of stakeholders is to exert pressure. Similarly, Jabbour et al. (2020) examine different stakeholder types but stress that stakeholders' role is primarily to exert pressure rather than actively collaborating to collectively engage in (innovative) governance. Consequently, it appears that both studies bypass the discussion on how stakeholders can effectively work together to carry out functional governance for guiding a systemic CE transition. Hansen and Revellio (2020) investigate intriguing governance aspects by discussing four generic coordination mechanisms and related value creation architectures for a CE: vertical integration, network, outsourcing, or laissez-faire. Their findings suggest that firms following slowing strategies (i.e., repair, reuse, and remanufacturing) pursue higher degrees of vertical integration than those following closing strategies (i.e., recycling). This can be attributed to the asset specificity in the different strategies. Further, Ho et al. (2022) propose a theoretical framework to enhance the understanding of the dynamic interplay between businesses and civil society in CE transitions. Their work contributes to the understanding of mechanisms and strategies for cooperation and contestation and the authors seek to understand how civil society organizations interact with firms to bring about CE innovation, outlining three ideal types: campaign based, resource efficiency based, and circular design based. Lastly, Köhler et al. (2022) develop a cross-sectoral collaboration in networks' framework for CE. They contribute to our understanding of how cross-sectoral collaboration can support advancing CE practices by developing knowledge-sharing routines and eco-centric dynamic capabilities. They emphasize the importance of effective governance as a prerequisite for successful cross-sector collaborations. However, they also call for further in-depth investigation of governance that can effectively guide functional CE collaboration.

Against this backdrop, it is reasonable to acknowledge a broad basis for the convergence of stakeholder interests concerning the overarching and widely shared objective of a transition to a CE as a systemic change. In line with Tapaninaho and Heikkinen (2022) as well as Marjamaa et al. (2021), this paper acknowledges that this widely shared goal may be realized through extensive stakeholder collaborations guided by innovative governance. The ensuing paper adds the novel argument that functional CE collaborations must be operated within the "collective governance mode" rather than the mere "optimization mode." While it may be anticipated that the latter mode

could eventually result in the prominence of trade-offs among individual stakeholders, the former mode involves stakeholders collaborating to establish new governance structures that can effectively resolve the salient conflicts of interest. Adding to and expanding on available knowledge, this paper discovers novel stakeholder governance types to facilitate CE collaboration found in the European PUR chemicals and plastics industry.

3 | METHOD

This research applies the 12 criteria for transparency and replicability of qualitative research methods as recommended by Aguinis and Solarino (2019). Therefore, this section informs about the (1) kind of qualitative method; (2) research setting; (3) position of researchers along the insider–outsider continuum; (4) sampling procedure; (5) relative importance of the participants; (6) documenting interactions with participants; (7) saturation point; (8) unexpected opportunities, challenges, and other events; (9) management of power imbalance; (10) data coding; (11) data analysis; and (12) data disclosure.

3.1 | Method, setting, sampling, and data collection process

(Recommendation 1) As CE research is calling for industry-specific insights, we applied a qualitative method (Ariño et al., 2016). We conducted semi-structured interviews with chemical and plastics industry experts, in English or German lasting between 45 min and 1 h 25 min (Table 1). We employed the qualitative-empirical GABEK (GANzheitliche Bewältigung von Komplexität–holistic management of complexity) method for explorative research (Zelger, 2000, 2019) and its associated computer-assisted program WinRelan to systematically analyze the large quantities of unstructured interview data we collected (Raich et al., 2014). GABEK-WinRelan is an explorative method that uses a systematic inductive procedure to analyze verbal data from interviews (Schmid, 2020). In addition, this approach allows for an in-depth examination of information, attitudes, and knowledge contained within individual interview statements and enables the researcher to analyze the data at varying levels of detail (Rhein & Sträter, 2021). We opted to use GABEK-WinRelan instead of alternative qualitative methods, such as Atlas.ti or NVivo. This decision was based on the unique capabilities of GABEK-WinRelan, which combines both qualitative and quantitative analysis steps on the same textual dataset; the rule-based analysis of this method further enhances the accuracy of content analysis while allowing for detailed and abstract questions to be scrutinized within the dataset (Hielscher & Will, 2014; Müller et al., 2011). The systematic, rule-based procedure of systematizing, coding, and interpreting the data enhances the validity of our data and findings (Müller et al., 2011). GABEK-WinRelan has demonstrated its effectiveness in multiple research settings and literature streams, including business model research in the retail industry (food, textile, and furniture) (Haas, 2019), organization and

TABLE 1 Interviewees.

No.	Professional position	Organization	Professional experience (year)	Time (hh:mm)
I-1	Senior Manager	Chemical Company	35	01:14 ¹
I-2	Senior Manager	Chemical Company	25	01:14 ¹
I-3	Vice President	Chemical Company	2	00:54
I-4	Manager	Chemical Company	7	01:15
I-5	(Former) Senior Manager	Chemical Company	38	01:25
I-6	Senior Manager	Distributor	10	01:00
I-7	Director	PUR-Manufacturer	25	00:58
I-8	Director	PUR-Manufacturer	25	01:00
I-9	Director	Waste Collector & Recycler	30	00:55
I-10	Director	Waste Collector & Recycler	20	00:59
I-11	Manager	Waste Collector & Recycler	3	01:05
I-12	Senior Manager	End-Application Producer & Retailer	20	00:58 ²
I-13	Manager	End-Application Producer & Retailer	16	00:58 ²
I-14	Secretary General	PUR-Industry Association	20	01:14 ¹
I-15	Secretary General	PUR-Industry Association	16	01:16
I-16	Secretary General	PUR-Industry Association	4	01:02
I-17	Senior Manager	PUR-Research Institute	22	01:23
I-18	Partner & Managing Director	Top-Management Consultancy	25	00:48
I-19	Partner & Managing Director	Top-Management Consultancy	25	00:47
I-20	Director*	PUR-Consultancy	30	01:13
I-21	Director*	PUR-Consultancy	25	01:12
I-22	Senior Manager	Top-Management Consultancy	14	00:45

Note: 1;2 Within one interview session.

