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## **Rethinking service in a circular economy**

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## **Rethinking service in a circular economy**

### **Abstract**

The circular economy (CE) narrative promotes closed-loop systems to decouple economic activity from resource depletion. However, despite increasing scholarly interest, CE remains theoretically under-explored, often guided by practical issues and theories-in-use, that are implicitly embedded in the industrial paradigm of linear value chain thinking. There is a growing number of CE scholars calling for a ‘Great Reset’ of traditional economic frameworks, suggesting a departure from capitalism. Instead of a reset, this paper proposes a recalibration of assumptions foundational to traditional economic thought and suggests an alternative economic exchange model for CE—a service-dominant (S-D) logic. S-D logic offers a holistic framework of value cocreation and provides guidance to navigate change in complex service ecosystems. The paper demonstrates that S-D logic is not only compatible with the CE narrative but also reconciles the divergent strands of CE research. It concludes by offering strategic considerations to aid firms and entrepreneurs in navigating CE transitions.

### **Keywords**

Circular economy, meta-theoretical framework, value cocreation, Service-dominant logic

## **1. Introduction**

The circular economy (CE) is emerging into a popular narrative for societal, institutional and organisational change that offers guidance to decouple economic activity from resource depletion (Fischer et al., 2021; Gümüşay and Reinecke, 2022; Stahel 2016; Stal and Corvellec, 2018). Indeed, CE provides a counter-narrative to the dominant industrial paradigm of linear take-make-use-dispose value chains by proposing circular closed-loop systems that prolong the use of products, materials and resources (Merli, Preziosi, and Acampora 2018). Principles of CE include use of renewable energies, elimination of toxic chemicals, and waste eradication through maximizing reuse, repair, remake, and recycle (Bocken et al. 2016; Geissdoerfer et al. 2017; Jackson 2009; Kirchherr, Reike, and Hekkert 2017). While we see an increasing push from organizations and governments to adopt the circular imperative (European Commission, 2020), there is also a rising scholarly interest across disciplines as diverse as engineering (Reh 2013), environmental science (Korhonen et al. 2018), innovation, supply chain and business model research (Bocken et al. 2016; Kirchherr, Reike, and Hekkert 2017).

However, despite the abundance of CE publications, CE remains theoretically under-explored (Patala et al., 2022; Corvellec et al., 2022). We have identified two developments within the CE literature. First, the evaluation of theories is often driven by pragmatism, focusing on practical and technical problem-solving (Kirchherr et al. 2017), particularly related to optimizing renewable and finite material flows and achieving closed material loops (Corvellec et al., 2022). Consequently, theories-in-use often serve as the basis for business solutions (Nenonen et al., 2017; Zeithaml et al., 2020). Although these theories-in-use have significantly advanced the CE field and offer valuable guidance for developing more sustainable business models (Bocken et al., 2016; Geissdoerfer et al., 2017), supply chains (Angelis, Howard, and Miemczyk, 2018), material and product designs (Den Hollander et al., 2017), they remain—often implicitly—embedded within the linear value chain mindset of the

*industrial paradigm*, in which value creation is typically controlled and captured by one focal economic actor—the firm (Vargo, 2021; Fehrer and Wieland, 2021).

The second development, we see emerging in the academic CE debate is the call for a *paradigm shift*. For instance, a strand of CE research proposes sustainable degrowth (Schröder et al. 2019; Hobson and Lynch, 2016; Corvellec et al., 2022). Sustainable degrowth entails a reduction in production and consumption levels while simultaneously improving human well-being, ecological conditions, and equity. It represents a transformative pursuit aimed at establishing more equitable socio-economic structures while maintaining a reasonable level of economic throughput, thereby enhancing the quality of life within the limits of the planetary boundaries (Kallis et al., 2018). In line with the broader discussions within management practice, which emphasize the need for a 'Great Reset' (as advocated, for instance, by the World Economic Forum, 2020), these scholars propose a departure from capitalist principles when formulating theories related to CE (Hobson & Lynch, 2016; Keblowski et al., 2020; Lazarevic & Valve, 2017).

While this call for a 'Great Reset' points to certain problematic underlying assumptions within traditional economic thought, we caution against prematurely discarding market dynamics as the foundational drivers of CE. Instead, we suggest advancing and recalibrating CE theory by explicitly addressing the following problematic assumptions:

First, traditional neoclassical economic models often assume that value creation is primarily driven by one actor, typically the firm, through production, while other actors, such as consumers, deplete value through product use and then return to the firm for more value-laden products. This assumption reinforces the notion that value predominantly resides in goods and perpetuates a goods-dominant perspective (Vargo, 2021), even as the CE discourse increasingly recognizes the importance of services and servitization. This limited viewpoint

impedes the evolution of the CE narrative, as it adheres to an economic exchange model designed for an industrial—not a service economy (Fehrer et al., 2023).

Second, the underlying logic of value creation in traditional management thought, exemplified by Porter's (1980) work, focuses on competitive advantage and profitability of the focal firm, relegating environmentally responsible and ethical business practices to mere means to an end (Porter and Kramer, 2011). This perspective fails to fully acknowledge the importance of sustainability and ethical considerations as integral parts of value creation.

Third, neoclassical economic thought often neglects the interconnectedness of business practices within larger societal and ecological systems. Achieving a genuine transition toward sustainability requires collective institutional alignment processes and recognizing that business activities are inseparable from the broader social and ecological contexts (Vargo and Lusch, 2016). These three assumptions are problematic for CE to advance as they perpetuate a mental model of economic activity that contributes to the root causes of the sustainability issue (Vargo, 2021).

The purpose of this article is to systematically address and rectify these problematic assumptions by reconciling the CE narrative with the axioms of service-dominant (S-D) logic (Vargo and Lusch, 2004; 2008; 2016). S-D logic offers a comprehensive perspective on value cocreation and provides guidance for navigating change within complex service ecosystems (Vargo and Lusch, 2004, 2008, 2016). Specifically, S-D logic explains the processes of value cocreation and resource integration as inherently intertwined with social structures and occurring within nested social and economic systems, which are shaped and encompassed by institutional arrangements (Vargo, Wieland, and Akaka, 2015; Vargo et al., 2016).

We will demonstrate that S-D logic is not only compatible with the CE narrative but transcends and reconciles the divergent strands of CE research—those concerned with firm-centric business practices and models; and those concerned with regional development, policy

making, and CE transitions on the societal level. It can therefore provide a unifying meta-theoretical framework for sustainable value cocreation as part of the CE narrative. Specifically, we argue that all CEs are service economies and thus recalibrate the basis of economic exchange from value-laden goods to service processes involving broad sets of resource integrating actors. Second, we suggest, instead of reducing value creation in CE to activities performed by the firm, viewing value as always being cocreated through a wide range of market-facing (i.e., from firms, for money, in markets), public (e.g., community and government) and private (e.g., friends and family) sources. Third, we draw attention to the fact that value cocreation is enabled and constrained by the institutions and institutional arrangements that guide actors' collective efforts in nested service ecosystems and that these institutions need to be aligned with CE principles. Importantly, an ecosystemic view suggests that single actors can only shape, not manage nor control CE transitions. The paper concludes by offering a set of strategic considerations to aid firms and entrepreneurs in navigating CE transitions.

