

# **Governance in Circular Economy: A Critical Review and Way forward**

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## **Abstract**

A transition to a circular economy (CE) is necessary to limit waste, conserve resources, and maximize sustainability. Nevertheless, the principle of governance is the biggest impediment to CE approaches. This review highlights important gaps in the literature on governance frameworks in CE and an explanation of when a framework might impact biodiversity conservation. A systematic literature review is done, and a thematic analysis is carried out to identify six core themes. To address the governance problems, this research proposes a Dynamic Polycentric Model (DPC) for Circular Economy Governance, a new governance framework enabling collaboration, improving regulation efficiency, and lowering governance costs. It is based on three key governance connections: Resource Optimization, Regulatory, and Digital Trust, whose role is to bring together the industry's efforts, policy mechanisms, and technological tools for circular practices. It also introduces trust-weighted governance, where stakeholders with strong sustainability records face fewer regulatory burdens while non-compliant actors receive stricter oversight. Blockchain-powered circular economy smart contracts and adaptive resilience protocols enable real-time compliance, automated resource tracking, and flexible responses to market disruptions. This study contributes to CE governance research by proposing a structured yet flexible framework that nurtures greater collaboration, transparency, and resilience. The model aims to provide practical solutions for overcoming regulatory and operational challenges in CE transitions by refining governance mechanisms and integrating emerging technologies.

## **Keywords**

Circular Economy, Governance, Polycentric Systems, Smart Contracts, and Sustainability Policy.

## **1. Introduction**

The Circular Economy (CE) is defined as “An economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being” (Murray et al., 2017).

The CE framework is based on three key principles. The first principle is directed at eliminating waste and pollution, in particular, working to minimize the negative environmental effects usually mentioned in connection with production and consumption. The second principle states the obligation to circulate products and materials at their highest value, preventing waste, sharing, prolonging, reusing/redistributing, remanufacturing/refurbishing, and recycling materials rather than disposing of them. The third principle centers on regenerating nature through supporting and restoring natural ecosystems. A model-based revenue from renewable energy and sustainable materials makes a resilient and regenerative system that a business needs, benefiting both communities and the environment.<sup>i</sup>

Recently, researchers have given attention to governance in CE (Bag and Mangla, 2025; Becchetti et al., 2025; Mango and Vincent, 2025). But, only a few studies, like Patala et al. (2020), directly address the governance challenges of privately owned resources. Challenges include a seamless flow of information between resource owners, scalability limitations for coordinated sharing of the resources, and the governance of the residual resources. Polycentric governance, which emphasizes decentralized coordination and mutual adaptations, is proposed by Patala et al. (2020) as a possible remedy. Nevertheless, their effort does not go beyond the preliminary conceptual framework without solving the practical implementation or cross-sectoral applications. Consequently, findings from Patala et al. (2020) on how practices and structures interact to develop polycentric governance can enhance the study of how structuration theory (Soderstrom and Weber, 2020) and polycentric governance are mutually explanatory.

A structure known as polycentric governance comprises many overlapping centers of decision-making, each of which has some autonomy but nonetheless operates as part of a larger system (Carlisle and Gruby, 2019). It is a good fit for the trait that enables the management of the complex and dynamic issues of CE. The main dimensions explain how polycentric governance functions. First, according to McGinnis (2016) polycentric governance comprises a structure of actors from multiple sectors with different institutions. Such a structure increases diversity in decision-making and ensures innovative solutions to complex problems. Additionally, this represents polycentric governance's nature as being decentralized and inclusive, held by multiple stakeholders. Second, these actors interact and adjust the mutual, transforming the behavior patterns and creating new collective practices (McGinnis, 2016). It facilitates adaptation and learning to keep the system open to changing conditions and new information. It encourages the emergence of novel collective practices by creating an iterative process encouraging the co-creation of solutions by the stakeholders.

This gives an emergent system with economies of scale at many levels of government (McGinnis 2016). It serves to promote systemic coherence while affording the option of localized customization and experimentation. Through scale-dependent advantages, such as the advantages of sharing more extensively at higher sizes or concentrating on specific concepts at lower ones, it promotes efficiency.