*Former Senior Manager at Raw Material Producer.

management research in the financial service industry (Raich et al., 2014), service management research in the medical equipment industry (Paluch, 2014), tourism management research in the hospital-ity industry (Sharma et al., 2012), crisis management (Haus et al., 2016), environmentalism and sustainability research of German companies from the DAX-30 index (Hielscher & Will, 2014; Müller et al., 2011), and in circular economy and sustainable consumption research in the plastics packaging industry (Herrmann et al., 2022; Rhein & Sträter, 2021).

(Recommendation 2) In our study, all involved researchers made an effort to recognize and address the power dynamics in the research setting by taking proactive measures to mitigate potential bias of the participants. Transparency was maintained about the researchers' biases taking actions to minimize impact on the research process to ensure a more objective approach to both data collection and analysis. We followed an insider/outsider approach for the involved researchers, where one researcher gathered, organized, and evaluated the data, while the other researchers kept objectivity and acted as pleader for scientific qualities during the entire process (Crosina & Pratt, 2019; Strike & Rerup, 2016). This iterative approach enabled us to enhance the research quality by posing critical inquiries, reexamining the data, and providing additional clarification. Since the interviews were conducted in Europe

by European Researchers, we were mindful of cultural norms and practices to ensure sensitivity throughout the research process. At any time, we ensured that our research upholds the principles of research ethics and that the privacy and confidentiality of participants were strictly maintained.

(Recommendation 3) The researchers' position along the insider-outsider continuum is predominantly described by no existence of a relationship with study participants prior to the interview process except of interviewees I-18 and I-19. Only for these two exceptions, did there already exist business-related connections prior to the interviews. During the interviews, there was no development of close relationships during the data collection process.

(Recommendation 4) We applied a two-phase contacting and sampling procedure: (a) we approached PUR-firms and PUR-industry-experts that are knowledgeable about CE through relevant industry associations; (b) we secured further interview partners by using a randomized snowball approach (e.g., Handcock & Gile, 2011) that utilized recommendations for snowball sample diversity by Kirchner and Charles (2018). As a result, we were able to attract representatives possessing profound experience between 10 and 40 years in chemicals and plastics industry organizations covering the entire supply chain from chemicals processing of oil to production of end-consumer-products to waste management and recycling operations.

(Recommendation 5) Since all participants in the study were knowledgeable experts in their fields and organizations, they made significant contributions to this research and their expertise and insights were highly valued. Specifically, the study benefitted from the variety of interviewees' perspectives covering influential organizations operating along the entire supply chain of the chemicals and plastics industry.

(Recommendation 6) The interviews were conducted face-to-face or utilizing an online-conference system while using open-ended questions. We recorded and transcribed all interviews and sent the interview memos back to the interviewees for validation and clarification to ensure accuracy. To foster trust and encourage additional insights, we guaranteed the anonymity of the interviewees (Berry, 2002; Gioia et al., 2013).

(Recommendation 7) Our study employed 22 semi-structured interviews (Table 1) and thus a medium N-sample design ($10 < N < 100$) following the saturation recommendation by GABEK-researchers stating that after "executing about 20 oral interviews ... more oral interviews do not provide a surplus value in gaining additional knowledge" (Raich, 2008, p. 27). Additionally, this design addresses the criticism by Kirchherr and van Santen (2019) regarding a lack of medium and large N-sample research in the contemporary CE literature.

(Recommendation 8) There occurred no significantly unexpected opportunities, challenges, or other events that had a mentionable impact on our research process or the study itself.

(Recommendation 9) Further, there existed no power imbalance between the researcher and the participants at any time during the research process.

3.2 | Data coding, data analysis, and data disclosure

(Recommendation 10) Based on the qualitative data we derived from the semi-structured interviews, we analyzed approaches to stakeholder governance in the European chemicals and plastics industry. We coded the transcripts by using the GABEK-WinRelan method (Zelger, 2000, 2019) that allowed us to organize and structure large amounts of unstructured qualitative data with the aim to reduce the immense complexity and to identify underlying motivations for actions of interviewees (Buber & Kraler, 2000; Raich et al., 2014). We initially conducted a detailed reading of the transcripts examining the collected data, followed by the manual coding of keywords found in a "text unit" under consideration of the rigorous coding standards of GABEK-WinRelan (Zelger, 2000; Zelger & Oberprantacher, 2002). A text unit, as defined by Zelger (1991), is a coherent and meaningful set of ideas that typically consists of three to nine lexical terms, that is, keywords. Using this criterion, we identified 680 distinct text units and saved each one as a single digital "index card" (see Appendix A) in the WinRelan system (Herrmann et al., 2022). We checked the keywords for synonyms and replaced them accordingly to ensure

accuracy. At the conclusion of our analysis, we obtained 372 distinct keywords that capture the semantic essence of each text unit.

(Recommendation 11) Consequently, and based on the software's coding standards, we identified and highlighted associative relationships between the coded keywords by utilizing GABEK-WinRelan. These associative linkages between keywords are illustrated via connecting lines in GABEK-WinRelan and eventually visualized via so-called "network graphs" (e.g., Raich et al., 2014; Rhein & Schmid, 2020). For the creation of a network graph, at least two keywords must be mentioned in one and the same text unit. If this programmatic rule is satisfied, they will be connected within the network graphs. GABEK-WinRelan enabled us to precisely identify those associative linkages between frequently occurring keywords in order to demonstrate how the interview experts understand CE-oriented stakeholder relationships, collaboration, and governance approaches occurring in the European chemicals and plastics industry. It ensured traceability and transparency of findings during the whole procedure due to the rigorous software-based standards of GABEK-WinRelan (Raich et al., 2014).

(Recommendation 12) To ensure trust and being in line with ethical research guidelines, we guaranteed the anonymity of the interviewees as recommended by Berry (2002) and Gioia et al. (2013) with the aim to gain unorthodox and unbiased views from the participants. Thus, this study shares the questionnaire (see Appendix B) and the relevant aspects, that is, the research essence, of our detailed transcripts in the findings section.