## **2. All circular economies are service economies**

### ***2.1 The circular economy narrative***

CE emerged as a critique to the prevailing '*linear*' economic model (Pearce and Turner, 1990). Linearity, in this case, refers to the industrial process perspective of following a linear path of firms *taking* resources, and *making* goods, and consumers ("end users") *using* and *disposing* them at their end-of-life stage. This linear path is viewed as problematic because it results in increasing waste and depletion of natural resources. The argument runs that CE can overcome this linear path by maintaining and prolonging the value of products, materials and resources in the economic cycle (Merli et al., 2018). CE specifically emphasizes achieving economic viability while simultaneously *decoupling economic growth from environmental degradation* (Stal and Corvellec 2018).

The roots of the CE lie within a broader paradigm that seeks to challenge conventional notions of production and consumption. It endeavors to emulate natural cycles in which waste becomes a valuable resource that sustains new life (Costanza et al., 2014; Ghisellini, Cialani, and Ulgiati, 2016; Greyson, 2007; Murray, Skene, and Haynes, 2017). The theoretical foundations of CE can be found in industrial ecology (Erkman, 1997; Graedel, 1996) and ecological economics (Costanza et al., 2014; Ghisellini, Cialani, and Ulgiati, 2016; Greyson, 2007; Murray, Skene, and Haynes, 2017). Industrial ecology draws inspiration from natural ecosystems and aims to transform linear industrial processes into cyclical processes. It views the industrial system as a subsystem that relies on resources and services provided by the biosphere. The aim is to close material and energy loops, improve energy efficiency, and reduce overall material use. Similarly, ecological economics acknowledges the interdependence of economic, social, and environmental systems, understanding that economic endeavors cannot be adequately conceptualized without considering the limits imposed by planetary boundaries (Bruel et al., 2019).

While its theoretical roots are much older, the adoption of CE as a new imperative in business practice was notably influenced by the establishment of the Ellen MacArthur Foundation's global network in 2013. This network united 100 leading companies dedicated to operating within the principles of CE, solidifying its significance in the business landscape. Over the past decade, the CE concept has undergone further refinement and exploration through various disciplinary lenses. These include business model thinking (Bocken et al., 2016; Geissdoerfer et al., 2017), design and innovation (Kiefer, Del Río, and Carrillo-Hermosilla, 2021), and supply chain management (Angelis, Howard, and Miemczyk, 2018).

The diverse range of research conducted across these business disciplines has resulted in a wide array of CE definitions. For example, Bocken et al. (2016) define the CE as the implementation of design and business model strategies that slow, close, and narrow resource

loops. Meanwhile, Geng and Doberstein (2008) propose that the CE encompasses the realization of closed-loop material flows throughout the entire economic system. Other definitions vary from narrower understandings that focus on recycling and reuse to broader systemic and holistic conceptualizations. The Ellen MacArthur Foundation, for instance, views the CE as “an industrial economy that is restorative or regenerative by intention and design” (2013, p.7).

Amidst this diversity of definitions, a set of broadly agreed-upon principles has emerged within the CE discourse. At its core, CE aims to design out waste and pollution by utilizing renewable energy and products that are designed to be easily recyclable (Webster, 2015), maintaining and extending the value of products, materials, and resources within the economic cycle (Bocken et al., 2016; Geissdoerfer et al., 2018; Ghisellini et al., 2016; Merli et al., 2018), regenerating natural systems (Lyle, 1994; Benyus, 2002), fostering collaboration and system thinking (Fehrer & Wieland, 2021; Konietzko et al., 2020), and promoting *dematerialization through service* (Tukker, 2004; Tukker, 2015).

## ***2.2 Service in the circular economy***

Service is increasingly recognized as playing a crucial role and is often discussed as a means to achieve dematerialization, which involves effectively reducing material throughput and resource consumption in circular closed-loop processes (Kasulaitis et al., 2019; Tukker et al., 2015). However, much of the existing CE literature, either implicitly or explicitly, tends to view service as an extension of goods. This inclination is evident in concepts such as products-as-a-service (PaaS) and product-service systems (PSS). We will explain service concepts used in the CE narrative briefly (see Table 1 for a summary).



**Table 1.** Service concepts used in the circular economy

	Service concepts used in the Circular Economy				Service-dominant logic (S-D logic)
	Products-as-a-service (PRaaS)	Product-service systems (PPS)	Platform-as-a-service (PaaS)	Servitization	
<b>Concept</b>	Service strategy offering access to a product over ownership, maximizing use of products and reducing material waste.	Service strategy providing integrated sets of products and services to fulfil customer needs, designed to be economically, socially and environmentally sustainable.	Service strategy centred on developing, deploying, and managing digital applications and services and to inform CE transitions.	Strategic shift from transactional product-selling model to providing customer-centric solutions and building long-term relationships.	Describes economic activity in terms of service-for-service exchange, with service defined as using one’s resources for the benefit of another. This brings service to the center of economic exchange.
<b>Circularity</b>	Prolonged service life of products, which make them more cost- and resource-effective.	Prolonged service life of products, which make them more cost- and resource-effective.	Optimized resource use, product lifecycle management, and enhanced circular supply chain efficiency through advanced digital technologies	Effective reduction of material and resource throughput through delivering ongoing sustainable solutions.	Redirects discussion of circularity toward the important role of service relationships, meaningful partnerships and the role of broader sets of actors (including, but not limiting to the firm) as cocreators of value in service ecosystems.
<b>Value creation</b>	Value for the firm is based on usage (i.e., pay-for-use).  Value for customers through access to functionality, without having to buy product.	Value for firm, based on product (i.e., leasing or renting) and service provision.  Value for customers through integrated and customized solutions.	Value for platform, based on reduced transaction costs, complementarity and network effects.  Value for platform users through access to underutilized resources	Value for firm over time (stable and long-term predictable cash-flows) through relationship management.  Value for customers through outsourcing maintenance and access to expertise / knowledge.	Value creation is an interactive and cocreative process of resource integration between actors – enabled and constrained by institutions and institutional arrangements – rather than an outcome of the actions of one focal actor (e.g., the firm).
<b>Level of analysis</b>	Firm-level	Firm-level	Platform-level	Firm-level; firm-customer relationship	Nested ecosystems, micro, meso and macro-levels
<b>Key references</b>	<i>Fischer and Pascucci, 2017; Lieder et al. 2018; Hoffmann et al., 2020</i>	<i>Tukker, 2004, 2015; Kjaer et al. 2019; Vezzoli et al., 2015; Annarelli et al., 2016; Kristensen and Remmen, 2019</i>	<i>Del Vecchio et al., 2021; Konietzko et al., 2020; Wu et al. 2022; Meath et al., 2022</i>	<i>Spring and Araujo, 2017; Kreye and van Donk, 2021; Frishammar and Parida, 2019</i>	<i>Vargo and Lusch, 2004, 2008, 2016; Fehrer and Wieland, 2021; Vargo, 2021; Fehrer et al., 2023</i>