Polycentric governance is often credited to be a successful model of CE's private governance of resource management (Patala et al. 2020). Because this model depends on mutual adjustments, collective agency, and shared structures of many stakeholders, it is on the shoulders of the responsible leaders to spread and sustain it. There are conditions under which polycentric governance is likely to fail in industries such as where trust, shared goals, or institutional support are weak. In these cases, polycentric governance work can be very challenging. One important problem of polycentric governance is the lack of trust between the participants (Neisig, 2017; McGinnis, 2016). Trust is one of the foundations of mutual adjustments and collaborative decisions, and upon breaking trust, the whole governance system can be destabilized. Informal recyclers prevail across most developing countries, for example in the e-waste recycling industry (Chi et al., 2011). Formal recyclers and regulatory authorities worry about environmental noncompliance as they occasionally do towards informal recyclers with whom they have an attitude of suspicion (Yang et al., 2018). The absence of trust between stakeholders breaks down the system to the extent that stakeholders cannot cooperate, and the waste of resources continues to be in a perpetual cycle.

Power imbalances are another important barrier to the emergence of polycentric governance. At the global level of the apparel and textile industry, multinational corporations have a disproportionate power over smaller suppliers (Jaiswal and Jung, 2020). These suppliers are not included in the decisions of the resource pool to which they are

usually referred; they do not have the power to bargain and demand fair terms. This means that the smaller actors focus on short-term cost savings over long-term circular practices like textile recycling. Unbalancing sustainability undermines the ability to implement shared governance structures that will benefit all stakeholders, cementing unsustainable practices.

Stakeholders do not have divergent goals and priorities, and polycentric governance can be a challenge as well. The plastic packaging industry serves as an example of this. Although governments and environmental organizations favor biodegradable or reusable packaging, private companies are reluctant to make such changes because of cost and scalability concerns (Mistry 2024). This subordination of the priority misaligns the governance structure in that each party's goal is progenitively divergent. Ultimately leading to limited progress in circular practices, e.g., reducing plastic waste or increasing recycling rates.

These challenges are exacerbated by inadequate institutional frameworks, given that polycentric governance effectively requires robust systems for coordination and enforcement. In many regions where the regulations for construction and demolition waste management are not clear enough, there are no inducements for contractors to adopt recycling practices (Andersson and Buser, 2022). Without institutional support, such as guidelines or incentives, stakeholders rely on cheaper but less sustainable options for illegal dumping. The lack of institutional governance limits the ability of circular initiatives to scale and succeed (Li et al., 2018).

In polycentric governance, overlapping jurisdictions can complicate resource management. The high transaction costs further discourage the participants from participating in such governance systems. For instance, food waste sorting, transportation, and processing costs in the food retail market are generally more significant than the effect. Discarding waste might be cheaper for the retailers rather than collaborating with NGOs or composting facilities. The refusal to incur further costs prevents resource-sharing structures from effectively resolving food waste issues.

Another obstacle to polycentric governance is the lack of shared knowledge among stakeholders. This is an issue for the electric vehicle battery recycling industry, as manufacturers, recyclers, and policymakers lack clear data about battery material composition and recyclability. This information asymmetry prevents stakeholders from cooperating to align their efforts or develop more efficient recycling systems (Serna-Guerrero et al., 2020). The governance framework struggles to promote genuine cooperation when the knowledge base is not shared among them. There are also specific characteristics of resources that run counter to sharing and collaborative management. Rare earth materials in the mining industry are geographically concentrated and are under competitive control. With the focus on exclusive and non-sustainable management, it becomes difficult to engage in collaborative governance. Similarly, there are veritable industries in which environments such as intellectual property is closely guarded, partly for fear of losing competitive advantage, making it exceedingly difficult to apply polycentric governance principles.

Even well-established polycentric systems can be disrupted by external shocks and sudden, unanticipated changes. For example, the COVID-19 pandemic has shown vulnerabilities in the global supply chains (Strange, 2020). Raw materials and critical supplies were hoarded by companies, which tended to resort to competitive rather than collaborative practices in silos. External crises derailed governance systems based on trust and cooperation by undermining resource-sharing frameworks such as such behavior.

Resistance to change and cultural fragmentation are serious barriers to the operation of polycentric governance (Allen et al., 2023). If outsiders take control of indigenous land management, traditional communities may be excluded from governance frameworks. The effective management of resources becomes elusive because of barriers to trust enabled by historical grievances and cultural differences. Additionally, powerful interests that prevent the transition from linear economies into a circular model will hinder the collective efforts toward sustainability.

