




Article

The Role of Consumers in Business Model Innovations for a Sustainable Circular Bioeconomy

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Abstract: Over the last decade, various governments and supranational bodies have promoted the development of a circular bioeconomy (CBE) as a response to sustainability challenges. The transition towards a CBE requires the collaboration of different actors in the innovation (eco)system. With this conceptual paper, we apply a circular business model lens to address the research question: “What are the archetypical roles of consumers in business model innovations for a sustainable CBE?” We use a combination of complementary theories from the circular economy and bioeconomy literature, evolutionary innovation economics, sustainability transitions research, the business model literature, and the work on active consumers. Considering consumers’ agency as a continuum between the manufacturer-active paradigm and the consumer-active paradigm, we propose: (i) consumers in the manufacturer-active paradigm can actively influence circular business models with their purchase decision; (ii) consumers can act as lobbyists and influencers for circular business model innovation; (iii) in their different roles as customer, user, repairer, and reseller, consumers can incentivize organizations to adapt their business models to their needs; (iv) consumers can become key partners in the process of defining the normative orientation of the innovation paradigm for a CBE; (v) consumers can actively co-create value by means of co-ownership (e.g., through platform cooperatives).

Keywords: bioeconomy; circular economy; circular bioeconomy; business models; circular business models; consumers; consumer innovation



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1. Introduction

Large-scale and immediate changes are required on multiple levels of our current economic systems to adequately respond to the climate and ecological crisis. Humanity has already transgressed multiple crucial tipping points and “planetary boundaries” (e.g., [1–3]), and the most recent synthesis report issued by the Intergovernmental Panel on Climate Change (IPCC) reminds us that the negative impacts of climate change on human and planetary health will increase in severity with increments of global warming [4]. Therefore, to re-align our modes of production and consumption with the evolving biophysical environment and the ecological systems keeping us and other species alive and well, the IPCC urgently calls on industries to substantially reduce greenhouse gas emissions and to engage in “coordinated action throughout value chains to promote all mitigation options, including demand management, energy and materials efficiency, circular material flows, as well as abatement technologies and transformational changes in production processes” [4] (p. 71).

Over the last decade, various governments and supranational bodies have already promoted the development of circular and/or bio-based economic systems as a response

to climate change and other sustainability challenges, albeit with questionable success in terms of the extent of the structural transformations evoked by such *circular economy* (CE) and *bioeconomy* (BE) policies and programs (e.g., [5–15]). Different policies and (sometimes highly incompatible) visions and imaginaries of circular and/or bio-based economies have been developed (e.g., [16–22]), with several national and supranational strategies (e.g., [7,11,19,23–26]) aiming at the explicit combination of CE and BE approaches for more sustainable and *nature-positive* economies by means of a *circular bioeconomy* (CBE) (e.g., [27–40]). It must be stressed, however, that the achievement of such fundamental systemic change cannot be brought forth by governmental interventions and policy measures alone (see also [41] on related discussions). Already the rather straightforward goal of avoiding or minimizing waste by adhering to the *three R's* (*reduce, reuse, recycle*)—or multiple other R's (e.g., *refuse, resell, repair, refurbish, remanufacture, repurpose, recover, re-mine* [14,42])—suggests that the transition towards a CBE is a multiplayer and multilevel effort involving all kinds of economic actors in the processes of proposing, creating, delivering, and capturing value. In fact, the transition towards a CBE can be framed and understood in the context of *sustainability transitions* more broadly: sustainability transitions are long-term coevolutionary processes in multiple dimensions, including changes in “technology, user practices, business models, policies and governance approaches, and cultural meanings” [43–46] (p. 1067).

It is evident that in the transition towards a CBE, business as usual is no longer possible and that those businesses that respond to the challenges by adjusting their business model from short-term profits to long-term sustainability may not only survive but thrive. Due to the potential systemic impact of changes in business models (e.g., [47–51]), the transition towards a CE, BE, or CBE has often been investigated through the business model lens (e.g., [52–57]). Business models are characterized by three key elements: value proposition, value creation/delivery, and value capture [58–61]. A transition towards a CBE implies a business model innovation from the traditional business model following linear supply chains towards a circular business model (CBM) embedded in a value ecosystem.

From the perspective of contemporary evolutionary innovation economics and sustainability transitions research, business model innovations towards CBMs call for particular attention to at least four interrelated viewpoints:

- The “Faustian aspect” [62] of innovation (i.e., the ambiguity of innovation due to the coexistence of creative and destructive elements and impacts) and a normative turn resulting from the awareness that innovations have “dark sides” and that, consequently, other modes of innovation (e.g., transformative, social, and organizational) may be needed beyond an ecomodernist belief in new technologies as a panacea (e.g., [63–69]);
- The differential potential of CBM variants as catalysts for sustainability transitions (e.g., [47,48,50,51]);
- The Schumpeterian “creative destruction” and exnovation of linear business models to replace or transform them with those that incorporate the principles of CE or CBE [51,70];
- The complexity of innovation (eco)systems and the resulting shift in attention towards stakeholder interaction and value co-creation within complex value networks [71–74].