4 | FINDINGS

Our major findings reveal three types of stakeholder governance for CE collaborations found in the European PUR chemicals and plastics industry (Figure 1). First, there exists a (Section 4.1) *type of company-centric governance* that is mostly focused on the optimization of daily business operations and dyadic stakeholder management. Second, firms maintain (Section 4.2) collective-oriented governance types for stakeholder collaboration, of which there are two varieties: (Section 4.2.1) *the type of industry-oriented governance* and (Section 4.2.2) *the type of cross-industry-oriented governance*. Both varieties entail the participation of firms in the co-creation of innovative governance structures. Therefore, the results of our interviews highlight three aspects of stakeholder governance to facilitate collaborations in the European chemicals and plastics industry: (i) what major stakeholders are involved; (ii) how exactly stakeholder interactions materialize; and (iii) what kind of managerial strategies are essential for each of the three identified stakeholder governance types to facilitate collaboration. Interestingly, while the type of company-centric governance is mainly characterized by understanding sustainability as a *means* to profit as an *end* (e.g., green washing), the collective-oriented governance types commonly understand company profits as an essential *means* to achieve sustainability-oriented *ends* (i.e., put profit-seeking *into service* for achieving sustainability).

Collective-oriented governance types

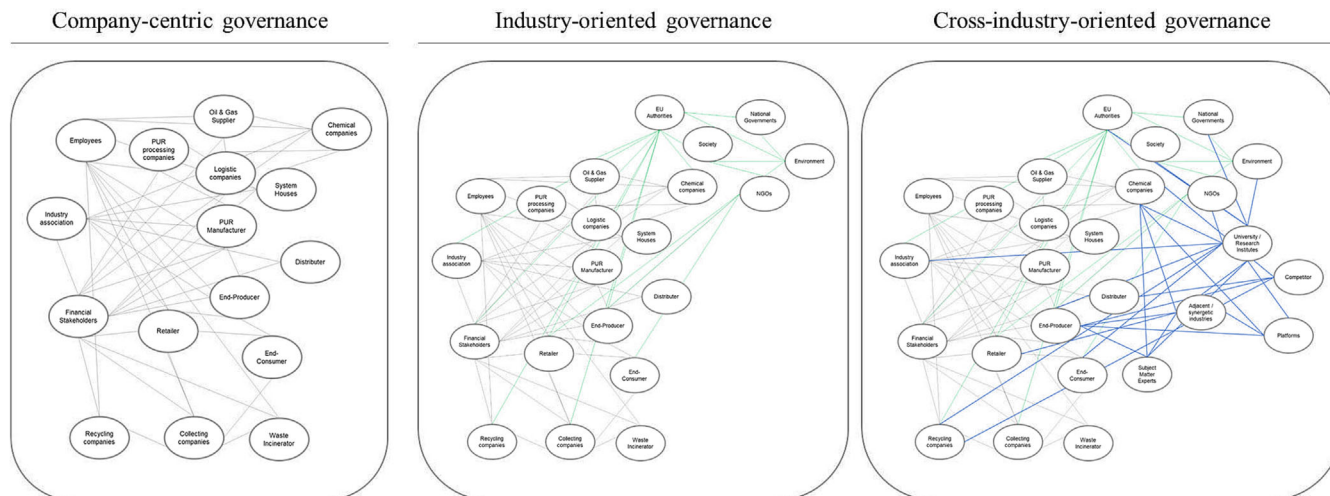


FIGURE 1 Overview of governance types for CE stakeholder collaboration.

4.1 | The type of company-centric governance for stakeholder collaboration

In the type of company-centric governance for stakeholder collaborations, the collaborative relations are primarily framed by the profit-seeking aspirations of individual stakeholders. The most typical stakeholders participating in these collaborations are located upstream (i.e., suppliers) and downstream (i.e., customers) in the supply chain of a focal firm. Other possible participants are financial stakeholders, as evidenced by a Secretary General who stated that: “It is at the end absolutely necessary that it is also a case of profitability ... Is it then also a proper business case in terms of making profits?” Finally, firm-level optimization requires the inputs of employees. As a Senior Manager of a consultancy firm put it, “we should not forget, the employees. Looking for the talent, getting the right people.” The key types of stakeholders participating in the company-centric type are shown in Figure 2.

The stakeholder collaborations of this type are mainly based on bilateral relationships between the directly connected upstream suppliers and downstream customers. As stated by a Senior Manager of a large Retailer, “we’re working together with our supplier base ... So, it’s very much about optimizing that setup.” In addition, relationships between the focal firm and its immediate financial stakeholders and industry associations are perceived as crucial for optimizing the organizational performance.

In terms of managerial strategies, the company-centric governance for stakeholder collaboration promotes short-term-oriented profit-seeking. Hence, it is not surprising that we found organizations to behave either like conservative rule followers or even opportunistic “rule breakers.” In this line, a Senior Manager of a chemical company said that “Products have to be profitable and we really have to try to find applications with added value because otherwise, e.g. in PET bottles, the only reason to put it back is the obligation to do it, but the

value is somewhere else.” Finally, this view of the company-centric type was underlined by a Secretary General who stated that “like with everything in sustainability, it has also to be profitable at the end.” A senior manager of a consultancy confirmed this view by admitting that “one of the biggest challenges for circular economy ... is to be profitable.”

4.2 | The collective-oriented governance types for stakeholder collaboration

4.2.1 | The type of industry-oriented governance

The type of industry-oriented governance for stakeholder collaborations is focused on devising and implementing those innovative governance structures that seek to bring the whole industry in a better congruence with prevalent understandings of sustainability requirements. Thus, it may come as no surprise that we find the boundaries for stakeholders’ involvement in the type of industry-oriented governance for collaborations to be broader compared to the company-centric type and include stakeholders such as transnational authorities (i.e., EU) and national governments. This is because these stakeholders are particularly capable of enforcing sustainable business practices as prescribed by sustainability-oriented recommendations, laws, and regulatory measures. As highlighted by the CEO of a Waste Management & Recycling firm “the crucial point is that the industries need to be motivated. It means, they need guidelines [laws], because they are incentivized to increase their sales and to satisfy customer demands, but not to move towards a CE by themselves. This is still far away in companies’ foci.” Moreover, companies that are interested in improving the industrial sustainability standards admit the important role played by stakeholders such as non-governmental organizations (NGOs) that may engage in advocacy or lobbying, particularly for the

