Degrowth Journal Volume 1 (2023) 00029
https://degrowthjournal.org/

degrowth
JOURNAL

THESIS SUMMARY

From recycling to recoupling: Towards a philosophy of the circular economy in the EU

Jonny Grünsch [a]

[a] University of Twente, Netherlands
Email address: jonny.gruensch@ethnologie.uni-halle.de

Information
Received 30 May 2022
Accepted 11 February 2023
Online 24 November 2023

Keywords
circular economy
sustainability
EU policy
environmental philosophy
degrowth

Grünsch, J. (2022). From Recycling to Recoupling: Towards a Philosophy of the Circular Economy in the EU (Master's thesis, University of Twente). https://purl.utwente.nl/essays/89516

1. Introduction

The transition from a linear to a circular economy (CE) is widely considered as an essential step towards sustainability. The CE is imagined to replace the current take-make-waste model that relies on the continuous input of raw materials from which products are made and then discarded. This model results in the depletion of finite resources, like coal and oil, and causes environmental waste pollution, such as plastic in the oceans and CO2 in the atmosphere. Supposedly, the CE would alleviate these ecological problems by keeping resources circulating in the economy through recycling materials and using renewable energy sources (MacArthur,

2013). The circulation of resources and the elimination of waste not only promises ecological sustainability, but also new business opportunities and economic growth.

The promise of a win-win scenario makes it an appealing idea, but evaluations of the CE are highly ambivalent. On the one hand, it tends to be popular with mainstream sustainability practitioners such as EU policy-makers. In 2020, the European Commission launched a second CE action plan, which builds upon the first 2015 action plan and is a central part of the European Green Deal (European Commission, 2019b). On the other hand, sustainability scholars tend to be critical of the CE, for instance because it lacks a clear definition, is based on technocratic politics, and fails to address established problems for sustainability such as laws of thermodynamics and the rebound-effect (see Corvellec et al., 2022, for an overview). The CE is being implemented in policy, while it remains conceptually unclear what the CE is and whether it would be desirable — even from the standpoint of sustainability.

There is thus a need to conceptually study the current EU CE policy. Analyses of the previous EU CE policy have diagnosed shortfalls in the action proposed (Calisto Friant et al., 2021; Kovacic et al., 2019; Leipold, 2021). More conceptual approaches have theorized desirable alternative versions of the CE (Bauwens et al., 2020; Genovese & Pansera, 2021; Hobson, 2016; Veraart & Blok, 2021). But there is a gap in research on the CE which embeds constructive, conceptual criticism within current policy practice.

In my thesis, I investigate the ecological sustainability of the recent EU CE policy from a conceptual standpoint (Grünsch, 2022). To do so, I employ a synthesized interdisciplinary methodology from the school of policy philosophy. I argue that the CE in the EU constitutes a conceptually incoherent, unstructured policy problem. It is defined as a new, ambitious sustainability agenda, which would fundamentally reshape the relationship between economic and ecological systems, but in practice continues previous technocentric, growth policies. To restructure CE policy and make it more coherent, I reframe the key concepts of circularity and decoupling: rather than recycling, CE should be understood as employing a strong ecomimetic approach to circularity which aims at recoupling economic with ecological systems. This entails socio-ethical transformations and limiting the economy within ecological boundaries. In the next section, I briefly elaborate on my methodological approach, then, I

summarize and present some of the outcomes of my analysis, before discussing their wider implication in the last section.

2. Approach and methodology: policy philosophy

In my thesis, I adapt an approach from the school of policy philosophy and the work of Robert Hoppe (2010), Adam Briggle (2016), and Alexandria Poole (2018). This interdisciplinary school treats policy as source and object for philosophical reasoning. It seeks to make conceptual contributions to current policy debates, by developing philosophy in dialogue with them. In my case, this consists in analyzing the ecological sustainability discourse in EU CE policy to critique and improve this policy on a philosophical level. This is what I mean by 'towards a philosophy of the CE in the EU'.