Due to the simple fact that these diverse debates on the normative turn, the potential of CBMs, the incorporation of CE principles for sustainability transitions, and the importance of value co-creation in innovation (eco)systems are relatively recent, there exist several research gaps in the literature, ranging from questions of conceptualization to the need for more empirical studies (e.g., [71,75]).

With this paper, we aim to address a specific research gap that has been identified both in the prior literature on bioeconomy in general [76] and regarding the literature on CBMs (e.g., [77–79]), namely, the role(s) of customers/customer relationships, users, the demand side, or *consumers* more generally in the context of these business model innovations towards CBMs for a CBE. As the prior literature suggests, consumers are not just passive recipients or “end-users” of innovation processes happening in organizations. Hence,

their agency and responsibility in sustainability transitions and the transition towards a BE or CBE should not be underestimated [74,76,80–82]. Consequently, we may need to shift the attention from a short-term perspective on how the consumer is “targeted” by business models towards a paradigm where active consumers can be decisive for sustainable business model innovation. With this conceptual paper, we will thus address the following exploratory question: *what are the archetypical roles of consumers in business model innovations for a sustainable CBE?* Our goal is a literature-based development of propositions that can be taken up in further research on CBMs and for the development of a typology of consumer involvement in business model innovations in a CBE context.

The paper is structured as follows: In Section 2, we describe the method and research design of our conceptual article. In Section 3, we provide some context on the development and importance of a sustainable CBE, proceed with a short recapitulation on the business model literature, and present why CBMs are a central building block in the transition to a sustainable CBE. In Section 4, we discuss the role and agency of consumers in circular business model innovation. Finally, in Section 5, we conclude with a discussion of our contribution and derive implications and avenues for future research.

2. Method and Research Design

In this article, we follow an approach of *theory adaptation* as proposed by Jaakola [83], which describes conceptual papers that aim at “changing the scope or perspective of an existing theory by informing it with other theories or perspectives” [83] (p. 22). More precisely, we conduct a *narrative literature review* as described by Sovacool et al. [84] and inform theory on the CBE transition with perspectives from the business model literature as well as the literature on the (passive vs. active) roles of consumers in innovation processes to answer our research question. Figure 1 depicts our research design and the logic of the knowledge creation process within this article: (a) On the “supply side”, new business models and especially more systemic variants of business models are necessary for a transition towards a sustainable CBE. Due to the “Faustian aspect” of innovation mentioned above (e.g., see [62]), it is of crucial importance to consider those business models that capture value from innovations and thus influence the sustainability of a CBE. (b) On the “demand side”, consumers can have a crucial influence on the design and success of the CBE transition [76] but are still an underestimated agent in the CBE and business model literature. (c) The roles of consumers in (circular) business models are under-researched (especially in the BE context) and differ from their roles in conventional business models [77–79,85].

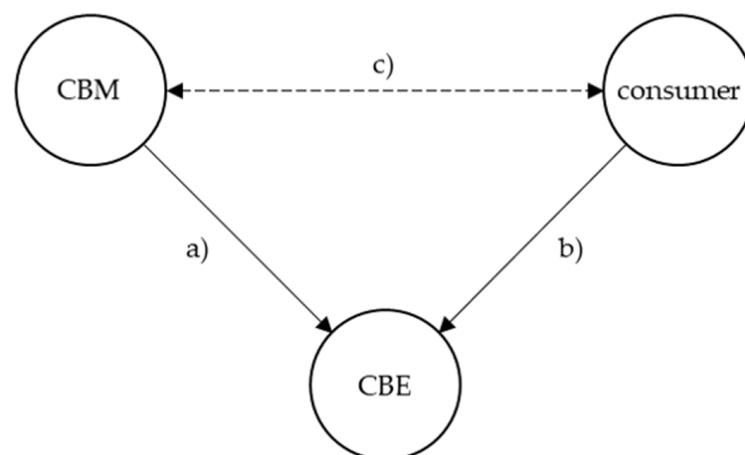


Figure 1. Research design of our theory adaptation. Source: own illustration.

One framework that allows us to conceptualize different degrees of consumer involvement in circular business models for a CBE is the agency continuum derived from the prior literature on consumer involvement in innovation processes because it facilitates

conceptualizing gradual changes and nuances of archetypical consumer roles that range from less to more active ones.