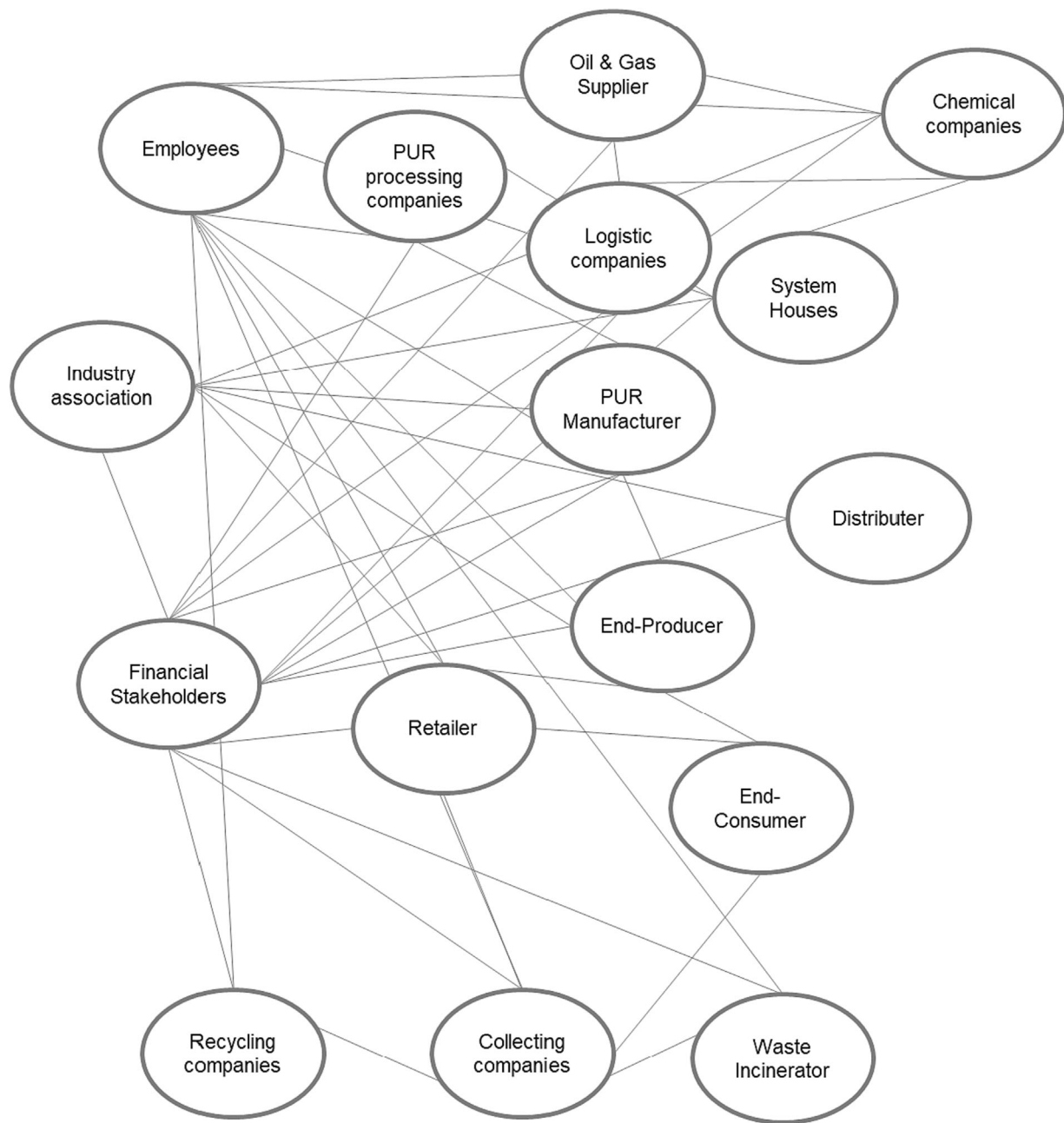


FIGURE 2 Network graph visualizing the type of company-centric governance.

adoption of sustainability-oriented legislation. The key types of stakeholders participating in the type of industry-oriented governance are shown in Figure 3.

Within this type, companies nurture long-term relationships that seek to improve sustainability standards and practices at the level of a whole industry. This objective is well visible in the following statement made by a Senior Manager of a large Retailer: “we work very much on long term partnerships.” In fact, sustainability-oriented boundary conditions to guide stakeholder collaboration need to be established by governments and advocated by NGOs since “NGOs are good at raising awareness. I think they are good at picking topics that can drive change. I think they also need to be good at bringing

people together and actually looking at steps forward, so how to promote a circular economy. If you talk about different developments in different countries. I think the NGOs have to play a role there. But we all have our part, and we all need to be able to come together.” (Senior Manager, End-Application Producer & Retailer). Interviewees pointed out that the areas of legislation where improvements are particularly needed are related to materials, such as chemical substances and waste products. As mentioned by a Secretary General, “the legislation, so the general framework is in place ... It would be better, to have a better clarification between the boundaries of chemical legislation and waste legislation. As I have mentioned, you do have some legacy chemicals for a product that prevents placing it at the market.



FIGURE 3 Network graph visualizing the type of industry-oriented governance.

It would be a reasonable approach if e.g. you have this chemical, and you cannot make consumer application and toys, but if you want to make plastic pipes for wastewater—this should be allowed.” The Secretary General continued that “from a governance point of view, what is very important, is that when it comes to provide the energy, talking in regard to the green deal and climate neutrality in 2050, the regulators have to provide the environment that the chemical industry can enable it in terms of using renewable energies.” Moreover, the legislative foundations of the use of materials and energy need to be improved in concert since “it is not to push for innovation, it is more to provide the context, the environment, the legal frame that enables innovation, that enables access to renewable energies because the

chemical industry is energy intensive and therefore, they also need the access to make it happen” (Secretary General).

The managerial strategies that are promoted within the type of industry-oriented governance for stakeholder collaborations are geared to improving industrial sustainability performance based on rules and laws established by transnational (i.e., EU) or governmental authorities. Even though these rules and laws may be considered to be externally determined and policy-induced, they do provide a useful canalization of profit-seeking activities with a view to making these more sustainable. Companies participating in these stakeholder collaborations may thus be characterized as progressive rule followers that look to NGOs and civil society actors to advocate for sustainability-

oriented regulation, and willingly follow the regulatory policy-induced initiatives once they are adopted.