This approach is grounded in Robert Hoppe's (2010) theory of governance as problem-structuring. According to him, policy is generally concerned with problems, but their structure matters and varies: there are structured problems with agreements on means and ends, moderately structured problems, where there is agreement on either (means or ends), and unstructured problems with agreement on neither (Hoppe, 2010, pp. 73–76). Unstructured problems, to which the CE belongs as I will argue, are best approached by what Hoppe (2010, p. 190) calls, "policy philosopher[s]", who "intertwine normative analysis through the clarification of norms and values with evidence-oriented research and analysis". This style of analysis thus consists in fundamentally rethinking means and ends.

To achieve such fundamental rethinking, my approach mirrors the two-step methodology of Poole's (2018) work on UN sustainable development goals. In a first step, the current meaning of a policy, manifested in its underlying assumptions, is established through a philosophical discourse analysis. Such hermeneutic work is afforded by comparing and analyzing the language of key concepts, such as the 2015 and 2020 CE action plans. Step two then consists in a normative contribution that makes the philosophy more coherent, but still resonates with the policy. Central concepts analyzed in the first step are evaluated against established evidence and transformed through philosophical argumentation. For the sake of brevity, I

have combined this second step with the discussion in the fourth section, while the next section summarizes some findings established in the first step.

3. An analysis of EU CE policy: transformation and continuation

Currently, the most notable EU CE policy is the European Commission's (2020) "new Circular Economy Action Plan – for a cleaner and more competitive Europe". It is not a standalone policy initiative but "aims at accelerating the transformational change required by the European Green Deal, while building on circular economy actions implemented since 2015" (European Commission, 2020, pp. 2–3). As a *new* action plan, it follows up and builds on the first CE action plan: "Closing the Loop – A circular economy action plan for Europe" (European Commission, 2015). At the same time, the new action plan is deeply embedded in the EU's response to the climate crisis: the longest section of the European Green Deal is about the CE (European Commission, 2019b, pp. 6–8) and, upon its release, it has been called "an economic heart of the Green Deal", by the commissioner for the Environment Virginijus Sinkevičius (2020). Due to the growing importance of environmental governance, the CE has become influential in EU policy-making. Yet, it is caught in a tension between the transformation required by these new environmental demands and the continuation of prior CE policy.

I compare the 2015 and 2020 CE action plans along three important dimensions that are outlined in their respective introductions: how it is defined, what it should achieve, and why it is needed. I only discuss the definitions as an exemplar here (see Grünsch, 2022, Chapter 2 for a full analysis). In the first action plan, the European Commission (2015, p. 2) defined the CE as an "economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised". This contrasts with the current definition as a "regenerative growth model that gives back to the planet more than it takes" (European Commission, 2020, p. 2). According to the 2015 definition, a CE would minimize a specific kind of environmental harm (waste), whereas according to the 2020 plan, a CE should give back to the planet. The newer definition is more ambitious: it takes greater effort to restore everything than to retain partially. What's more, the 2020 action plan exchanges the mechanical language of closed loops in the 2015 plan for the biological language of regeneration and restoration. This expresses a view on the economy that is in

interaction with the environment rather than sealed off from it. Hence there is significant discursive transformation in the new action plan regarding what the CE is (and what it should achieve and why).

Given this change in the foundational concepts of the CE outlined in the introductions, I would also expect a similar transformation in the bodies of the 2015 and 2020 action plans. However, my analysis of the plans' bodies does not show any substantial changes in the proposed actions (Grünsch, 2022, Chapter 2). For the most part, the 2020 action plan continues the closed-loop, recycling actions of the 2015 plan. What it adds are two key concepts that are absent from the 2015 plan: circularity and decoupling. Circularity is best understood as the approach or means the CE takes towards sustainability (see Chapter 3). The European Commission (2020, p. 16) even considers "[c]ircularity as a prerequisite for climate neutrality". But what does circularity mean? Even if it is not defined explicitly, my analysis shows that it refers to closing material loops through recycling technology. In addition, the European Commission (2020, p. 2) claims: "Scaling up the circular economy … will make a decisive contribution to … decoupling economic growth from resource use". Absolute decoupling has become a key goal of the CE (see Chapter 4).