3. Innovation beyond Technology and Business Models for a Circular Bioeconomy

3.1. The Normative Turn and Its Relevance for the Circular Bioeconomy

Before addressing the topic of business models and consumer roles, it is necessary to provide some context on the development and importance of a sustainable CBE, especially since both the CE and BE can be regarded as *essentially contested concepts* (e.g., [13,67]). At the same time, a BE is not sustainable per se, depending on the underlying vision or imaginary (e.g., [16–18,29,30,86,87]). Simple substitution of conventional products with bio-based ones is not enough if we want to avoid further transgressing planetary boundaries. Fundamental transformations of production *and* consumption patterns are needed in accordance with an overarching *normative turn* from the dominant techno-economic innovation paradigm focused on competitiveness, economic growth, and technological solutions towards an innovation paradigm dedicated towards transformative innovation, sustainability, regeneration, and justice (e.g., [30,63–66,69,87–91]). Similar to the differentiation of sustainability concepts into a continuum between very weak and very strong sustainability (e.g., [88,92]), BE approaches and visions range from substitution and green growth narratives following the rationale of neoclassical economics to a comprehensive ecological and evolutionary economy in the sense of Georgescu-Roegen's bioeconomics [16,69,93–96]. Although the notion of a CBE aims for economic processes more in line with the laws of thermodynamics, the CBE also runs the risk of being “hijacked” or misappropriated to fit the logics of what Joly has called the *economics of techno-scientific promises* [16,30,89,97].

Innovation is undoubtedly a key element in the transition towards a sustainable CBE. However, the implicit assumption that innovation is something inherently good and will almost automatically lead to more sustainable and just outcomes is something the recent innovation literature has rightfully challenged [41,62,63,65,68,90,91]. This normative turn towards the ethical and social implications of (all kinds of) innovation, as opposed to solely analyzing the mechanics and drivers of (technological) innovation, acknowledges that innovation can have significant (positive and negative) impacts on society, the environment, and the economy. However, the false belief (or desperate hope) that technological innovations (understood in this neoliberal belief system as almost magically created by the “invisible hand” or the ingenuity of entrepreneurs and innovative firms) will solve all societal problems is still strong and results in complacency and a lack of urgency to address pressing issues. Individuals, organizations, and political actors believing in and propagating these promises may adopt a “wait-and-see approach”, hoping that “the right” technological fix will emerge in due course. Additionally, it is important to acknowledge that the “value” of an innovation is contingent on its use and impact and dependent on who benefits from it and how it is implemented (e.g., just think about the development of nuclear technology or the use of social media). To better understand these value processes and networks and the related issues of beneficiaries, stakeholders, and implementation, it is worthwhile to adopt a business model perspective while keeping in mind the broader systemic context of transitions towards a sustainable CBE. Thereby, it should be possible to shift the focus from technological innovations to the broader context of innovative business models that affect and are affected by their environment, external factors, and actors outside of the original boundaries of a business organization [72,73].

3.2. Business Models: A Recapitulation

Business models can be seen as the orientational core of a business organization as they describe “the rationale of how an organization creates, delivers, and captures value” [61] (p. 14) or the “design or architecture of the value creation, delivery, and capture mechanisms employed” [60] (p. 172) (see also [52,58,59]). The recent literature on business models also frequently follows the tripartite division of the business model into (i) *value proposition*, (ii) *value creation and delivery*, and (iii) *value capture* (e.g., [47,58,70]). Every successful

business model has a clear value proposition by offering unique value to its customers. Traditionally, the value proposition is the creation of a product design that delivers value to the customer and may be the first step in developing or innovating a business model [98]. Value proposition deals with a variety of aspects, such as shared beliefs, customers, and geography (e.g., [99]). Value creation and delivery are directly linked to a company's ability to generate profit. A key element of business models is figuring out how to capture value from innovation [60]. Traditionally, a central purpose embedded in business models is the creation of lasting value to the customer, resulting in profit for the company. Therefore, the central question of how a long-term competitive advantage can be built is addressed by strategists. A successful business model thus conventionally aims at proposing value that is unique for the customers while achieving favorable risk and cost structures for yielding high profits [60]. It must be stressed, however, that the term business model is highly ambiguous, conveying different meanings depending on the context. It has been used, for example, to refer to only a part of a business model, to describe different business model types (e.g., [60,100–106]), or to outline concepts [107].