Although polycentric governance has significant potential to provide adequate private resources within the context of a CE (Patala et al., 2020), its effectiveness is neither guaranteed nor reliable. Various conditions, such as a lack of trust, power imbalances, divergent objectives, and a lack of institutional support also hinder the success of this practice. Hence, we present our research question below.

*RQ: How can polycentric governance systems be refined to effectively address the challenges of managing privately owned resources within CE frameworks, ensuring equitable collaboration, enhanced trust, reduced transaction costs, and adaptive resilience to achieve sustainable resource management?*

The rest of the sections are organized as follows. Section 2 presents the method, while Section 3 presents the literature analysis on governance in the CE. Section 4 provides the CE management model, and section 5 presents concluding remarks.

## 2. Methodology

This study follows a systematic literature review (SLR) approach (Lahane et al., 2021; Zhang et al., 2022; Vann Yaroson et al., 2024) to analyze governance in the CE, ensuring a structured and comprehensive synthesis of existing research. The review is driven by our core research question. To address this, the study focuses on key governance challenges, including institutional complexity, stakeholder trust, regulatory gaps, and cross-sector coordination. The literature search is conducted in Scopus. Scopus is the world's largest curated abstract and citation database of research literature (Schotten et al., 2017). The search strategy applies Boolean operators (AND) with relevant keywords, such as "circular economy" and "governance." The inclusion criteria prioritize peer-reviewed journal articles and review papers published from 2014 to 2024 that provide empirical evidence, theoretical insights, reviews, or case studies on CE governance. Non-English publications, editorial pieces, and studies lacking a governance focus are excluded. We found 158 documents. The search syntax is presented below.

( TITLE-ABS-KEY ( circular AND economy ) AND TITLE-ABS-KEY ( governance ) ) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND ( LIMIT-TO ( SUBJAREA , "BUSI" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "re" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )

The graphical analysis of 158 documents is presented below in Figure 1.

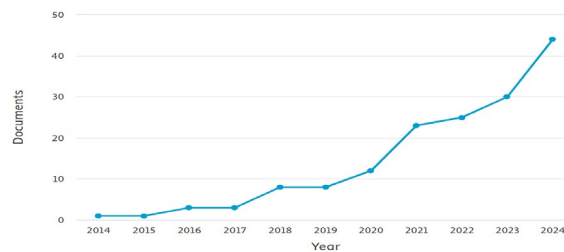


Figure 1. Documents by year (Source: Scopus)

Over the years, an increasing number of publications (see Figure 1) indicate that governance in CE is an emerging or growing field, reflecting policy and academic shifts towards sustainability.

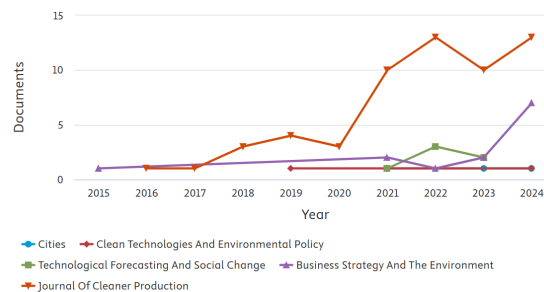


Figure 2. Documents per year by source (Source: Scopus)

We also identified key publication sources that contribute significantly to CE governance literature (see Figure 2).

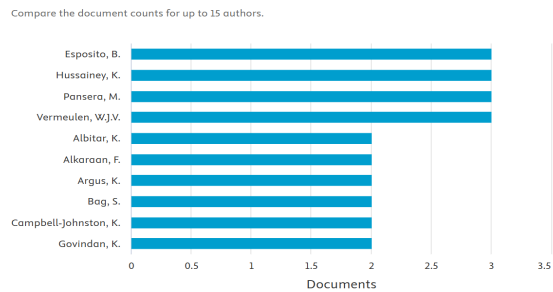


Figure 3. Documents by author (Source: Scopus)

Figure 3 identifies leading researchers in CE governance, helping map the intellectual landscape of the field.