*Products-as-a-service (PRaaS)* strategies shift economic exchange from selling products to offering them as a service or subscription. Under this model, customers pay for the use of the product over a specified period rather than purchasing it outright (Hoffmann et al., 2020; Lieder et al., 2018). The underlying assumption is that PRaaS models contribute to the prolongation of product service life, leading to improved cost-effectiveness, resource efficiency, and environmental sustainability. For example, Hoffmann et al. (2020) illustrate the concept of diaper-as-a-service, where the use of efficient continuous batch washers for sanitizing cloth diapers is presented as a profitable business model with superior environmental performance compared to the production of disposable diapers. Services within the PRaaS framework can encompass a wide range of offerings, including installation, training, upgrades, replacements and IoT enabled subscription models. For instance, Hewlett-Packard's Instant Ink model uses connected printers to send customers replacement cartridges, along with pre-paid envelopes for returning used cartridges, before their customers run out of ink. These examples highlight how PRaaS models incentivize the design of durable products that can be reused, extending their lifespan and ultimately reducing waste.

*Product-service system (PSS)* strategies are often used interchangeably with PRaaS strategies, with a subtle difference lying in the emphasis on PSS as integrated solutions or product-service packages (Tukker, 2004; 2015). Within the context of CE, PSS concepts frequently serve as starting points for departing from traditional manufacturing, agriculture, or supply chain operations towards a circular approach to resource management (Neramballi et al., 2020; Wang et al., 2020; Kolling et al., 2022; Kühl et al., 2022; Nag et al., 2021).

In practice, CE implementation efforts often arise from business models that extend their value proposition beyond product sales to include services such as renting, leasing, and maintenance (Frishammar and Parida, 2019). For example, Bosch's BlueMovement service offers a subscription model to rent washing machines, where Bosch takes care of installation,

repairs, and replacements when needed. The underlying logic of PSS revolves around rethinking how needs are met, aiming for improved goods and services in tandem with enhanced material and energy efficiency (Hobson et al., 2018; Tukker, 2015). For instance, Pialot, Millet, and Bisiaux (2017) suggest that sustainability in PSS can be achieved through dynamic, continuous service upgrades and modular product design that enables repair instead of replacement. Similarly, Wang et al. (2020) highlight the potential of PSS for equipment manufacturers to provide high-value-added services. Others argue that PSS allows for better meeting customer needs by offering integrated and customized solutions that combine products and services (Kristensen and Remmen, 2019; Hobson et al., 2018).

Recently, *platforms-as-a-service (PaaS)* strategies are gaining prominence within the CE discourse. These strategies revolve around the development, deployment, and management of digital applications and services to facilitate CE transitions (Del Vecchio et al., 2021). For instance, digital infrastructure can enable the sharing and exchange of resources, products, and services, thereby promoting collaborative consumption and reducing waste (Wu et al. 2022). PaaS platforms can facilitate the creation of online marketplaces, where businesses and individuals can connect to share or trade underutilized resources, such as excess inventory, equipment, or materials (Kovacic et al., 2020). Furthermore, PaaS can support the development of circular economy business models and innovation (Konietzko et al. 2020), optimize resource use, product lifecycle management, and enhance circular supply chains. This is possible due to advanced digital technologies including data analytics, artificial intelligence, IoT integration, and application programming interfaces that enable the integration of circularity principles into digital service processes (Chauhan et al. 2022).

*Servitization* serves as the foundation for all three strategies: PRaaS, PSS, and PaaS (Frishammar and Parida, 2019; Spring and Araujo, 2017). However, it is worth noting that a significant portion of existing CE research on servitization primarily focuses on traditional

manufacturers (Kreye and van Donk, 2021; Raddats et al., 2017; Schmenner, 2009; Zhang et al., 2016). These studies outline strategic pathways for manufacturing industries to offer comprehensive market packages or bundles that include customer-centric combinations of goods, services, support, self-service, and knowledge (Vandermerwe and Rada, 1988, p. 314). The traditional concept of servitization assumes that manufacturers can benefit from transitioning to service provision through higher profit margins, stable cash flows, and increased competitiveness with customer lock-in (Kreye and van Donk, 2021; Wise and Baumgartner, 1999). On the other hand, customers can reduce operational costs by outsourcing maintenance activities and gaining access to technical expertise (Kastalli and Van Looy, 2013), enabling them to focus on their core competencies (Wise and Baumgartner, 1999).

According to this traditional view, products remain central to firms' value creation processes, with services provided to extend the lifespan of these products (Spring and Araujo, 2017). This perspective regards products as bundles of property rights or value-laden assets, making them prone to underutilization, overutilization, underpricing, or overpricing (Lay et al., 2009). This product-centric mindset maintains the belief that value creation primarily resides within the goods themselves. Stated alternatively, it reflects a *deeply ingrained goods-dominant logic*, which poses *challenges for the evolution of the CE narrative*, because it perpetuates an outdated economic exchange model that was originally developed for an industrial economy (Vargo, 2021). In order to fully embrace the principles of CE, there is a need to move away from this product-centric logic of value creation and transition toward a service-oriented approach that recognizes services as the basis for all economic exchange.

### ***2.3 Service-dominant logic***

Instead of considering service as an additional output or a distinct category of a product (such as intangible goods), Vargo and Lusch (2004) offer a different perspective by defining service

as *using one's resources, such as knowledge and skills, for the benefit of another*. Central to this view is the conceptualization of “*service*” (singular), not as a unit of output (often conveyed in the plural, “*services*”—i.e., intangible goods), but as a *process that underlies all economic and social exchanges* (Vargo and Lusch, 2004). The usefulness of an actor's resources in such exchange processes relies on the availability of resources from other actors and the willingness and ability of other actors to engage in exchange and resource integration (Vargo and Lusch, 2011).

By placing emphasis on service-for-service exchanges, with service at the core of value cocreation, this perspective offers a robust foundation for reimagining CE as a strategic orientation (Vargo, 2021). It presents a counterpoint to traditional strategy and business model frameworks, where a single actor, typically the firm, creates, delivers, and captures value (Fehrer and Wieland, 2021). Instead, S-D logic suggests that value is always cocreated through the collaboration of a wide range of actors (Vargo and Lusch, 2004), including firms, customers, communities, governments, and others. Notably, *all these actors*, whether through policy-making or recycling waste, *both provide and receive service*.