If business models are unsuccessful, it is often said to be due to them either failing the “narrative test” (i.e., the story they convey does not—or no longer—make sense) or the “numbers test” (i.e., the profits do not—or no longer—cover the losses) [108]. However, it is important to note that, far from being a static construct, business models are a dynamic, self-reinventing organizational construct that can be innovated to adapt to (or actively anticipate and initiate) changes in the organization's environment (if the narrative or the numbers tests fail, so to speak) [59,109,110]. This change in business models has been termed *business model innovation* (BMI). According to Geissdoerfer et al. [111], there are four generic applications or contexts for BMI (see also [109] for alternative BMI conceptualizations):

- The first one is when a company does not have a business model and a new one is created (“start-up”);
- The second is the fundamental change of the current business model into another one (“business model transformation”);
- The third is the adoption of an additional business model with the old one remaining in place (“business model diversification”);
- The last one refers to the identification, acquisition, and integration of an additional business model (“business model acquisition”).

However, when aiming for the transition towards a sustainable CBE, such traditional business models may fail, whereas the principles of a CE can help to create opportunities for BMI that may create new value streams or value webs and even completely new innovation trajectories (e.g., [55,71,112–116]).

3.3. Towards Circular Business Models for the Bioeconomy

With the increasing interest in circular (bio)economy concepts, a growing body of literature has dealt with designing *circular business models* (CBMs) (see also [117]) and developing frameworks including *business cycle canvas* [118], *sustainable circular business model innovation* [119], *circular business model canvas* [120], an *adapted sustainable business model canvas* [113], and a *circular business mapping tool* [121]. In line with Geissdoerfer et al. [111], BMI for CBMs particularly involves creating circular start-ups, diversifying into CBMs, acquiring CBMs, or transforming a business model into a circular one. The impact of this BMI process can be on the complete business model, on one or several of its components, or the relationships among the components [70]. CBMs offer a unique value proposition by shifting from the traditional, linear way of doing business to a potentially more sustainable approach prioritizing CE principles. From the perspective of the business, producing products and services that are environmentally friendly and socially responsible can improve customer engagement and loyalty (e.g., [122,123]).

In such dedicated (circular and sustainable) business models, the value proposition specifically reflects the commitment and the re-orientation of a company's innovation paradigm towards sustainability transitions [47]. The core value of a CBM is defined by

sustainability and circularity in the broader context of human thriving and well-being and the preservation of ecosystems as valued goals [47,124]. Likewise, the market segmentation reflects a new target and geography: it may no longer be enough to try and understand the needs of a given target population, it may also be important to actively support the education and market creation for a CBE [125,126]. Generally, there are multiple ways in which CBMs can create value, for example, through optimization of resource use, reduction of waste, and the generation of new revenue streams (e.g., [127]). More broadly, CBMs may reflect different sustainability approaches, ranging from very weak sustainability (*efficiency*) and intermediate sustainability (*consistency*) approaches towards (very) strong sustainability (*sufficiency* and/or *agroecology*) (e.g., [69,128–132]). Implementing circularity in bio-based business models can thus contribute to the production of novel materials, technologies, skills, and knowledge and the co-creation of value in the form of more sustainable practices for all actors in the economic system [47,114,128].

CBMs are often seen as a subcategory of *sustainable business models* (e.g., [70–73]), aiming at addressing sustainability issues by means of the four CBM archetypes of *cycling*, *extending*, *intensifying*, and/or *dematerializing* [53,70]: *Cycling* includes processes of “reuse, repair, and remanufacturing” [70] (p. 10). These kinds of processes are closely related to the closed-loop concept of CE [133]. In the CBE, cycling or recycling process are often discussed in the context of bioplastics (e.g., [134]), which are not biodegradable per se, or the recycling and re-valorization of agricultural waste (e.g., [135]). *Extending* resource cycles means extending the period during which a product can be used through robust design, marketing that promotes long use, and providing for maintenance and repair services [70]. *Intensifying* resource cycles means intensifying the use phase of the product through solutions such as the sharing economy [70,136]. *Dematerialization* of resource cycles involves the delivery of product benefits without the actual physical form of a product by substituting it with services or software solutions [70].

The transition to a CBE thus requires the adoption of dedicated CBMs that incorporate circularity as a constant requirement throughout the entire value process (cf. [47]). Generally, in CBMs product ownership is not necessarily transferred to the consumer when a sale is made. Instead, the seller can maintain ownership rights and the customer is only granted rights of usage. This means that although the consumer is able to use the product, they do not own it outright and may only have access rights [85,137,138]. This approach is designed to promote sustainable consumption and, in a certain sense, advocates for co-ownership, as buyers are incentivized to take care of the product and return it for further use or recycling.