4.2.2 | The type of cross-industry-oriented governance

Within the type of cross-industry-oriented governance for stakeholder collaborations, stakeholders work together to actively devise new CE-enabling governance structures, with the boundaries of stakeholder involvement being even broader than within the type of industry-oriented governance. A Senior Manager of a Chemicals Company expressed her/his vision of the former type of collaborations as follows: “[t]oday’s value chains, we know. With the circular economy, obviously we see new stakeholders become relevant. These are ... companies which also have their ways to define what will be feasible and viable and economically interesting for them to do. I think, there will be more of them, and they will try to find a space. Then, they will become part of a circular value chain.” The Senior Manager further explained that “[i]t will be different products, so there will be new business developments, there will be new players involved in the [CE] and they need to be integrated, so there we are coming back to the governance.” Crucially, CE-enabling governance structures are not limited to industrial boundaries and require participation of organizations operating in adjacent industries (e.g., PET, PP, and PE). In the words of the CEO of a PUR Consultancy, “[f]or the CE ... you have to bring together different parties, which have never worked together in the past, because at first glance there was no win-win.” Stakeholders who could participate in such structures include not only various subject matter experts, universities, and research institutes, but even actual (and potential) competitors, since each of these may deliver crucial inputs for the transition to CE as a systemic encompassing change. The key types of stakeholders participating in the type of cross-industry-oriented governance for collaborations are shown in Figure 4.

If this type is to succeed in devising CE-enabling governance structures, it must entail mobilizing long-term relationships of stakeholders across various industries and value chains. Therefore, the “value chain thinking approach” is key to facilitate cross-industrial relationships. This was clearly acknowledged by a Senior Manager of a Waste Management Company who shared with us the following insight: “If you want to improve [CE], [various firms] need to come together, [like] shoe manufacturer, mattress manufacturer, and waste management companies.” A special role in such collaborations is played by NGOs, which were favorably characterized by a Senior Manager of a Consultancy: “NGOs which bring [CE] into the debate need to exist. They should focus ... on collaboration and should show solutions for the problems.” At the same time, such an extraordinarily wide participation patterns certainly brings challenges of its own. As noted by a Senior Manager of a large Retailer, “we must rethink our whole business model. We must relook at how we source materials; we need to look at how we produce products, how we move products everywhere, etc.” This view was echoed by the following statement

by a Senior Manager of a chemical company: “you get different business models, you get different types of logistics, different players and this is starting to develop in plastics and in the whole PUR industry. But the PUR industry probably will expect a different kind of momentum, again given the diversity, and the complexity or the size of the value chains.”

The managerial strategies that are promoted within the type of cross-industry-oriented governance for stakeholder collaborations require companies to break off from being *passive rule-takers* in order to become *active rule creators*. As rule creators, companies are directly responsible for the design of innovative governance structures, which are needed for incentivizing systemic change. The need for rule creation emerges out of the fact that the complexity of sustainable industry practices and standards makes public regulation per se insufficient. Consequently, for these practices and standards to be materialized, a combination of public regulation and self-regulation is essential. A Secretary General put this point as follows: “I think that those two kinds of regulation, so self-commitment ... and governmental one, they are a good combination of both of them together since at least [i]n the [various] supply chains, it is necessary to find an agreement or standard of testing recyclates and batches. [...] We need an agreement in the supply chains that balances safety and economic feasibility of recycling.” Furthermore, in view of the industry-spanning nature of the needed stakeholder collaborations, the CEO of a PUR Consultancy argued that devising CE-enabling governance structures requires “a holistic concept and not only isolated measures, which affect only a single stakeholder of a very complex supply chain. The risk is enormous that such measures are going to be instrumentalized by single actors and thus undermine the initial goal of circularity.” But crucially, all these innovative governance structures do not interfere with the economic logic of profit orientation, which is perceived as a long-term *means* that needs to be instrumentalized for the sake of promoting a CE transition. As highlighted by a Senior Manager of a Consultancy “This will be kind of a way to influence a company to be more sustainable. It is compatible with the objective to create shareholder value. Ultimately, you still have to make money.”

5 | DISCUSSION AND IMPLICATIONS

5.1 | Discussion

Our findings deliver key contributions to the literature streams on (1) stakeholder theory and (2) stakeholder collaboration and governance for a CE:

1. Our first contribution to the stakeholder theory literature lies in discussing the possibility of overcoming the stakeholder-system divide, which has been characteristic within the existing literature (Johnson-Cramer et al., 2022). This divide problematizes the fact that the development of stakeholder theory has been driven by fundamental and indeed system-changing ambitions to offer an alternative and deeply moral narrative of capitalism (Freeman,



FIGURE 4 Network graph visualizing the type of cross-industry-oriented governance for a CE.

Phillips, & Sisodia, 2020), whereas the practical implications of stakeholder management have tended to be limited to the level of the firm. We address this problem by showing that stakeholder collaborations may promote positive systemic change, specifically the change entailed in the rise of a CE. While some stakeholder collaborations for CE may be company-centric and thus potentially affected by the problem of trade-offs, other collaborations are collectively governance-oriented and utilize new collective governance structures to overcome the trade-offs that emerge (see Table 2). These innovative governance structures do not interfere with the profit-seeking objectives of individual companies but modify the institutional constraints faced by these companies in such a way that their profit-seeking orientation no longer causes their interests to collide.

Our second contribution to stakeholder theory centers around the exploration of underlining the unique role of innovative

governance for ensuring the success and viability of stakeholder collaborations. While scholarship has acknowledged that stakeholder collaborations can take different governance forms (Amis et al., 2020; Dorobantu, 2019), we argue that the impact of stakeholder collaborations on systemic change can only be sustainable if these collaborations are collectively governance-oriented rather than company-centric. This argument suggests that, at least in the systemic change context, the concept of stakeholder governance is an essential supplement to that of stakeholder relationships. Whereas Tapaninaho and Heikkinen (2022, p. 11) note that the “stakeholder relationship model provides a concrete basis for understanding CE value creation beyond company-centric and economic-oriented business models,” we emphasize that stakeholder relationships alone do not present a sufficiently powerful focus for implementing systemic, rather than company-centric, changes. Given that the transition to CE presents a shared interest of a wide variety of stakeholders not all of which maintain direct mutual relationships, we argue that it is governance

TABLE 2 Characteristics of stakeholder governance types.