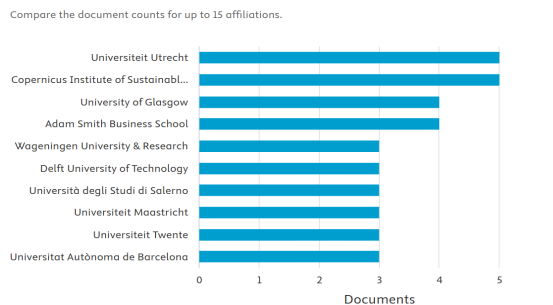


Figure 4. Documents by affiliation (Source: Scopus)

Figure 4 shows which universities or research institutions are leading in CE governance research.

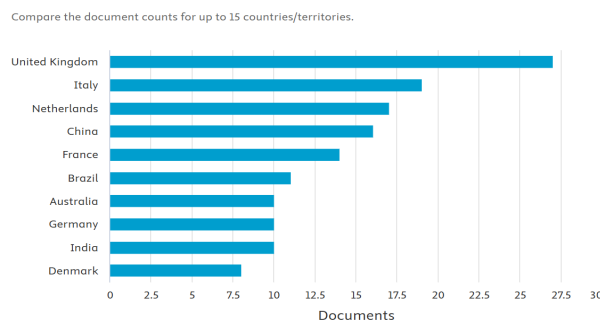


Figure 5. Documents by country or territory (Source: Scopus)

Figure 5 provides insight into the global distribution of research efforts in CE governance. Policy-wise, it may indicate which governments are investing in CE governance studies, showing alignment with national sustainability goals.

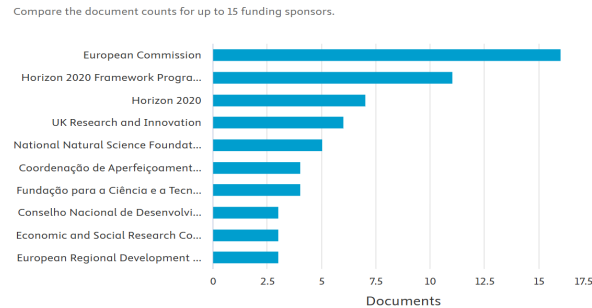


Figure 6. Documents by funding sponsor (Source: Scopus)

Figure 6 highlights key funding agencies that support CE governance research. It helps understand who funds the research and helps reveal political, industrial, or policy interests in CE governance.

Further, a step-by-step screening process is used, following the PRISMA framework to ensure rigor and transparency. First, titles and abstracts of 158 documents are reviewed to filter out irrelevant studies. We found 20 articles are relevant for this study. These, 20 selected papers undergo full-text analysis to assess their relevance to CE governance. Once finalized, the literature is systematically categorized based on emerging themes aligned with the study's focus areas. A thematic synthesis approach is applied to make sense of the collected research articles. This involves identifying recurring patterns, gaps, and contradictions in CE governance literature. Different governance models are critically examined, comparing traditional regulatory approaches with adaptive, polycentric systems.

### 3. Literature Analysis

#### 3.1. Governance in Circular Economy

The transition to a CE is a pressing global priority aimed at addressing sustainability challenges through regenerative and restorative systems. Governance plays a pivotal role in this transition, determining the collaboration among stakeholders, the effectiveness of corporate governance mechanisms, and the scalability of micro-level practices to systemic solutions (Bag and Mangla, 2025; Becchetti et al. 2025; Mango and Vincent 2025). This review critically examines key contributions in the field, highlighting their insights and gaps, and sets the stage for advancing governance frameworks for CE.

There are studies on stakeholder collaboration in CE governance. For example, Schultz et al. (2024) offer a nuanced understanding of stakeholder collaboration as a cornerstone of CE governance. By identifying three governance types: company-centric, industry-oriented, and cross-industry collaborations, the study highlights the importance of collective strategies that extend beyond immediate industrial boundaries. It highlights successful collaborations as involving diverse stakeholders who maintain close mutual interactions, advocating for systemic, rather than isolated, governance approaches. However, the study remains largely conceptual, lacking practical frameworks to implement collective strategies across different industries.