Sample cases of successful BMI in the context of a CBE include small-scale business models that aim at minimizing the waste of local resources by using agricultural residuals for sustainable packaging solutions (e.g., [139]). Although such cases might not achieve complete circularity, they may serve as a pointer to studying the impact of this BMI on the societal acceptance of a CBE due to their positive impact on local stakeholders (e.g., local workforce, valorization of resources farmers would otherwise have had to dispose of, etc., cf. [139]). Another study conducted by De Keyser and Mathijs [140] mentions examples of circular BMI that could be achieved in a BE context with relatively little investment, such as waste conversion into biogas or biofertilizers. Nevertheless, circular BMI may face (at least) three recurring issues or obstacles: the lack of resources, both in terms of skills and materials [139]; the requirement of a radical transformation in the core values and attitudes of the company, which not everyone within the organization may be willing to follow (due to various reasons or “field forces” [141]), potentially resulting in a refusal to change [142]; stakeholder opposition in the sense of “regime resistance” [143] or due to the dominance of unsustainable attitudes such as climate change skepticism (e.g., [144], on a related note) or the belief in the economics of techno-scientific promises [89,97] in the wider population.

In line with the literature on the role of business models in sustainability transitions (e.g., [47,48,50,145]) as well as the shifting focus in the business model literature towards stakeholder interrelations and value co-creation in (eco)systems (e.g., [71–73,146]), it is

important to note that moving to CBMs may require innovation efforts that business organizations cannot effectuate on their own. One important and powerful stakeholder with a potentially systemic impact is the consumer (e.g., [74,76,80]). To be clear, we agree with other authors that CBMs have the potential to support the transition towards a sustainable CBE. However, we may also include the consumer more into the BMI beyond them being the “target” of an organization’s business model (see also [123], on a related discussion on consumer roles). Business models may connect and include different internal and external actors, thus fostering active contributions from consumers and acknowledging that they are more than the targets of marketing campaigns. In this sense, we will focus on the issue of active consumers in the remainder of this article.

4. Should We Say “Good Buy” or “Goodbye” to the Passive Consumer?

4.1. Consumer Involvement in Innovation Processes: The Agency Continuum

As already discussed in some of the authors’ earlier work (e.g., [74,76,147]), it is important to recollect that the roles of consumers in innovation processes have been subject to debate among economists, management scholars, and other innovation researchers for decades. Whereas some authors have highlighted the activities and internal capabilities of firms as the primary drivers of innovation, as in the so-called *technology push* or “manufacturer-active” paradigms (e.g., [148], see also [149]), others have argued that the demand side plays the more active role, as in the *market or demand pull* and “consumer-active” paradigms (e.g., [150–154]). A parallel debate on political consumerism in the sense of “consumption as voting” [155–157] can also be read as support for the notion that consumers can exert important influence on the innovation process, in this case by being a force of positive or negative selection of more or less *responsible* innovations [74,76]. Nevertheless, a strict and clear differentiation between consumers and producers of innovation is often impossible.

In fact, various more or less fragmented strands of the broader innovation literature have since dealt with the different degrees of consumers’ participation or integration in innovation and value creation processes (see also [81,158–160]), ranging from debates on *democratizing* and *free innovation* [161,162], *user innovation* or *consumer innovation* (e.g., [161,163,164]), and *open innovation* [165–167] to the *co-creation of value* in the context of a *service-dominant logic* (e.g., [146,168–170]), *prosumerism* (e.g., [171–174]), etc. A key message from these debates is that there is not just a binary category of “passive vs. active” consumers but a continuum of consumer agency with multiple intermediary realizations (e.g., [76,175–177]) that is also reflected, to varying degrees, in the literature on *innovation systems* and *innovation ecosystems* (e.g., [71,82,178]).

4.2. Innovating Business Models to Accommodate More Active Consumers

When discussing the role and agency of consumers in relation to BMI, we may start at one end of the continuum (see Figure 2) and begin with the roles and responsibilities of consumers in the context of the *manufacturer-active paradigm* (MAP) mentioned above (again, see [153,175] for terminology). From this perspective, the business organization has the most power and responsibility in the value network. Consumers are essentially reduced to the three traditional “facets of consumer behavior—*obtaining, use and disposal*” [179] (p. 768, emphasis in original). Already from the MAP perspective, consumers may have a certain influence on CBMs as their adoption of sustainable lifestyles creates a new target market for companies, prompting them to change their business model to meet the demand for more sustainable and circular products and services. Lewandowski [120] also makes the case for a more active role in the context of the *take-back system*. Here, the consumers are directly engaged because the company incentivizes them to return the products after use to close the loop [120]. Hence, even in the MAP, CBMs may increasingly involve the consumer in additional processes, such as recycling [120,123]; however, consumers are still part of the customer segment and customer relationship components of a business model, arguably still reflecting them as the “target” of a the firm’s business model. From this

point of view, on the one hand, firms aiming at transforming their business model towards circularity may tend to aim for an increase in the acceptance of circular BE products through marketing campaigns to specifically target the drivers of acceptance (e.g., [180]). On the other hand, consumers can take on responsibility through “voting” with their purchase decisions [155–157] and in the context of the responsible use and disposal/recycling of the product [76]. In this regard, we are mainly dealing with questions pertaining to the diffusion of “responsible innovations” and the importance of the share of “responsible consumers” as discussed in [74]. We may now take up the four types of BMI mentioned above (start-up, transformation, diversification, and acquisition [111]) to formulate our first (twofold) proposition.