EU policy conceives of the CE in much more ecologically ambitious terms than before. But instead of providing concrete actions that would realize such new conception of the CE, the newer action plan relies on the same waste recycling approaches of the 2015 action plan, only adding vague additional concepts, like circularity, and highly implausible goals, such as decoupling. In the next section, I will make sense of this incoherence and propose modifications that are particularly relevant for the degrowth community.

4. Discussion: towards a degrowth philosophy of the CE

The major upshot of my analysis is the ambitious transformation of the CE concept, which was not matched by practical actions. This mismatch is a characteristic feature of EU CE policy. Analysis of previous policy have shown that the CE started in 2014 as a modest proposal to introduce some environmental concerns after the economic crisis, but already with the 2015 action plan the proposal increased significantly in ambition (Kovacic *et al.*, 2019, Chapter 3).

However, this hike was limited to the discourse around the CE, while the EU did little to enact an ambitious CE. This has led to "a dichotomy between words and actions" in previous EU CE policy (Calisto Friant *et al.*, 2021, p. 337). My analysis shows that this pattern continues and the gap between words and actions is widening in the 2020 action plan.

Hoppe's (2010) theory of governance as problem-structuring is helpful to make sense of this widening gap. Problems as understood by him are not static types; his problem structur*ing* perspective highlights the processes in policy-making through which problems are constituted and their structure change. In the case of EU CE policy, we can observe an *un*structuring: The initial mismatch is indicative of a moderately structured problem because there was agreement on the ambitious ends, but not on the means. My analysis shows, rather than structuring this problem and matching the ambitious discourse in action, the goals have further increased. Indeed, the qualitative shift in the definition (as well as goals and motivation) which recast the CE as organically regenerative and restorative rather than mechanically minimizing harm, indicates conflict in the ends themselves. EU CE policy now constitutes an unstructured problem.

Even though structured problems appear more desirable, recognizing the CE as an unstructured problem provides an opportunity for degrowth to influence its development. Degrowth scholars have come to be critical of the CE because of its technocratic approach to sustainability and pursuit of economic growth (Hobson, 2016, 2021; Valenzuela & Böhm, 2017). This criticism is justified, but if the CE is taken seriously as an unstructured problem, then both technocentric means and growth-centered ends need and can be rethought. My analysis shows that there is an ideal opportunity with the 2020 action plan to realize degrowth scholars Andrea Genovese and Mario Pensera's (2021, p. 16) proposal "to reshape, or 'occupy,' the language box built around the notion of circularity instead of rejecting it *tout court*". Following their proposal and in line with the second step of policy philosophy, I reframe the concepts of circularity and decoupling in a way that is conducive to degrowth in the next two subsections.

4.1. Circularity as Ecomimetic Ethics

As outlined above, circularity refers to the approach the CE employs. In EU policy, this approach is apparently understood as closing material loops through recycling technology. However, such technocentric understanding of the CE's means is problematic: closed material loops are highly questionable from a thermodynamics perspective and vulnerable to the rebound effect (Korhonen et al., 2018, pp. 43–44): materials degrade, energy dissipates, and the efficiency benefits of loops can be off-set by an increase in circulation volume. More importantly, it is the wrong kind of approach. If the CE is defined as regenerative and restorative, at least some loops cannot be closed, because they should give back to the planet.

Therefore, I propose, circularity should be understood as a form of biomimicry. Biomimicry, from the Greek *bios* (life, nature) and *mimesis* (imitation), is an approach to sustainable design. I argue that the CE intends to be sustainable by imitating the functioning of natural systems. Biomimicry not only does justice to the biological definition of regeneration and restoration; it also captures the central feature of the most influential CE graphic. The butterfly diagram by the Ellen MacArthur Foundation (2013, p. 7), of whom the EU adopts its recent definition, does not conceptualize the CE in terms of closed loops (see Figure 1 below). Rather the economic and industrial cycles on the right interface with and are modeled after the biospheric cycles on the left.