	Company-centric governance	Industry-oriented governance	Cross-industry-oriented governance
Major stakeholders	<ul style="list-style-type: none"> • Immediate suppliers (upstream) • Immediate customers (downstream) • Financial partners • Employees • Industry Association 	<ul style="list-style-type: none"> • Suppliers (upstream) • Customers (downstream) • Employees • Financial partners • Industry Association • NGOs • EU Authorities • National authorities • Society 	<ul style="list-style-type: none"> • Suppliers (upstream) • Customers (downstream) • Employees • Financial partners • Industry Association • NGOs • EU Authorities • National authorities • Society • University/Research Institutes • Subject matter experts • Immediate and potential competitors • Adjacent industries • Platforms
Stakeholder relationships	<ul style="list-style-type: none"> • Mostly short- and medium-term opportunistic bi-lateral (dyadic) relationships between directly connected upstream suppliers and downstream customers, financial partners, and associations 	<ul style="list-style-type: none"> • Long-term oriented relationships between supply chain partners, governmental authorities, and societal partners 	<ul style="list-style-type: none"> • Long-term relationships with partners beyond immediate industry boundaries (e.g., firms operating in adjacent industries; platforms; etc.) aiming to enable inter-industrial and -sectoral sustainable development.
Managerial strategy	<ul style="list-style-type: none"> • Firms and managers act as authority and either as conservative rule followers or even as opportunistic rule breakers (cost–benefit calculation: Lawsuit vs. gain). 	<ul style="list-style-type: none"> • Firms and managers act as progressive and pro-active rule adopters. But they are still passive rules takers of governmental law and legislation (public ordering—1st-order incentivization). 	<ul style="list-style-type: none"> • Firms and managers act as innovative rule designers, integrators, and diffusers combining compliance and self-commitments beyond immediate industrial boundaries to sustainably develop governance for creating market conform CE solutions.

rather than relationships that must become the keystone of stakeholder collaborations in this field. It is important to mention that this argument does not deny the importance of relationships but rather underscores their critical embeddedness in governance structures that are required to harmonize stakeholder interests.

Our third contribution to stakeholder theory involves suggesting that a systemic change, such as the transition to CE, could operate as a powerful driver of stakeholder collaborations. Freeman (1984, p. 27; cf. Freeman et al., 2010, p. 3) acknowledged this driver in the condition of turbulence of the business environment confronting individual corporations, with key dimensions of turbulence pertaining to environmental dynamism, high knowledge intensity of specific business activities, and significant task and outcome interdependence (Jones et al., 2018, p. 381). We connect Freeman's view of stakeholder theory to the wider context of sustainability challenges faced by contemporary economies (cf. Schwab & Vanham, 2021) and thus point out the significance of stakeholder collaborations for coping with grand challenges (cf. Voegtlin et al., 2022). Our conclusion in this respect is that both turbulence and systemic changes provide strong impetus for stakeholder collaborations. Whereas, in the former case, these collaborations can be supposed to rest on moral stakeholder relationships, in the latter case, the relationships need to be embedded in governance structures that are geared to streamlining stakeholder activities toward realizing the widely shared stakeholder interests, such as the transition to CE.

2. Our major contribution to the CE literature is the identification of novel governance types for stakeholder collaborations in the European chemicals and plastics industry and particularly to emphasize stakeholder collaborations operating beyond immediate industrial boundaries. Thus, we enrich the existing literature discussing stakeholder collaborations for a CE rather in a generic manner (e.g., Durán-Romero et al., 2020; Jakhar et al., 2019). In addition, we respond to recent studies that called for discussing specific aspects of a CE such as stakeholder collaborations (e.g., Blomsma et al., 2023; de Jesus et al., 2021; Prieto-Sandoval et al., 2018; Tapaninaho & Heikkinen, 2022). Adding to and expanding on the remarkable findings by, for example, Tapaninaho and Heikkinen (2022), our study reveals three stakeholder governance types for collaboration and characterizes major stakeholders, stakeholder relationships, and managerial strategies within each type. Particularly, the two latter collective-oriented governance types are crucial for building an enabling CE environment as illustrated in Table 2.

Bridoux and Stoelhorst (2022) theoretically discuss how to govern stakeholder interactions utilizing three stakeholder governance forms. Adding to and expanding on their theoretical contribution, our findings largely (empirically) confirm their conceptual governance types, since we also found three governance types for collaboration that employ relatively similar structures. However, our study

contributes novel findings to the literature by highlighting that a collective governance is key that moves beyond industrial and even sectoral boundaries, which necessitates an extension of stakeholders' interactions. First, the type of company-centric governance highlights dyadic stakeholder relationships and is characterized by immediate bilateral interactions between directly connected and affected stakeholders along a supply chain, in which a focal firm and its management implicitly assume to have authority over (some) stakeholders and thus strategically act as conservative rule followers or even as opportunistic rule breakers. However, this type possesses disadvantages for a CE transition since stakeholder interactions for circularity can be illustrated as a "collective action problem" in which actors are increasingly dependent on each other. An alternative to Ostrom's initial idea of a central authority is "community governance," which has been further developed by Bridoux and Stoelhorst (2022) to "lead-role governance" and "shared governance." Our empirical findings expand on their theoretical work by emphasizing that the "collective-oriented governance types" require stakeholder relationships and interactions that need to be embedded in collectively developed governance structures to harmonize stakeholder interests for creating and maintaining crucial collective actions. Adding novel insights on collective governance for CE, our study distinguishes between two forms of collective-oriented governance types.

While the "type of industry-oriented governance" is characterized by long-term relations of supply chain partners, governmental authorities, and societal partners within a specific industry setting (e.g., PUR) that mandate governance-related decisions to key actors in a specific industry, the "type of cross-industry-oriented governance" focuses on long-term relationships (along a variety of supply chains) with partners beyond immediate industrial and even sectoral boundaries such as companies operating in adjacent industries (e.g., PP, PET, and PE) with roughly equal say. To enable and maintain such diverse stakeholder collaborations that are required for a functional CE transition, focal firms (*plural!*) must act as innovative rule creators, actively designing and implementing both—self-commitments to functional rules and compliance structures in keeping with competitive markets—beyond immediate industrial and sectoral boundaries, including and managing a variety of (new and more diverse) stakeholder relationships.