	MAP				CAP
Proposition	Manufacturers need willingness to change towards CBE (1a). Consumers influence through consumption choices (1b).	Consumers become more active and act as lobbyists or influencers to incentivize manufacturers (2).	Consumers participate in CBMs (3a). This might trigger BMI on manufacturer side (3b).	Consumers and manufacturers become partners in CBMs (4).	Consumers and manufacturers become co-owners of CBMs (5).
Agency	Obtaining, using, disposing	Procuring and sharing information	Repairing, collecting, (re-) selling	Co-creating	Co-owning
Role	Consumer as customer	Consumer as influencer	Consumer as enabler	Consumer as co-creator	Consumer as co-owner
CBM perspective	Consumers can influence an organization's business model diversification and business model acquisition with their purchase decision.	Consumers can act as lobbyists and influencers for business model transformation	Consumers can extend their roles towards service providers, creating niches for business model innovations	Consumers and CBMs co-creating value for the whole innovation (eco)system, depending on the extent and characteristics of their integration.	Consumers can operationalize the value co-creation by means of co-ownership (e.g. through platform cooperatives)
CBE perspective	Adoption of sustainable lifestyles creates new demand	Promotion of a more fundamental transformation	Responsible consumption and production	Co-creation of the innovation paradigm	Citizen-led future

Figure 2. Continuum of consumer involvement between manufacturer-active paradigm (MAP) and consumer-active paradigm (CAP). Source: own illustration.

Proposition 1a: *From the point of view of the MAP, the first general requirement for BMI towards CBMs is to be forward thinking and willing to strategically conquer the niche of a CBE.*

Proposition 1b: *Depending on the share of consumers with a positive attitude towards a CBE over those with a strong throw-away mentality (i.e., “irresponsible consumers”, cf. [74]), consumers in the MAP can influence/incentivize an organization's business model diversification and business model acquisition with their purchase decision.*

The share of consumers with a positive attitude towards a CBE depends on multiple aspects often beyond the control of the company, such as demographic (e.g., education), economic (e.g., income), psychosocial (e.g., norms), cultural (e.g., status), and socio-material (e.g., legal) factors [78]. Yet, when we go beyond the three facets of consumer behavior, we may argue that consumers also have the power and responsibility to obtain and share information on the companies they interact with (e.g., see [76,80]), so that consumers may become active advocates and promoters for a particular business model by using their power to influence others and share their knowledge (see also [181,182], on related

discussions). In the context of a CBE, however, the domain of (obtaining and sharing) information becomes more complex as compared with more linear modes of production and consumption. Consumers may need to seek information on the entire value web, including raw material use and their origins, waste management, recycling, and repair services, etc. Hence, to account for the systemic nature and shared responsibility for sustainability transitions [76,80] (and also to potentially attract new customers), businesses and intermediary service providers (e.g., curators [183] or “green consumption assistants” [184]) need to provide transparent information about the various aspects of the CBM. In this regard, the consumer may use their power to promote a more fundamental transformation (instead of a diversification or acquisition) of a business model.

Proposition 2: *Consumers can act as lobbyists and influencers for business model transformation within their social network.*

Moving even more towards a consumer-active paradigm (CAP; again, cf. [153,175]), one may argue that within the additional services required in a CBE, consumers may also expand their “tri-dimensional” roles as customer, user, and end-of-life (EoL) product holder and take on additional roles such as repairer (who maintains), collector (who disassembles and identifies), and seller (e.g., as refurbished or second-hand products via platforms; see also [185]) (see [123] for a description of these activities and roles, albeit arguably with a more narrow view on the genuine roles of consumers). As also Müller and others argue [186,187], in the context of more active and responsible consumption, the roles of consumers and producers or “providers” of products and services have become ever more blurred, thus implying role-specific extensions of what Schlaile et al. called the “consumer responsibility territory” [80], that is, “a potential or possibility space” for responsible consumer behavior [76] (p. 20). This essentially reflects an intermediate position between the MAP and CAP.