In accordance with S-D logic, no single actor can solely deliver value but can only participate in the creation and offering of value propositions (Vargo and Lusch, 2008). Vargo and Lusch (2016) further argue that the processes of value cocreation and resource integration are *enabled and constrained by institutions and institutional arrangements* that coordinate actors' behaviors within nested service ecosystems. Accordingly, they define these service ecosystems as “relatively self-contained, self-adjusting system[s] of resource integrating actors connected by shared institutional arrangements and mutual value creation through service exchange” (Vargo and Lusch, 2016, pp.10-11).

Institutions encompass social structures, such as rules, norms, and symbols, that facilitate the coordination of actors' behaviors and collaborative practices. However, it is

important to recognize that institutions and institutional arrangements (collections of interconnected institutions) are not fixed or predetermined. Instead, they emerge and are shaped through the collective actions of actors (Vargo & Lusch, 2016). To illustrate this, let's consider the example of second-hand stores. These stores have existed since the 19th century, with organizations like the Salvation Army opening them to provide affordable clothing to those in need. Over time, as societal awareness of environmental issues increased and appreciation for second-hand items grew, a market for vintage clothing emerged. This led to the flourishing of high-end vintage boutiques and the establishment of sharing platforms like Rent a Runway, a service that offers rental options for designer clothing. Through these developments, second-hand stores and related service platforms gained institutional legitimacy and became recognized as viable alternatives in the fashion industry.

By adopting S-D logic, it becomes evident that value is always cocreated through circular service-for-service exchange, highlighting the importance of institutions and institutional change processes in propelling CE transitions (Lawrence, Suddaby, & Leca, 2009). In the subsequent section, we will delve deeper into the understanding of value cocreation as part of the CE narrative.

### **3. Value is always cocreated in circular economies**

There is ongoing discussion about CE transitions requiring a fundamental change in how we define the purpose of business and the way value is created. Some scholars argue that value creation should go beyond economic measures and include considerations for societal well-being and environmental stewardship (Bocken et al., 2014; Manninen et al., 2018; Fehrer and Wieland, 2021). This perspective aligns with the concept of the triple-bottom-line (TBL) coined by Elkington in 1994, which emphasizes the integration of environmental and social resources into business practices. The TBL is concerned with the integration of environmental

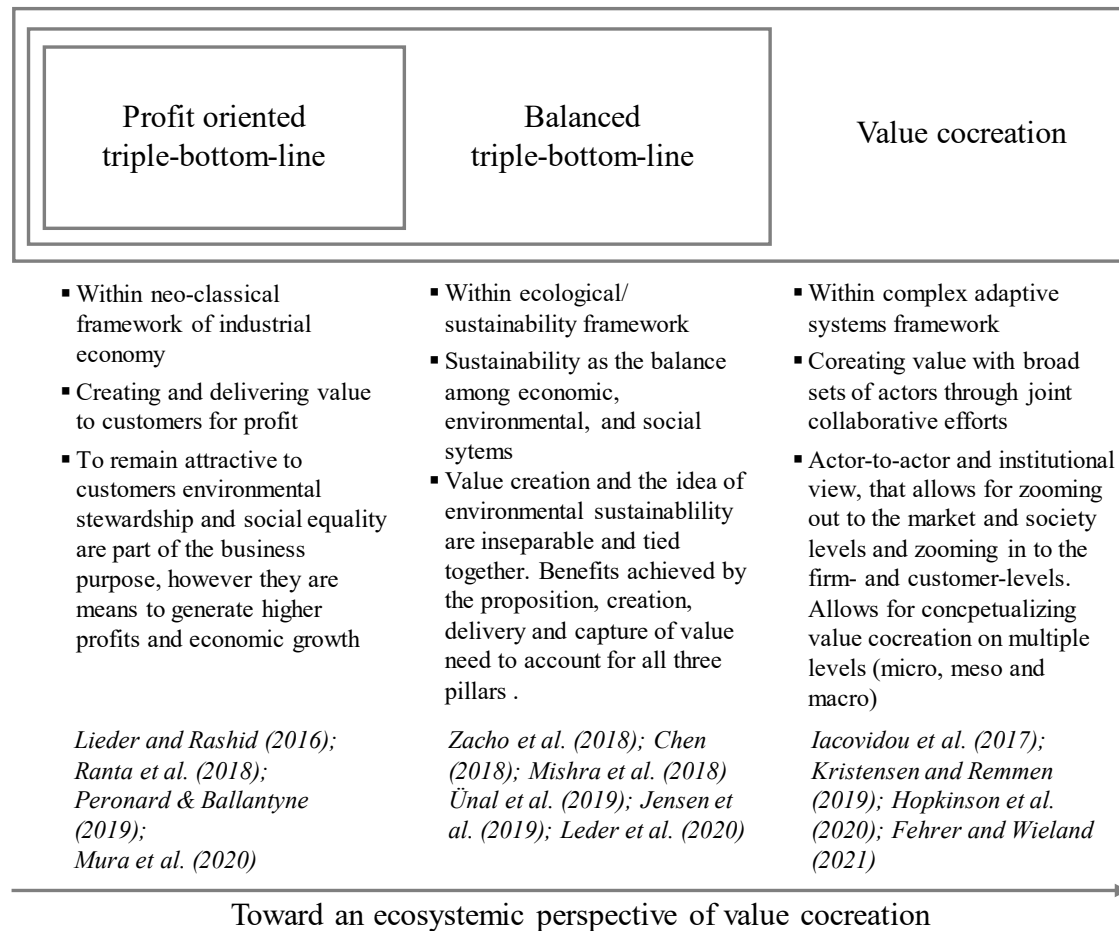
and social resources (often viewed as externalities in traditional economic thought) that arise when actors knowingly or unknowingly benefit from resource integration while cocreating costs borne by other actors (Peñaloza and Mish, 2011). Such forms of resource integration, sometimes labelled as the ‘tragedy of the commons’, have been recognized as a longstanding problem in markets (Fisk, 1973; Press and Arnould, 2008; Schultz and Holbrook, 1999)—and fuel a central CE debate.

Within the literature on the circular economy, two opposing viewpoints regarding the TBL have emerged: a profit-oriented TBL perspective (e.g., Lieder and Rashid, 2016; Ranta et al. 2018; Mura et al. 2020) and balanced TBL perspective (e.g., Zacho et al. 2018; Chen, 2018; Jensen et al. 2019; Leder et al. 2020). The profit-oriented TBL approach focuses primarily on economic gains, while the balanced TBL approach seeks to achieve a more equitable integration of economic, environmental, and social factors. We will explain both, before we discuss how they can be reconciled through a lens of value cocreation (see Figure 1 for an overview).