Earlier, Arfaoui et al. (2022) focused on governance at the micro level, emphasizing participatory approaches, facilitative leadership, and frequent information sharing as critical success factors. While these findings are valuable, the study's focus on regional contexts (e.g., methanation projects in France) limits its generalizability. The challenge of scaling micro-level arrangements to broader systemic applications remains unexplored. Cramer (2022) takes a macro-level perspective, comparing governance practices across 16 countries and proposing models for effective CE governance. While the emphasis on network governance and active stakeholder involvement is insightful, the study does not adequately address the nuances of cross-sectoral or cultural adaptations, which are critical for ensuring the replicability of governance models. There are also studies available on corporate governance mechanisms in CE. For instance, Palea et al. (2024) explore the role of corporate governance in promoting CE strategies within manufacturing industries. Their findings reveal that stakeholder engagement practices, sustainability reporting, and environmental management teams have a direct impact on CE adoption. However, mechanisms such as CSR committees and adherence to global frameworks (e.g., the UN Global Compact) indirectly support CE through complementary actions. This study provides practical insights for managers and policymakers but falls short of examining the role of corporate governance in promoting trust and accountability across supply chains. Similarly, Esposito et al. (2023) examine CE disclosures in integrated reports, finding that board diversity and CSR committees positively influence the level of CE

information disclosed. While this study advances understanding of transparency mechanisms, it overlooks how these mechanisms can drive behavioral change among firms and stakeholders. The narrow focus on European companies further limits the study's applicability to diverse regulatory and cultural contexts. Stekelorum et al. (2021) expand the discussion to supply chain management, including the roles that supply chain ambidexterity and big data analytics capabilities play as enablers of CE practice. This work shows the relevance of supplier selection in facilitating CE outcomes but, at the same time, shows the limited relevance of supplier development initiatives. In particular, it identifies a gap in the knowledge of how to govern supplier relationships to sustain circularity when relationships are horizontal.

Another set of studies focused on transformative frameworks and adaptive governance. Christensen (2021) and Termeer et al. (2019) propose transformative governance frameworks centered on incremental "small wins" that can accumulate into systemic change. These frameworks emphasize adaptive, non-linear governance approaches that embrace ambiguity and promote innovation. While the small-wins perspective offers a compelling alternative to top-down models, it assumes flexibility and receptivity that may not exist in rigid regulatory environments or among conservative corporate actors.

According to Christensen (2021), the transition from linear to more circular models requires a rethink of the governance model. Schultz et al. (2024) also recommend changes in business environment systems to promote CE transitions. Nonetheless, neither study employs empirical evidence regarding how such transformations can be started and maintained, especially in competitive markets or sectors with entrenched linear practices.

Few studies focused on governance arrangements and policy instruments. Studies such as Arfaoui et al. (2022) and Flynn and Hacking (2019) emphasize the role of governance arrangements and policy instruments in CE. Flynn and Hacking critically assess voluntary standards and neoliberal governance mechanisms, highlighting their limitations in challenging existing market relations. Their findings suggest that standards often prioritize cost over quality, undermining the trust necessary for CE transitions. On the other hand, Termeer et al. (2019) provide policy approaches to scale minor victories by triggering non-linear mechanisms such as the bandwagon effect and the logic of attraction. For overcoming barriers in rigid governance systems, these interventions are particularly important and require more attention to their long-run feasibility and impact.

From global and comparative perspectives, Cramer (2022) and Fratini et al. (2019) provide comparative analyses of CE governance across countries and cities, respectively. Cramer's identification of public and network governance as critical for CE transitions offers a valuable macro-level perspective. However, the study's reliance on transition management frameworks limits its engagement with micro-level dynamics and private sector roles. Finally, Fratini et al. (2019) have introduced a spatial dimension, that is, how urban configurations affect CE governance. Through their engagement with CE imaginaries in cities such as Amsterdam, Paris, and London, they point towards the ways in which urban governance has the ability to support inclusive and environmentally desirable transitions. It does not, however, discuss how urban models developed in the study could be integrated into broader regional or national strategies.

## **3.2 Findings**

This study identifies and analyses core themes that are not just about understanding governance in the CE but about finding real solutions to make it work at scale. From power dynamics and trust issues to policy gaps and transaction costs, governance challenges are at the heart of why CE adoption is still slow. The key is refining polycentric governance to ensure collaboration, fairness, efficiency, and long-term sustainability.

### **3.2.1. Power Dynamics and Institutional Complexity in Circular Governance**

Polycentric governance in the CE sounds great in theory, with multiple actors making decisions together, but in reality, power imbalances often make it one-sided (Cramer, 2022). Large corporations, especially in resource-heavy industries like textiles and rare earth metals, dominate decision-making, leaving smaller suppliers and informal recyclers with little say. The challenge is figuring out how governance structures can redistribute power more equitably. Solutions could involve mandatory resource-sharing policies, stricter supply chain accountability, or new institutional mechanisms that give SMEs and informal actors a stronger role in CE decision-making. A key question is: Can polycentric governance truly work when power is not distributed fairly?