Proposition 3a: *In a CBE, consumers may extend their genuine “tri-dimensional” roles (customer, user, and EoL product holder) towards a hexa-dimensional one, also including their roles as repairers, collectors, and (re-)sellers.*

Proposition 3b: *The hexa-dimensional expansion of the consumer responsibility territory can lead to a corresponding BMI, e.g., firms adopting an additional business model or transforming into platform providers, depending on the share of consumers adopting these new roles.*

Finally, when we take the discussions mentioned in the previous section seriously, we arrive at the other end of the continuum, the CAP. Here, consumers become actively involved in innovation processes and the co-creation of value [175,177,188]. However, also in the CAP various nuances exist, depending on whether the consumer is a stakeholder “outside” of the firm or an integral entity within the value ecosystem. In the case of the “outside stakeholder” perspective, consumers may co-innovate a business model by joining stakeholder workshops or providing feedback through channels offered by the organization. Yet, in line with the framework of service-dominant logic [146,168–170,177,189] and in the language of the business model canvas [61,120], consumers may be considered to move from the business model components of customer segment and customer relationship towards “key partnership”. Examples from the CBE may include approaches known from agroecology, where elements of the CE and the solidarity economy are combined in order to foster the co-creation and exchange of knowledge and a close linkage between farmers and consumers (or consumer associations and organizations) with the aim of a food system transformation [24,131,132].

By adopting the service-dominant logic, we can examine how CBMs as value ecosystems can lead to value co-creation, with the goal of improving the exchange of resources (e.g., knowledge, skills) between the company and consumers, both in terms of quantity and quality. Quero et al. [190] draw similar conclusions on universities as ecosystems.

Due to this close exchange of knowledge and the joint development of a problem definition, search heuristics, and the definition of success [47], consumers may co-create the “innovation paradigm” (cf. Urmetzer [47]) of the innovation (eco)system.

Proposition 4: *Consumers can become key partners in the process of defining the normative orientation of the innovation paradigm for a CBE, thus potentially co-defining and co-creating value for the whole innovation (eco)system, depending on the extent and characteristics of their integration.*

Consumers—like everyone else—are deeply impacted by the negative effects of exceeding planetary boundaries and global inequalities; it thus also makes sense for them to become “problem owners” and have a stake in business organizations that can address these problems. In this sense, it can be argued that if the consumer is an integral part of the value ecosystem, it also requires CBMs with new ownership structures (e.g., cooperatives) that reflect the co-creation (and also common capture) of value in the sense of prosumerism. According to Brown et al. [171] “prosumer business models are most likely to succeed when delivering value for both prosumers and the wider energy system” (p. 10). The same applies to CBMs in general: when value (i.e., circular processes, products, and services) is delivered to the whole innovation (eco)system, CBMs are likely to become successful catalysts for sustainability transitions. Multiple institutional arrangements for organizing co-ownership exist (e.g., see also Rosa et al. [117]), probably one of the most prominent ones being collaborative consumption platforms (sharing economy) and platform cooperatives [185,191].

For example, consumer-to-consumer interactions involve consumers renting out their goods like a rental agency, which is part of the prosumerism trend. When these rentals are conducted through a platform where payment is involved, it is called a peer-to-peer economy. The platform acts as an intermediary and provides services such as ratings, insurance, and automatic payment. Alternatively, there are platforms where consumers sell or give away goods to others; hence, ownership changes. These platforms contain a collaborative aspect, not between consumer and business but between consumer and consumer where the platform acts as intermediary [185]. Whereas peer-to-peer platforms are expected to gain importance in the next years, there is a growing trend towards alternative platform models that grant consumers ownership rights and a say in the matter of governance [185]. In these so-called platform cooperatives (see also [192]), consumers become genuine co-owners of the business/platform, thus enabling them to directly participate in and benefit from joint value creation activities. Interestingly, D’Amico et al. [193] recently proposed a platform-based approach to BE, albeit remaining unspecific about the ownership structure.

Proposition 5: *Platform cooperatives are a way to operationalize co-creation of value by means of co-ownership in CBMs for the CBE.*

In this context, Frenken [185] talks about the *citizen-led future*, where consumers and citizens alike take an active role in shaping the transition to a sustainable CBE (e.g., by means of urban gardens or urban agriculture [194]). Hence, to a certain extent, co-ownership also enables consumers to fulfil their responsibilities as consumer citizens (e.g., [76,80]).