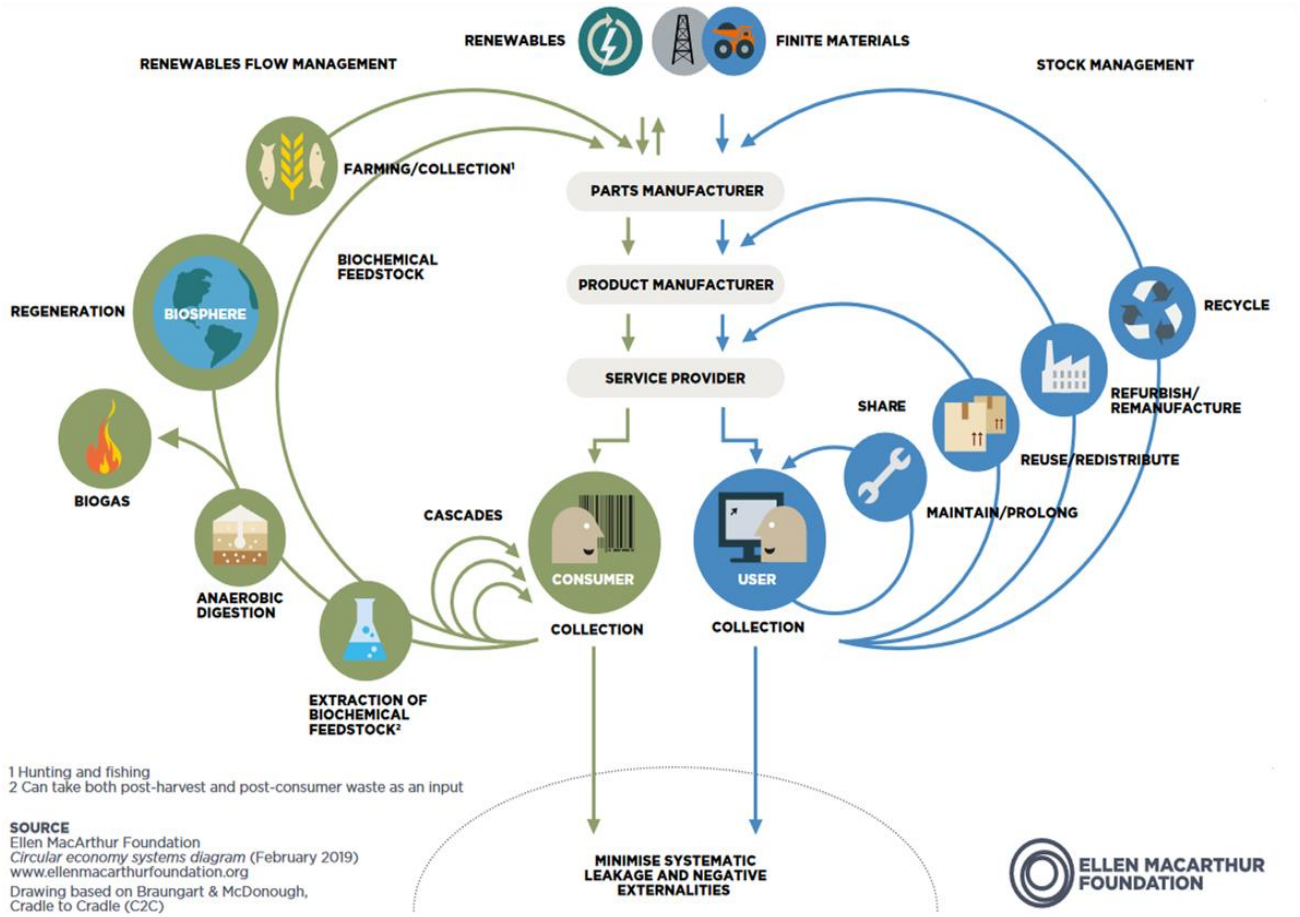

Figure 1: The Butterfly Diagram depicts a regenerative and restorative system. The economic or industrial loops on the right are modeled after biological loops on the left. Adopted from the Ellen MacArthur Foundation (2019).