While former studies already discussed stakeholder collaborations in a CE, our study emphasizes the crucial role of innovative governance structures to enable and maintain collaboration with and between diverse stakeholders. As a case in point, Hansen and Schmitt (2021) focus on how stakeholder collaboration can enable radical technological innovation. Yet, our governance focus is different to their approach in so far that governance is about broad institutionalization and legitimation of technological innovation which should not remain exotic. We need broad and legitimate innovation of governance (cf. Hielscher et al., 2022). We propose that institutionalizing radically new technology requires going beyond the traditional firm and market levels of analysis and "embracing" governance. Further, Pinheiro et al. (2018) empirically identify the main driver of CE to be legislation and regulation, which affirms our governance perspective. However, our findings highlight that a CE transition requires both

public ordering (1st order) and private ordering (2nd order) in the form of a complementary interplay—instead of perceiving them as substitutes. We suppose that while product innovation that is discussed by Hansen and Schmitt (2021), or other types of market-related innovation (e.g., Castro-Lopez et al., 2023), may not be radical enough, we argue that innovative governance holds greater potential for radical change. It is needed to bring the full potential of technological innovation to bear on market innovation. Put differently, the requirement arises to improve the fit between productive forces and social relations to enable CE by innovative governance. As a historical case in point, constitutional reforms in the first place enabled the (first) industrial revolution. The reasons for that are differently framed in the literature. For example, (a) North and Weingast (1989) see the introduction and credibility of property rights as the trailblazer for the industrial revolution, while (b) Baumol (1990) assigns this development to constitutional (i.e., governance) arrangements that enabled and encouraged entrepreneurs to change from win-lose activities (business of war) to win-win activities (production, trade, and consumption). Of course, both perspectives are complementary and illustrate that the governance-innovativeness likely decides whether and how product-innovations work and diffuse.

Further, our study agrees with Castro-Lopez et al. (2023) that "business models" intermediate the relationship between firm-level organizational agility and system-level institutional pressures. Adding to and expanding on their view, we suggest that business models are not given and do not present a fixed limiting factor constraining the influence of the system level on the firm level. Instead, we argue that business models need to be adjusted through innovative governance. Furthermore, Castro-Lopez et al. (2023) discuss institutional and stakeholder pressures. This is symptomatic for large parts of the contemporary literature since market dynamics generate moral complaints. However, our study seeks to integrate both aspects through our focus on innovative governance, which puts markets and morality together. Since the study by Castro-Lopez et al. (2023) raises the interesting question of what the mechanism behind the impact of institutional pressures is, our paper proposes innovative governance as one possible solution.

5.2 | Implications for theory, practice, and policy

We fully concur with Castro-Lopez et al. (2023) in recognizing the need that CE transition must be holistic and comprehensive. However, we interpret this comprehensiveness through the lens of innovative governance. Thus, we recognize the crucial role of firms and managers in addressing *collective action problems*. Yet, it is evident that achieving functional collaboration for a CE transition can be more challenging than what the existing literature has acknowledged. Specifically, managers face the primary governance challenge of assisting diverse stakeholders in overcoming the complex dilemmas and hybrid challenges inherent in productive activities that involve interdependent tasks or outcomes. This challenge becomes even more arduous when collaboration involves stakeholders who exist beyond the

conventional boundaries of the firm, the industry, or even the sector. Moreover, these stakeholders may maintain a balanced power dynamic with the firm or its managers, which is increasingly common in modern economies. In such cases, the assumption made in stakeholder theory that managers can rely on their authority over stakeholders to effectively manage for their benefit becomes even more problematic.

This is particularly true when considering collaboration activities that involve stakeholders external to the firm, as managers are less likely to possess direct power over them. Therefore, we must provide an explanation as to why these external stakeholders might accept managers as a central authority or acknowledge the necessity of business-driven new governance approaches to address collective action problems. Innovative governance can only be successful if it is carried out by managers who are capable (and incentivized) to transparently communicate and share information among stakeholders. Such managers' task is to enhance coordination and foster collaboration with the aim to align stakeholders' individual interests, clarify common goals, and reduce misunderstandings. To provide stakeholders with appropriate reasons and rewards to contribute to collective goals and to agree to the enforcement of rules may create an enabling environment for a functional CE collaboration. Managers and policymakers need to be engaged to actively participate in collective decision-making processes, collective trust-building, and collective alignment with the aim to foster collective problem-solving guiding collaboration processes.

6 | CONCLUSION

This study aimed to explore stakeholder governance types that may effectively facilitate stakeholder collaborations for a systemic transition toward the CE. Based on a qualitative-empirical study utilizing semi-structured interviews in the European chemicals and plastics industry, our major findings revealed a novel distinction between three types of stakeholder governance to facilitate collaborations toward a CE—(i) company-centric governance, (ii) industry-oriented governance, and (iii) cross-industry-oriented governance, with the two latter needing to be co-created with and by a variety of stakeholders. Our study makes a contribution to bridge the “stakeholder-system divide” in stakeholder theory by accentuating the systemic CE-oriented stakeholder collaborations that must be operated within a “collective governance mode” rather than a mere “optimization mode.” Unlike the latter, which will ultimately result in the prominence of trade-offs among individual stakeholders, the “collective governance mode” involves stakeholders working together to co-create new governance structures that may resolve the salient conflicts of interest. We invite fellow researchers to constructively criticize our study with the goal of strengthening the contemporary CE field that in our view can create significant and critical momentum for facilitating functional sustainable development. We encourage further research in various areas such as the investigation of (1) specific aspects of novel stakeholders and their interactions in other industries

and geographical areas, (2) institutional arrangements with NGOs, industry associations, universities, and consultancies, and (3) peculiar formal and informal governance mechanisms to facilitate inter-industrial and inter-sectoral stakeholder collaboration for a CE.