5. Discussion and Conclusions

A successful transition to a sustainable CBE requires the participation of all stakeholders, including consumers. In other words, this endeavor implies a *shared responsibility* [74,76,80,195–197]. Various authors have discussed the roles of (circular) business models for a CBE [57,70,114,140] and the roles of consumers in the CE [78,79,123] and the BE [76]. However, there has been a gap in the research on the joint subject, particularly with an eye to the more active roles consumers can play in BMI processes towards CBMs for a CBE. We have taken this research gap as a starting point for our literature-based theory adaptation (as explained in Section 2), using an eclectic combination of suitable complementary lenses from the CE and BE literature, evolutionary innovation economics, sustainability transitions research, the business model literature, and the work on active

consumers. In other words, as also shown in Figure 1, we contribute to ongoing debates in the literature by means of a theory adaptation, specifically by informing, extending, and cross-fertilizing the literature on the CBE transition with concepts and discussions from the literature on (circular) BMI and the (more active) role of consumers in innovation processes. Although in many strands of the literature consumer behavior is seen as critical to the success of circular BMI (because their actions can either act as a barrier to change or facilitate it by providing feedback, ideas, and actions that lead to innovation), the more active roles of consumers as in the CAP appear to remain insufficiently conceptualized—especially in the CBE context.

Although our work is conceptual and follows a rather subjective, narrative approach to the literature as described in Section 2 (which poses clear limitations to our work), we contribute to the literature by developing five propositions that be taken up and refined in future empirical and case study work. Despite this need for future research, these propositions already yield various implications for the transition towards a sustainable CBE:

First and foremost, businesses must recognize that consumers can be—and arguably should become—more than passive “targets” of their business model. Consumer participation in BMI can bring economic benefits to the company while contributing to a more sustainable orientation of our economic system. Second, it follows from the above that in the MAP, the success of a CBM critically hinges upon the willingness of firms to occupy the CBE niche and the attitude of conscious and responsible consumers towards the CBE. This perspective would imply that the successful transition towards a CBE also requires educational and marketing efforts to positively influence consumer acceptance of CBMs. Third, as consumers have the power to be active “influencers” for CBMs, this can be supported by means of workshops, transparent communication infrastructure, and CBE networking and information events. At the same time, it is important to consider that consumers can also act as negative influencers (e.g., cf. negative word of mouth [198]). This emphasizes why it is important for consumers to be able to procure transparent, reliable, and easily accessible information on the sustainability and societal impact of the CBMs provided by businesses. Fourth, the consumer can act as an enabler for circular BMI by adopting new forms of using and disposing (e.g., repairing, reselling) products and services in a CBE; through this extension of their role towards becoming services providers, they create niches that the companies can enter by adopting CBMs. The orientation towards the circularity and sustainability of these niches is set by the consumers’ behavior, which prompts the companies to adapt (e.g., by offering platforms for these services). At the same time, companies require not only the incentives but also the absorptive capacities to incorporate circular economy principles [199,200]. In the broader context of the innovation (eco)system, this also implies that formal institutions and regulations need to be in place to recognize and support this changed and more active role of consumers as service providers and niche creators. Fifth, drawing on the service-dominant logic, including consumers as co-creators of CBMs implies that they can create value for the whole innovation ecosystem. Actively integrating the consumers’ perspectives and knowledge in the innovation process can lead to the development of entirely new business models and innovations that the company alone might never have uncovered. Hence, companies should view consumers as co-creators who can offer valuable input and feedback to improve their products and services. By involving consumers in this way, businesses can ensure that their practices align with the values and expectations of their customers. Ultimately, integrating consumers into circular bio-based business models has the potential to contribute to transformative innovation. Sixth, consumers can operationalize the value co-creation by means of co-ownership (e.g., through platform cooperatives), which implies a genuine move towards a citizen-led future, allowing consumers to take on their roles as consumer citizens and normative “stewards” of the CBE. Yet, also in the CAP, it should be remembered that consumers cannot develop their capacity to become stewards of the CBE on their own. Combining the insights gained from our discussions leads to the conclusion that although we need to pay more attention to the relationship between consumers and business models for a CBE, it is necessary to

embed these discussions into a systemic perspective of the *shared responsibility* of various economic actors (including policymakers, non-governmental organizations, educators, the media, etc.) [195,196].

- Building on our discussion, we can suggest various avenues for further research, including but not limited to the following ones:
- Empirical and case studies are required on the CAP side of a CBE;
- Policy implications and more tailored policy mixes for the CAP for a CBE must be scrutinized, accounting for the heterogeneous contexts of consumer integration and where in the MAP–CAP continuum the activity can be located;
- Extensions, revisions, and refinement of the proposed continuum should be related to sustainability transitions research more generally;
- Inquiries into suitable co-ownership models for platform-based Bes are needed;
- As the MAP–CAP continuum focuses on the fluctuating roles between manufacturers and consumers, future research should also aim at incorporating other innovation system actors into the agency continuum (e.g., academia, local communities, and other knowledge carriers) in the sense of a “stakeholder-active paradigm”, thus also linking back to the broader literature on (dedicated) innovation systems [40,41,65].

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