The discourse surrounding the *profit-oriented TBL* perspective largely remains within the realm of traditional economic thought, which considers value-in-exchange (for goods) as the appropriate metric and exemplar, not only for market development but also for social development (Peñaloza and Mish, 2011; Porter and Kramer, 2011). While acknowledging the importance of environmental stewardship and social progress in value creation, the profit-oriented approach tends to prioritize economic considerations. For instance, Lieder and Rashid (2016) argue that prioritizing the economic perspective is crucial for the success of the circular economy, suggesting that actions aimed at minimizing environmental impact and resource depletion should be carried out with an underlying economic agenda. Similarly, Ranta et al. (2018) propose that “the cost efficiency of circular operations is the key proponent to successful CE business” (p. 996), emphasizing that circular economy principles are effective only when

they generate economic value. This perception of “sustainability as a cost rather than an investment” (Mura et al. 2020, p. 5) is further ingrained in the mindsets of many business owners and managers as an empirical study by Mura et al. (2020) shows.

**Figure 1.** Viewpoints on value in CE



The *balanced TBL approach* aligns more closely with the ideas put forth by Amartya Sen (1999) and Joseph Stiglitz (2000), who argue that social progress and, by extension, environmental stewardship should be recognized as benefits rather than costs. In this perspective, value is not solely reduced to an economic dimension. Zacho et al. (2018) contend that adopting a non-reductionist view of value is crucial. Instead of exclusively focusing on economic aspects, they emphasize the importance of evaluating potential political and



regulatory measures based on their environmental, financial, and especially social value. This viewpoint acknowledges the need to consider the broader societal impact and benefits derived from these measures.

There is growing evidence supporting moral-oriented and ethical mental models that are becoming intertwined with the narrative of the circular economy. This is exemplified by the rise of social entrepreneurship and social purpose organizations, which emphasize the pursuit of social and environmental objectives alongside economic goals (do Adro and Fernandes, 2020; Fehrer and Wieland, 2021).

While the balanced approach to value creation in the circular economy (CE) is gaining recognition, there is also a growing acknowledgment of potential conflicts between different goals. Ünal et al. (2019) argue that “short term monetary [gain] compromises for long-term [sustainable] gain” (p. 304). They conclude that overcoming the linear prioritization of short-term economic value creation requires a CE approach that aligns the interests of the company and its value network.

Furthermore, caution is urged regarding rebound effects, which can occur when actors prioritize environmental stewardship but inadvertently contribute to overuse. Korhonen et al. (2018) highlight this concern. To illustrate, let's consider the example of electric vehicles (EVs), which are promoted as a means to reduce greenhouse gas emissions. EVs are more energy-efficient and have lower emissions compared to gasoline-powered vehicles, making them a sustainable transportation option. However, if the increased availability and affordability of EVs lead to more individuals driving or traveling longer distances, the overall emissions savings may be offset or diminished. This highlights the complex interdependencies between economic, environmental, and social resource integration processes, necessitating a more systemic perspective of value cocreation.

Instead of solely attributing value creation to firm activities, S-D logic suggests that *value can be cocreated through various sources*, including *market-facing interactions* (e.g., between firms, involving monetary transactions in markets), *public interactions* (e.g., involving communities and government), and *private interactions* (e.g., involving friends and family). The understanding of value cocreation within S-D logic surpasses mere economic exchange and encompasses social exchange processes and non-market domains. In other words, value cocreation is not limited to transactions within markets, but also takes into account the social interactions and exchanges that occur in broader societal contexts (Vargo and Lusch, 2004).

To capture the complexity of circular resource flows, Fehrer and Wieland (2021) suggest that the CE narrative can benefit from an S-D logic informed perspective on value cocreation. Take Loop, a platform that offers reusable packaging solutions to tackle single-use packaging waste as an example. Loop's platform involves multiple stakeholders, such as retailers, consumers, manufacturers, and waste management companies, working together within a circular system for packaging. Each stakeholder contributes to the value cocreation process in their own way: retailers by providing reusable packaging options, customers by returning empty packaging, manufacturers by redesigning supply chains for reusable packaging, and waste management companies by collecting and cleaning the packaging solutions. S-D logic allows for zooming out to the market and societal level while also zooming in to firm- and customer-level interactions.

Furthermore, S-D logic highlights that value cocreation cannot be solely managed by a single actor; instead, it is coordinated through institutions and institutional arrangements (Vargo and Lusch, 2016) that give meaning to circular business practices. Returning to the Loop example, customers may choose to return packaging as a way to set a good example for their children, retailers may be influenced by new plastic packaging regulations, and

manufacturers may need to comply with sustainability standards agreed upon in their supply chain networks. This case demonstrates that value cocreation is a process in which all actors negotiate value propositions to reach mutually agreeable and legitimized outcomes. Taking a systemic and institutional perspective not only helps explain the complex interdependencies and goal conflicts inherent in the TBL concept, but also highlights the importance of value cocreation that extends beyond the individual benefits of actors to encompass the viability of nested service ecosystems, such as families, companies, markets, and societies, in which these actors operate (Vargo and Lusch, 2017; Edvardsson et al., 2011; Akaka and Vargo, 2015).

#### **4. CE transitions require (re-)configurations of circular service ecosystem properties**

Recent research suggests that adopting an ecosystemic perspective is crucial for understanding CE transitions (Aarikka-Stenroos, Ritala, and Thomas, 2021; Boldrini and Antheaume, 2021; Konietzko, Bocken, and Hultink). For instance, Konietzko et al. (2020) argue that circularity should be viewed as a systemic property, such as the transportation system within a city, rather than focusing solely on individual products or services like electric vehicles or ridesharing providers. Taking a business ecosystem perspective, Konietzko et al. (2020) propose three principles for circular ecosystem innovation. The first principle emphasizes the importance of strong collaboration among all actors in the ecosystem, including representatives from different industries. These actors must negotiate and agree upon shared objectives and strategies to work collectively towards circularity. The second principle revolves around ongoing experimentation, where the circular ecosystem continuously defines and redefines its value proposition and resources. The third principle highlights the need for an open online platform that serves as a coordination mechanism for all social and economic interactions within the ecosystem.

A circular business ecosystem perspective explains how a set of business actors, including producers, suppliers, service providers, end users, regulators, civil society organizations contribute collectively to achieve circular outcomes (Jacobides et al., 2018) and serves to explore cooperative and competitive activities of multiple organizations (Suominen et al., 2019). While valuable in revealing interorganizational collaboration and complex network coordination beyond single firms (Aarikka-Stenroos, Ritala, and Thomas, 2021), most business ecosystem concepts remain predominantly firm-centric, albeit focused on groups of firms (Boldrini and Antheaume 2021) or large firms as orchestrators of ecosystem partners (Parida et al. 2019).

An S-D logic informed *circular service ecosystem perspective* in contrast, as highlighted by Vargo and Lusch (2011), effectively captures the complexity of multi-actor settings. It recognizes that economic and societal transitions are grounded in institutional change processes, emphasizing the interplay between actors and institutions. A service ecosystems perspective further expands beyond narrow value creation by a focal firm or network of firms. It allows for zooming out to consider value cocreation and resource integration processes within nested service ecosystems. This broader perspective further acknowledges the interconnectedness of various *nested and overlapping service ecosystems and their interdependencies*.