The sustainability of biomimetic approaches is not uncontroversial. Following environmental philosopher Henry Dicks (2016, 2017) and philosophers of technology Vincent Blok and Bart Gremmen (2016), I argue biomimicry needs to be understood in a strong, ethical sense, rather than in a weak, poetic one. In order to be sustainable, the CE must be based on principles of actual ecological systems and not only take some creative inspiration from a vague notion of nature — I call this approach ecomimetic ethics. Contrary to the mechanical approach of closing loops, strong ecomimicry must go beyond technological solutions and also involve socio-cultural changes. A central principle of such ecomimetic ethics is limitedness. As the eminent ecologists Steward Pickett and Richard Ostfeld (1995, p. 266) put it, "[n]o component of a natural ecological system, at whatever level of organization, grows without limits". Understood as such, the pursuit of growth is antithetical to the CE's main approach.

My reframing of circularity in terms of an ecomimetic ethics should ease some worries proponents of degrowth have about the CE's technocentric approach. Furthermore, this reframing is directly relevant to a recent disagreement about the post-growth CE. Thomas Bauwens (2021) has proposed that only a post-growth path can lead to the CE, because of the economic costs of circularity. In response, Julian Kirchherr (2022, p. 2) has argued "[c]ircularity is best considered as a means towards sustainability instead of a means towards 'post-growth' which is effectively meaning degrowth". My argument resolves this disagreement, since degrowth is not an end of, but entailed by ecomimetic circularity. The choice is not between a CE that will lead to degrowth or sustainability, but limiting economic growth is an important means for any CE that seeks to be sustainable.

4.2. Decoupling as Recoupling

Decoupling was added to the 2020 CE action plan, which claims that the CE will decouple economic growth from resource use. The empirical evidence for decoupling is less than convincing (Hickel & Kallis, 2020; Næss & Høyer, 2009; Parrique et al., 2019; Vadén et al., 2020) but it is also conceptually questionable. Environmental philosopher Kenneth Shockley (2018) has argued that (de)coupling not only concerns the (weakening) correlation between economic growth and environmental pollution, but refers to (severing) the relation between human and natural systems in general. The link between economic and ecological systems is quite literally central to the butterfly diagram (see Figure 1 above). Therefore, decoupling is the wrong goal for the CE defined as a regenerative and restorative economy. I propose that the CE should aim for *re*coupling. Instead of (in vain) attempting to severe the link between economic and ecological systems, the CE should explicitly embrace this existing relation as a constitutive feature. Recoupling means acknowledging the economy's ecological basis and taking responsibility for the unavoidable impacts of economic activities.

The CE, based on a strong ecomimetic approach and aiming at recoupling, cannot be a growth economy. However, I do not posit ecomimicry and recoupling merely as means and goals for an alternative CE; both concepts are rooted in EU policy. As such, ecomimicry and recoupling are useful conceptual tools to occupy the language of the CE and thus re-structure the EU policy in line with degrowth. My philosophy has been far from exhaustive. I have only focused on the ecological sustainability of the CE, and a fuller philosophical account would need to be

integrated with critiques of the CE's socio-political dimension (Hobson, 2021; Pansera et al., 2021; Pla-Julián & Guevara, 2019). Still, a recoupled CE based on an ecomimetic ethics might ultimately provide a valuable economic model for degrowth, which at the same time strengthens degrowth's undertheorized relation with nature (Heikkurinen, 2021). In any case, the concepts of ecomimetic circularity and recoupling help to destabilize the understanding of the CE in the EU on its own terms: even in EU policy, it is less than clear that the CE should pursue economic growth through technological means. Indeed, its current definition is more plausible from a degrowth perspective — it is much easier to be regenerative and give back to the planet when taking less.

Conflict of interest

The author has no conflict of interest to disclose.

Funding

The author did receive any funding for this research.

Acknowledgements

I am grateful to Tamalone van den Eijenden and Minou Bouchehri for their helpful comments on this thesis presentation as well as to Dr. Alexandria Poole for her expert supervision of my master thesis.

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The author

Jonny Grünsch received his degree in Philosophy of Science, Technology and Society (M.Sc.) from the University of Twente in the Netherlands. His research interests lie at the intersection of politics, economy, technology, and nature. They encompass topics such as the philosophy of the circular economy and degrowth. He lives in Leipzig and is an aspiring degrowth and climate justice activist/scholar, who detests smartphones for their undeniable utility.