### **3.2.2. Building Trust and Legitimacy in Multi-Stakeholder Collaboration**

Trust is the glue that holds any governance system together, but in CE, it is often missing (Minoja and Romano, 2024). Formal recyclers don't trust informal ones, small businesses don't trust corporations, and private firms often resist government intervention. This lack of trust slows down cooperation and creates inefficiencies. Research needs to dig into what actually builds trust in CE governance: is it greater transparency, better regulatory oversight, or more participatory decision-making? For instance, sustainability certifications and digital tracking systems can help, but do they genuinely build trust or just provide surface-level compliance? Understanding how to create legitimacy in CE governance is key to ensuring that all actors, not just the powerful ones, are willing to engage.

### **3.2.3. Reducing Transaction Costs to Make CE More Attractive**

One major reason why businesses hesitate to embrace circularity is the high transaction costs, legal uncertainties, compliance burdens, and the logistical headache of tracking materials (Fehlner, 2024). If it is cheaper to stick with a linear model, companies won't shift. This raises a pressing question: How can governance mechanisms make circular practices more cost-efficient? Digital innovations like blockchain for supply chain transparency (Acosta Llano et al., 2025), AI-powered resource-matching platforms, and automated regulatory compliance systems might help, but are they scalable? The real challenge is determining what governance structures minimize these costs while maintaining accountability.

### **3.2.4. Making Governance Adaptive and Resilient to Shocks**

Circular governance cannot be rigid, it needs to adapt to unexpected disruptions like pandemics, geopolitical crises, or supply chain breakdowns (Kennedy and Linnenluecke, 2022). The COVID-19 crisis showed how fragile global supply networks are, with companies hoarding resources rather than sharing them. Governance systems need to be flexible enough to adjust policies in real-time while maintaining long-term sustainability goals. Concepts like "small wins" governance (incremental progress over time) are promising, but they assume industries are willing to experiment and adapt—what if they are not? Research should explore how adaptive governance can be implemented in sectors resistant to change and what regulatory mechanisms help businesses stay flexible without abandoning CE goals when a crisis hits.

### **3.2.5. Bridging Policy Gaps and Institutional Voids in Circular Governance**

Many CE policies fail because they do not fit within existing legal and regulatory frameworks (Corvellec et al., 2022). In some regions, there are no clear rules on how CE should operate, while in others, conflicting policies make implementation nearly impossible (Bag and Rahman, 2024; Braz and de Mello, 2022). For example, some recycling laws make secondary material use expensive, discouraging businesses from adopting CE principles. How can governance frameworks fill these gaps? Public-private partnerships, self-regulatory initiatives, or international policy alignment might help, but they all come with challenges. Research should focus on which governance models best bridge institutional voids and how policy fragmentation can be overcome to create a smoother transition to CE.

### **3.2.6. Coordinating Circular Resource Management Across Industries**

One of the biggest CE challenges is that industries operate in silos (Bag and Rahman, 2024). Waste from one sector could be a valuable resource for another, yet governance mechanisms rarely encourage cross-sector collaboration. For example, food waste from retailers could be turned into biogas, or textile scraps could be used in construction materials but regulatory barriers, liability concerns, and logistical issues get in the way. What governance structures enable cross-industry collaboration in CE? Could material flow tracking systems, industry consortia, or regulatory incentives for industrial symbiosis be the answer? Future research should explore what actually works in breaking down these silos and making circular collaborations scalable and efficient.

## **4. The Dynamic Polycentric Model for Circular Economy Governance (DPC)**

Governance in the CE is often hindered by power imbalances, high transaction costs, regulatory fragmentation, and a lack of trust among stakeholders. To overcome these challenges, the DPC model provides a self-adjusting, trust-based, and cost-efficient governance framework that enhances collaboration, reduces inefficiencies, and ensures resilience in CE transitions. This model moves beyond traditional governance structures by introducing fluid, interconnected governance clusters that adapt in real-time based on economic, regulatory, and environmental shifts.