Importantly in the context of CE, the natural environment plays a crucial role. It can be seen as the supra service ecosystem within which all other social and economic service ecosystems are nested (Fehrer and Bove, 2022). Unlike more narrow business and innovation ecosystem perspectives, the *natural environment is explicitly incorporated into the circular service ecosystem definition*. It is recognized as an integral part rather than an external dimension. Fehrer et al. (2023) conclude that all other human-made service ecosystems exist within the boundaries of the natural environment. A circular service ecosystem perspective,

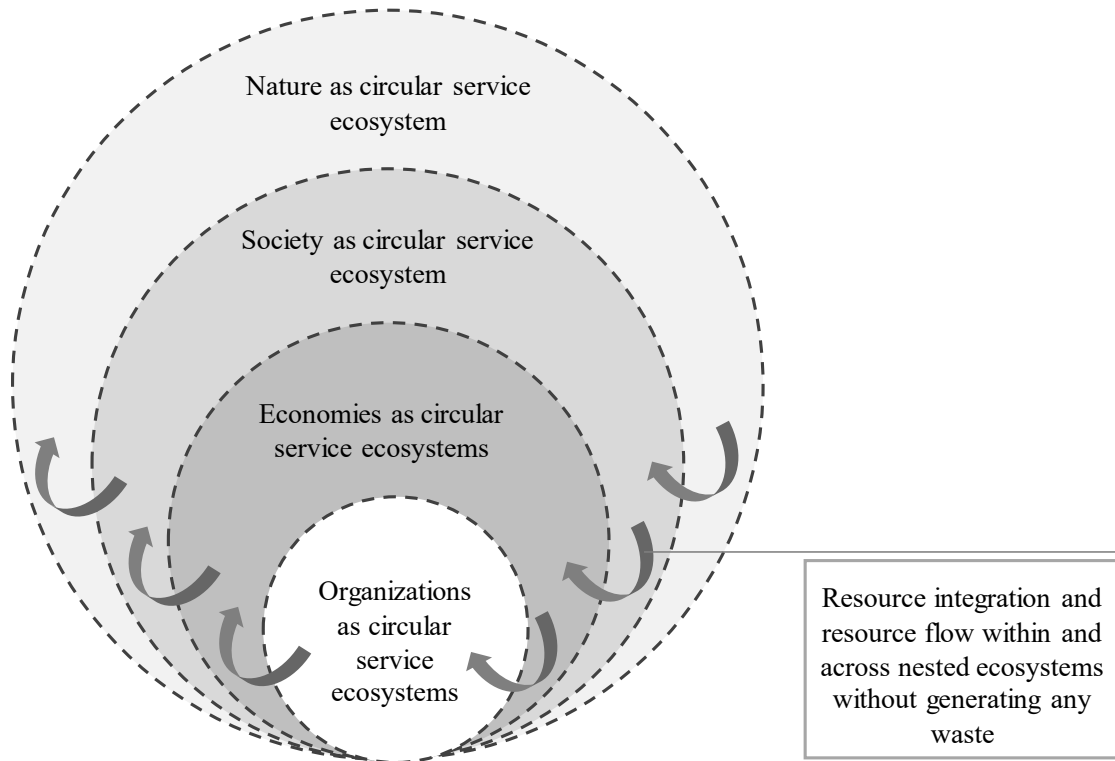
therefore, inherently embraces a strong sustainability ethic (Neumayer, 1999). It takes a long-term approach to sustainability and acknowledges the intrinsic value of nature and the necessity for ecosystemic change.

This further aligns with an upcoming stream of CE research concerned with complex issues of circular regional development (Paes et al., 2022; Nesticò et al., 2022). This research points to the indispensable role of ecosystem service provided by a territory, which encompasses aspects such as clean air, food, water, recreation, and infrastructure. This ecosystem service plays a pivotal role in meeting the diverse needs of the human population and ensuring their overall well-being and long-term sustainability (Xu et al., 2016). It recognizes that urban areas and regions are not isolated entities but intricate systems deeply interconnected with their surrounding environments. The notion of ecosystem service highlights the tangible and intangible benefits derived from natural and built environments. Clean air, for instance, contributes to improved public health and well-being, while access to quality food and water ensures the nutritional needs of urban residents are met sustainably. Moreover, green spaces and recreational facilities offer opportunities for leisure, relaxation, and connection with nature, enhancing the overall quality of life in cities. Adequate infrastructure, including transportation systems and waste management, supports efficient resource utilization and contributes to the resilience of regions. (Daily, 1997; Costanza, 1997; Xu et al., 2016).

Circular service ecosystems, as Figure 2 illustrates can be viewed as “ideal types of service ecosystems, regenerative and embedded within nature, where (material, intellectual, digital and financial) resources flow seamlessly within and between nested systems without creating any waste or leakage.” (Fehrer et al., 2023, page 1). Transitions to this ideal type are underpinned by processes that unfold within and between nested service ecosystems and their components (i.e., actors, resources and institutional arrangements) (Fehrer et al., 2023). They

inspire episodes of de- and re-institutionalization, resulting in emergent, novel outcomes and ecosystem properties (Vargo et al., 2023; Polese et al. 2021) that eventually feature circularity.

**Figure 2.** Nested circular service ecosystems



Vargo and Lusch (2016) suggest that service ecosystems—just like natural ecosystems—are self-organizing, co-evolutionary and emergent, both constrained and enabled by their structures (see also, Taillard *et al.*, 2016; Vargo *et al.*, 2022). Emergence means that order and structure (i.e., institutions and institutional arrangements) are not imposed by a ‘system manager’ (Roundy, Bradshaw & Brockman, 2018). Instead, order and structure are the intended (and potentially unintended) outcomes of coordinated and uncoordinated activities of broad sets of actors. Whether those actors are policymakers investigating new regulations, managers exploring new circular business processes, or activist groups driving new practices, circular transitions can ‘bubble up,’ challenge incumbent institutions, and become accepted

(Fehrer et al., 2023). This is important to reiterate because it implies that the behaviors and structures of circular service ecosystems arise from bottom-up self-organization and coevolution rather than top-down control.