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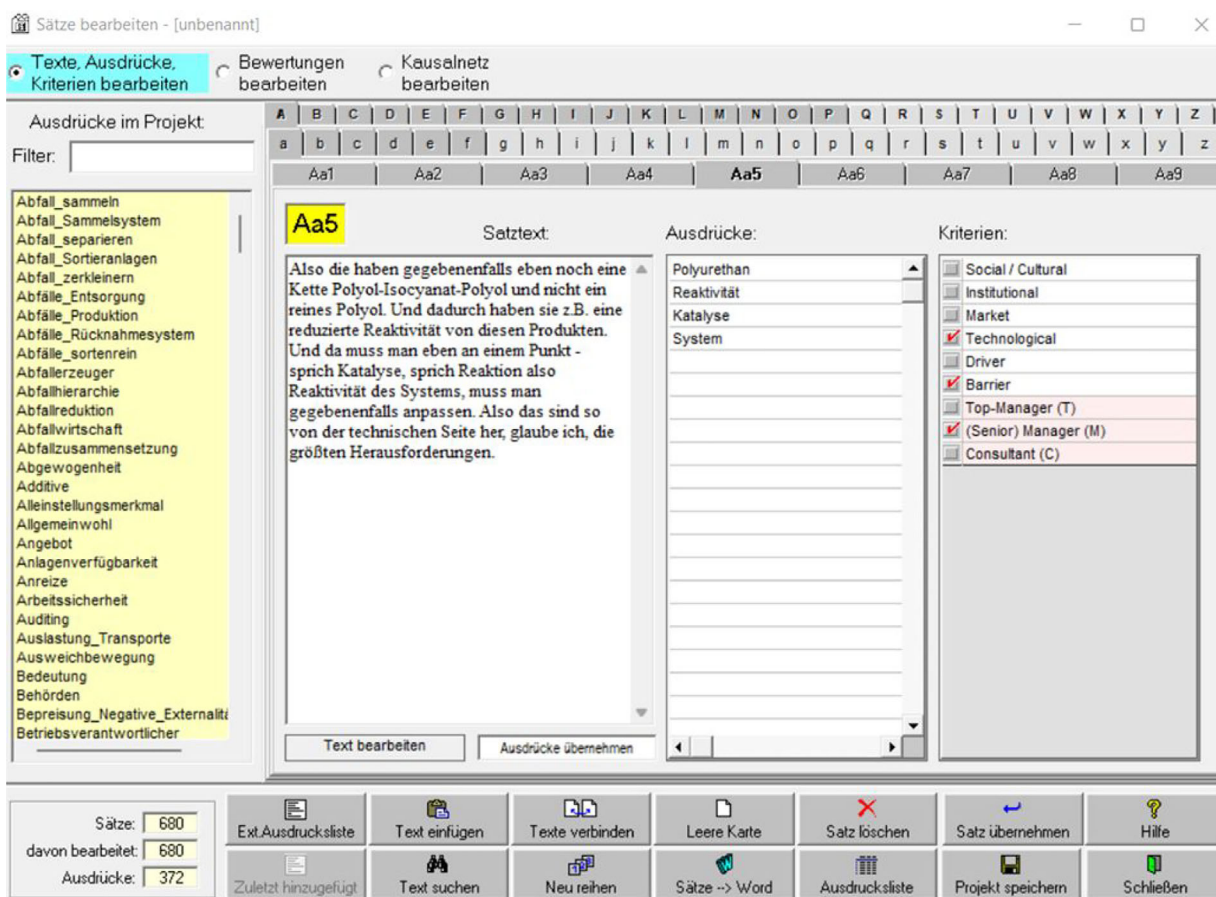
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APPENDIX A: GABEK-WinRelan index-card-system



APPENDIX B: Questionnaire for interviews

Sub-topic	Overarching questions	Follow-up-questions (optional)
1. Technology	<p>What are the main technological challenges and barriers for a circular economy in the PUR industry from your point of view?</p> <p>What are the major drivers?</p>	<p>What is your opinion on reuse, refurbish, and recycling options for PURs?</p> <p>What is your opinion on mechanical vs. chemical recycling?</p>
2. Economic/market	<p>What are the economic challenges and barriers for going circular to a business in the PUR industry?</p> <p>What are drivers?</p>	<p>What economic/market determinants are crucial?</p> <p>What changes do you expect for circular market environments?</p>
2.1. Opportunities/benefits	<p>What benefits do you expect from going circular?</p> <p>Do you see additional market opportunities with a circular economy approach (e.g., customers specifically asking for it)?</p>	<p>What are the major challenges for 3DP to circularity?</p> <p>What are the opportunities to facilitate sustainable production and consumption by applying 3DP (products and procedures)?</p> <p>What is the current state-of-the-art in recycling and how could 3DP contribute to improvements? (What are the benefits?)</p>
2.2. Cost	<p>What are the expected additional costs/investments for a business when going circular?</p>	<p>Is the price for circular input materials, like recycled plastics too high? (Costs)</p> <p>If yes: Why and how much?</p>
2.3. Price/pricing	<p>Is the willingness to pay a price premium for circular/sustainable products (recycled plastics) too low? (Revenues)</p>	<p>Is there a willingness from your customers (along the supply chain) to pay more for circular solutions and products?</p> <p>If yes: Why and how much?</p>
3. Governance/collaboration	<p>What are the governance challenges (regulations, agreements, rules) for 'going circular' for your firm, for business models, industry? And for specific supply chain steps?</p> <p>What are the governance drivers?</p>	<p>What are the major challenges for your business and regarding regulations? (National, EU, Global?)</p> <p>What are the opportunities to create a functional regulatory environment?</p>
3.1. Commitments	<p>What approaches do you know regarding commitments (self-commitments): e.g., "Branchenvereinbarung"; (or) commitments for suppliers; code of conduct?</p> <p>Do you perceive commitments as a suitable approach to facilitate a circular economy transition?</p>	<p>Does your company (or industry or sector) apply sustainability rules that are not state mandated? (voluntary regulation/standards)</p> <p>What commitments are crucial for enabling circularity and how can they be realized?</p> <p>What is your opinion on the viability/functionality of self-commitments? How do they need to be designed to become (more) functional?</p>
3.2. Stakeholder I	<p>What stakeholders (supply chain steps) and how many stakeholders (% of market volume per step) are currently/should be approached for an appropriate circularity dialogue? And for circular collaboration?</p> <p>Is there a tipping point?</p>	<p>What are the key industries that use PURs?</p> <p>Are there any expected/potential industries for collaboration?</p> <p>What are the current and expected key stakeholders of your firm/your industry?</p> <p>How do you manage current and expected stakeholders? What strategies are functional?</p>
3.3. Stakeholder II	<p>What role do (likely) skeptical stakeholders like NGOs, research institutes, etc. play in promoting CE collaboration?</p> <p>How do you perceive the role of NGOs, research institutes, etc. for the promotion of circular economy?</p>	<p>Are there any potential stakeholder collaborations (not yet realized) that are potentially critical for going circular from your point of view?</p> <p>Do you like to mention any further points of importance to us?</p>