The DPC model is based on three governance clusters, namely Resource Optimization, Regulatory, and Trust in Digital connections, at its core. These clusters interact dynamically and exchange information through an argument and dependent values, thus efficiently managing circular resource management, regulatory alignment, and data sharing. A weighted governance system enables compliance and is not rigid but reacts accordingly to stakeholders' reliability, helping increase accountability rather than uncontrolled regulatory burdens. Further, smart contracts and Circular Economy Smart Contracts (CESCs) based on blockchain automatically make compliance verification, material tracking, and financial transactions, and eliminate transaction costs and bureaucratic delays.

This model is a major innovation because it integrates adaptive resilience protocols into the governance clusters that can adapt to external shocks such as an economic crisis, supply chain disruption, or new policy developments. In other words, some regulations can be temporarily relaxed, or some emergency response measures can be made without jeopardizing implementing long-term CE objectives during a crisis. Furthermore, the Cross Industry Synergy Hub makes sure that there is cross-industry synergy so that instead of wasting materials from different sectors in industry silos, they can share resources.

The DPC Model combines systemic coordination and decentralized decision-making to make CE more robust, scalable, and affordable and is a significant game changer in CE governance. Companies can utilize AI-based governance adjustments, automated compliance mechanisms, and dynamic trust-based regulation to take advantage of the technology's benefits. This ensures operational and adaptive efficiency in this CE governance system for future challenges.

## **5. Concluding Remarks**

Technological innovation alone will not suffice to transition to a CE; effective governance mechanisms are needed that create collaborative, trustful, and efficient conditions across industries and supply chains for the new market structure. This review has focused on critical governance issues in CE and the particular setting of polycentric governance and privately owned resource management. It has also presented the DPC Model as a new framework to tackle these issues. To make governance more scalable, transparent, and responsive, the model includes multi-level governance clusters, trust-based compliance mechanisms, delegated decision-making to smart contracts, and adaptive resilience technology. Although the theory of polycentric governance promises benefits, barriers such as power asymmetries, regulatory misalignment, and high transaction costs persist. This review points out the importance of being flexible and technology-driven, yet capable of promoting long-term stakeholder alliance governance frameworks. However, as it stands, the model presented offers a structured approach to filling governance gaps; however, empirical research is required regarding the practical implementation of the model.

Limitations of this review include, firstly, its conceptual nature. The study primarily presents theoretical insights without empirical validation or case-based applications. The proposed governance model remains a conceptual framework that requires real-world testing to assess its effectiveness across different sectors and regulatory environments. In addition, although the review covers various industries, it does not offer a detailed sector-by-sector governance analysis. Different industries, such as electronics, construction, textiles, and food waste management, face unique governance challenges, which should be explored further in future research. Thirdly, governance structures are heavily influenced by national policies, legal frameworks, and cultural attitudes toward sustainability. This review does not fully address how variations in governance traditions, political systems, and economic priorities affect CE governance models across different regions. Fourthly, the proposed model assumes widespread adoption of digital governance tools such as blockchain, AI, and automated smart contracts. However, many regions and industries lack the infrastructure or capacity to implement such technologies, raising concerns about the model's feasibility in low-tech environments. Finally, while the model addresses power disparities, it does not fully explore how dominant market players, such as multinational corporations, regulatory bodies, and financial institutions, shape the governance landscape in ways that may reinforce existing inequalities. Future research should investigate how to prevent governance structures from becoming corporate control mechanisms rather than platforms for equitable collaboration. Addressing these limitations presents several critical research opportunities for advancing CE governance.

Governance remains the missing link in CE transitions. CE efforts will struggle to scale beyond isolated initiatives without robust, adaptive, and trust-driven governance frameworks. This review highlights that governance in CE is about enforcing compliance and creating governance ecosystems that develop trust, reduce inefficiencies, and drive meaningful collaboration.

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<sup>i</sup> [https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview?gad\\_source=1&gclid=CjwKCAiA3Na5BhAZEiwAzrfagORO4yN28ZU47t6US744IJHajsgBxuc0UvS7nebKo-jornkTGQEssBoCetcQAvD\\_BwE](https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview?gad_source=1&gclid=CjwKCAiA3Na5BhAZEiwAzrfagORO4yN28ZU47t6US744IJHajsgBxuc0UvS7nebKo-jornkTGQEssBoCetcQAvD_BwE)