For CE this means that neither policy makers, incumbents, high-profile entrepreneurs, nor investors can manage CE transformations. However, actors in service ecosystems “have some reflective capacity, which enables them to observe the emergence they produce” (de Haan, 2006). By extension, actors can not only recognize that institutional arrangements are mutable (Suddaby, Viale, and Gendron, 2016; Vink & Koskela-Huotari, 2022), but shape them through institutional work—the purposive creation, change and disruption of institutional arrangements (Lawrence and Suddaby, 2006; Fehrer et al. 2020). For example, institutional creation might be achieved through undertaking political work, involving actions such as advocating through political or regulatory mechanisms for CE policies (Lawrence and Suddaby, 2006). Institutional creation may also emerge through changing belief systems achieved by negotiating and envisioning common strategic goals (Baker and Nenonen, 2020) and shaping the public CE discourse (Fehrer et al., 2022). Institutional disruption, on the other hand, can occur through undermining established institutions, for example, by demonizing the ethical foundations of previously accepted practices (Baker et al., 2019). Institutional work utilized to maintain institutions is typically achieved through actions such as reinforcing established networks (Micelotta and Washington, 2013) and purposively reproducing incumbent norms, practices and beliefs (Lawrence and Suddaby, 2006).

In sum, institutional arrangements play a crucial role in enabling constraining CE transitions. However, it is essential to recognize that these institutional arrangements are not fixed but socially constructed through the collective actions of various actors (Vargo and Lusch, 2016). This understanding is critical for the advancement of the CE narrative as it shifts the focus from designing and developing new circular solutions and circular business models

to *designing and shaping new circular service ecosystems* that are coordinated through institutions and institutional arrangements that facilitate circular, regenerative, and ethical service-for-service exchange.

## **5. Discussion**

### ***5.1 Theoretical implications***

The CE narrative emerged in response to the prevailing linear take-make-use-dispose model in industrial systems, with a vision to endorse alternative closed-loop systems that prolong the lifecycle of products, materials, and resources (Merli, Preziosi, and Acampora, 2018). However, our reading of the literature suggested that much of the existing CE work, both implicitly and explicitly, perpetuates linear value chain thinking or a goods-dominant logic (Vargo, 2021; Fehrer and Wieland, 2021). This persistence can be attributed to problematic underlying assumptions deeply rooted in the neoclassical economic doctrine.

One of these problematic assumptions is the conceptualization of circularity as merely a feature of products and manufacturing processes. By viewing circularity in this limited way, the focus remains primarily on the design and functionality of products or the efficiency of specific processes within value chains. This mindset reinforces the belief that value creation originates from the inherent qualities of goods, impeding the progress of the CE narrative. It reflects an outdated economic exchange model that was originally conceived for an industrial economy, where economic activities revolve around the manufacturing, distribution, and sale of tangible products.

Adopting S-D logic offers a transformative framework for CE. At its core, S-D logic suggests that all CEs fundamentally operate as service economies, leading to a recalibration of economic exchange from goods-centric to service-centric processes involving diverse actors who integrate and contribute resources. Service, in this context, is defined as the utilization of



one's resources, including knowledge and skills, for the benefit of another entity. It serves as the fundamental basis of circular exchange and circular resource integration. Actors embedded in circular service ecosystems rely on the availability of resources from other actors, recognizing the interdependence and collaborative nature of resource integration. Importantly, service-for-service exchange extends beyond traditional economic transactions and encompasses social exchanges and non-market domains, reflecting the holistic nature of CE.

Another assumption of many neoclassical models is that firms are solely responsible for value creation in an economy. This notion perpetuates the idea that value is primarily generated within the boundaries of focal firms or networks of firms. However, a comprehensive CE approach requires recognizing that value is cocreated among diverse actors, including consumers, families, communities, and the natural environment. Failing to acknowledge the collective nature of value cocreation through a wide range of actors hinders the full potential of circularity.

S-D logic aligns with CE's broader understanding of value creation, encompassing societal well-being and environmental stewardship. It recognizes that value cocreation extends beyond the firm, involving collaborative efforts across market-facing, public, and private domains. This expanded perspective of value cocreation provides a potentially robust foundation for exploring alignment processes and collective action in complex multi-actor settings. It highlights the importance of value cocreation that extends beyond the individual benefits of actors to encompass the viability of nested service ecosystems (Vargo and Lusch, 2017; Edvardsson et al., 2011; Akaka and Vargo, 2015), such as families, companies, markets, societies, and ultimately nature. It also allows for delving into the complexities of goal conflicts inherent in the TBL, rebound effects, and unintended consequences that may arise during CE transitions (Fehrer et al., 2023).

Relatedly, a third limitation of neoclassical economic models is their tendency to disregard the interdependencies of business practices within broader societal and ecological systems. This reductionist view has resulted in an oversimplified understanding in the current literature, suggesting that CE transitions can be successfully managed through new product designs, new circular business models, or circular supply chains. While circular products, business models and supply chains play crucial roles, they are not the sole determinants of successful CE implementations.

S-D logic explains that CE transitions necessitate adopting a holistic approach that accounts for long-term institutional change. These transitions involve episodes of de- and re-institutionalization, resulting in emergent, novel outcomes (circular solutions and processes) and ecosystem properties that eventually feature circularity (Fehrer et al., 2023; Vargo et al., 2023). To realize the transformative potential of CE, it is pivotal to recognize that transitioning from a linear model to a circular one requires more than just implementing new processes and technologies. It demands a fundamental (re-)configuration of norms, regulations, infrastructure and societal values. This process of de- and re-institutionalization involves reflecting on, challenging and reshaping existing structures, rules, and belief systems that perpetuate linear economic models. By recognizing the importance of institutions, we acknowledge that CE transitions cannot be solely managed or controlled by single actors. Rather, they require collaborative efforts and systemic change across nested service ecosystems. Embracing S-D logic's ecosystemic view, allows for moving beyond the narrow focus on individual actors and recognizing the interdependence and collective responsibility necessary for successful CE transitions.

With this study, we argue that the S-D logic not only aligns with the CE narrative but also transcends and reconciles the diverse strands of CE research, those providing service strategies on the firm-level (e.g., Fischer and Pascucci, 2017; Lieder et al. 2018; Kristensen et

al. 2019; Hobson et al. 2018), and others concerned with ecosystem collaboration (Konietzko et al, 2020), complex issues of urban and regional development (Paes et al., 2022; Nesticò et al., 2022) and macroeconomic and societal considerations (Boonman et al., 2023; Jaeger-Erben et al., 2021). As we have shown, by adopting an S-D logic informed meta-theoretical perspective, it becomes possible to address some of the critiques levelled against the CE and circular business models. These criticisms highlight CE's diffused conceptual boundaries, the absence of well-defined theoretical foundations, and an excessive emphasis of academic studies on narrow technical and economic aspects, overall limiting its contribution to sustainable economic development (Corvellec et al., 2022).

## ***5.2 Strategic implications***

Drawing from S-D logic as a guiding framework for CE, we have identified a set of strategic considerations, summarized in Table 2, that can drive the transition toward more sustainable and inclusive economies. First and foremost, organizations need to shift their mindset from a goods-centric to a service-centric perspective, recognizing service as the core of value creation. This shift enables them to view resources such as knowledge, skills, and data as essential components for achieving circular exchange and resource integration. In order to enhance resource efficiency and promote circularity, organizations should also facilitate the sharing and integration of resources through the creation of platforms and initiatives that foster collaboration and cooperation among diverse actors across market-facing, public, and private domains.

**Table 2.** S-D logic informed strategic considerations to further advance the CE narrative

S-D logic informed CE narrative	Explanation	Strategic considerations
<b>All circular economies are service economies</b>	The adoption of S-D logic offers a transformative framework for CE, recognizing that all CEs fundamentally operate as service economies. This shift recalibrates economic exchange from goods-centric to service-centric processes, involving diverse actors who integrate and contribute resources, extending beyond traditional economic transactions to encompass social exchanges and non-market domains.	<ol style="list-style-type: none"> <li>1. Shift mindset: Embrace a service-centric perspective, recognizing service as the core of value creation in the circular economy (CE).</li> <li>2. Facilitate resource sharing: Create platforms and initiatives to foster collaboration and cooperation among diverse actors across market-facing, public, and private domains, enhancing resource efficiency and promoting circularity.</li> </ol>
<b>Value is always cocreated in circular economies</b>	S-D logic aligns with CE's broader understanding of value creation, emphasizing its extension beyond the firm and involving collaborative efforts across various domains. This expanded perspective of value cocreation provides a robust foundation for exploring alignment processes, collective action, and addressing complex multi-actor challenges in CE transitions.	<ol style="list-style-type: none"> <li>3. Embrace a holistic approach: Consider economic, societal, and environmental dimensions in value creation, aligning business objectives with the principles of the circular economy for long-term sustainability.</li> <li>4. Develop comprehensive metrics: Design metrics and reporting frameworks that capture social and environmental impacts alongside economic indicators to effectively measure and communicate the broader dimensions of value creation.</li> <li>5. Achieve alignment in value propositions: Navigate preferences, tensions, and goal conflicts across nested stakeholder ecosystems to envision win-win-win scenarios that benefit all parties involved.</li> </ol>
<b>CE transitions require (re-) configurations of circular service ecosystem properties</b>	CE transitions require a holistic approach that involves long-term institutional change, including episodes of de- and re-institutionalization. This transformative process goes beyond implementing new technologies and processes and involves reflecting, challenging and reshaping existing structures, rules, and belief systems that perpetuate linear economic models. By embracing an ecosystemic view and acknowledging the interdependence of actors within nested service ecosystems, CE transitions can be approached collaboratively and with a collective responsibility for achieving circularity.	<ol style="list-style-type: none"> <li>6. Create benefits for the wider ecosystem: Share knowledge and infrastructure with other actors, including competitors, to foster collaboration, mutual support, and the collective advancement of circular practices.</li> <li>7. Embrace emergence and continuous innovation: Cultivate an agile organization capable of addressing the complex challenges that arise during CE transitions through continuous innovation and adaptation.</li> <li>8. Enable self-organization: Reduce centralized decision-making and hierarchical structures, fostering flexibility, agility, and adaptability to navigate changing circumstances, unintended consequences, and seize new opportunities.</li> <li>9. Advocate for CE principles: Take an active role in influencing policy discussions, collaborating with other organizations, and sharing knowledge to drive systemic change in support of the circular economy.</li> <li>10. Shape circular service ecosystems: Shift focus from managing business models and supply chains to co-creating sustainable and resilient circular service ecosystems, leveraging complementary resources and capabilities for collective success.</li> </ol>

A holistic approach to value creation is also essential for CE success, encompassing economic considerations, societal well-being, and environmental stewardship. Organizations can ensure long-term sustainability by aligning their business objectives with the principles of the circular economy. To effectively measure and communicate their progress, organizations should develop metrics and reporting frameworks that capture the broader dimensions of value creation, including social and environmental impacts. Integrated reporting approaches provide a comprehensive view of organizations' contributions to CE. Additionally, achieving alignment in value propositions and envisioning win-win-win scenarios requires navigating preferences, tensions, goal conflicts, and unintended consequences across nested stakeholder ecosystems. Creating benefits for the wider service ecosystem by sharing knowledge and infrastructure fosters collaboration and mutual support, contributing to the collective advancement of circular practices. This might not just benefit the actors involved, but other actors, including competitors. For instance, the global manufacturer of modular carpet tiles, Interface has developed a number of resources and tools to promote sustainable business practices in the carpet and textile industry. The company's Sustainability Consulting team offers services to help other businesses reduce their environmental impact and improve their sustainability performance. Interface also offers a free online resource center, the Designing with Climate in Mind toolkit, which provides guidance for designers and architects on how to reduce the carbon footprint of their projects. While they are competitors, Interface and Desso collaborate to shape sustainable standards in the carpet industry. Both companies have developed into global industry leaders because of their holistic and systemic CE approach.

Finally, understanding the interdependencies and interrelationships within nested service ecosystems is crucial for effectively influencing CE transitions. This involves embracing emergence and cultivating an agile organization capable of continuous innovation to address the complex challenges that arise during CE transitions. Enabling self-organization

reduces centralized decision-making and hierarchical structures, fostering an environment that promotes flexibility, agility, and adaptability to navigate changing circumstances, unintended consequences, and seize new opportunities. Simultaneously, taking an active role in advocating for CE principles and thought leadership is essential. By influencing policy discussions, collaborating with other organizations, and sharing knowledge, organizations can drive systemic change. This shifts managerial focus from managing business models and supply chains towards shaping sustainable and resilient circular service ecosystems, where actors can leverage and benefit from complementary resources and capabilities.

## **Conclusion**

This study introduces an alternative meta-theoretical framework for CE, inspired by S-D logic. This framework challenges conventional neoclassical assumptions and promotes a systemic perspective, offering significant insights that can aid scholars, corporations, and entrepreneurs in breaking free from the outdated industrial paradigm. While forward-thinking CE scholars ground their work in a systemic comprehension of value creation, encompassing a wider spectrum of actors beyond the focal firm and a more comprehensive conceptualization of value beyond mere economic profit, there is a tendency to revert to linear value chain thinking in the realms of CE process design, business model development, and the operationalization and implementation of CE principles.

Our study underscores the necessity of a comprehensive approach to circularity, one that integrates economic, societal, and environmental facets. In line with S-D logic, it highlights the critical role of value cocreation among a diverse range of actors and the importance of collaborative initiatives spanning different domains. Understanding the interdependencies within nested service ecosystems is crucial for successful CE transitions and necessitates driving long-term institutional change through (re-)configurations of norms and infrastructure.

By fusing S-D logic with the CE narrative, we present a transformative framework that encourages organizations, scholars, and entrepreneurs to alter their perspectives, adopt a systemic outlook, and contribute to the development of more sustainable and inclusive economic models. It challenges the dominant linear value chain thinking and accentuates the importance of value cocreation within nested circular service ecosystems. It redirects the focus of CE back to its original idea, which is to benefit not only businesses, but also society and the environment at large.

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