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Pansera, M., Genovese, A. orcid.org/0000-0002-5652-4634 and Ripa, M. (2021) *Politicising Circular Economy : what can we learn from Responsible Innovation?* *Journal of Responsible Innovation*, 8 (3). pp. 471-477. ISSN 2329-9460

<https://doi.org/10.1080/23299460.2021.1923315>

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To cite this article: Mario Pansera, Andrea Genovese & Maddalena Ripa (2021): Politicising Circular Economy: what can we learn from Responsible Innovation?, Journal of Responsible Innovation, DOI: [10.1080/23299460.2021.1923315](https://doi.org/10.1080/23299460.2021.1923315)

To link to this article: <https://doi.org/10.1080/23299460.2021.1923315>



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Published online: 12 May 2021.



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Politicising Circular Economy: what can we learn from Responsible Innovation?

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ABSTRACT

The 'Circular Economy' has become a new buzzword in debates about sustainability. Circularity, however, is usually presented in terms of scientific and technological challenges that often neglect the socio-political aspects related to the transition towards more sustainable futures, such as participation, co-creation and social justice. We argue that the Circular Economy agenda might greatly benefit from the field of Responsible Innovation. This argument is at the centre of the EU funded project, 'A Just Transition to Circular Economy' (JUST2CE), which aspires to address the present shortcomings of Circular Economy literature and practices. JUST2CE aims at understanding, in a critical way, under which conditions a responsible, inclusive and socially just transition to a Circular Economy is possible and desirable, what technical, political and social factors can enable or hamper such transformation and how these aspects can contribute to the development of transitional policy measures.

ARTICLE HISTORY

Received 24 January 2021
Accepted 26 April 2021

KEYWORDS

Circular Economy;
environmental justice;
Responsible Innovation;
stakeholders engagement

A powerful new buzzword

The 'Circular Economy' (CE) has become a powerful new buzzword within political and academic debates about environmental sustainability and climate change. Proponents see the CE as a new paradigm that is able to square the circle of economy-society-nature interactions (Ellen MacArthur Foundation 2015). The core idea is that, rather than discarding products at the end of their useful life, they should be designed in such a way to be re-employed in a cascade of subsequent or feedback uses (Ghisellini, Cialani, and Ulgiati 2016; Genovese et al. 2017). While its theoretical foundations have been debated for some time, being rooted in a wide array of academic disciplines, CE has only recently been pushed into the public discourse, with news media devoting increasing attention to it.

This increasing visibility of CE in the public sphere is accompanied by several attempts by national governments and international organisations to develop strategies for the implementation of CE practices at micro, meso and macro levels. Recently, the European Commission has adopted a 'Circular Economy Action Plan', which is also central in the

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European Green Deal (EGD). The measures proposed in the plan are aimed at closing the loop of product life cycles through greater recycling and reuse, with the objective of bringing benefits for both the environment and the economy. It is important to note, however, that the European Commission and its member states mainly rely on self-regulatory, bottom-up approaches for the practical implementation of the Action Plan, given the prevailing pro-market approaches in this geographical area, whereas countries like China are implementing large-scale top-down circular economy initiatives (Liu et al. 2016).

Importantly, however, it is also evident that the translation of such concepts into practical economic initiatives produces very diverse outcomes based on competing ideological perspectives. Scholars with different academic backgrounds have enquired about the type of governance and political regime that the CE implies. Among others, Hobson (2016) warns that CE may become yet another instance of neoliberal environmental governance, practiced through the eco-labelling of products and ecological modernisation, where the responsibility for societal change moves not only from public to private institutions, but also to the individual in her role as consumer rather than as citizen. Friant, Vermeulen, and Salomone (2020) point up that, given the ambiguity of the concept, different actors and sectors are articulating circular discourses which align with their interests, and which often do not sufficiently examine the ecological, social and political implications of circularity.

The assumptions behind CE agendas can be also questioned from a scientific perspective. As pointed out by Giampietro and Funtowicz (2020), the current characterisation of the CE concept is full of contradictions: while the concept acknowledges the dependence of the economy on biophysical flows, the proposed solution ignores the thermodynamic constraints ruling such flows. Furthermore, the implementation of CE practices and strategies in the current economic system might also have controversial *rebound* effects, hampering the achievement of advances towards more sustainable futures (Zink and Geyer 2017). As such, the CE agenda can be seen as the ultimate version of the ‘decoupling’ notion (Fletcher and Rammelt 2017). For its proponents, decoupling entails increasing the efficiency and productivity with which value is derived from natural resources in order to reconcile endless economic growth with environmental sustainability. Despite its biophysical impossibility, the decoupling narrative is being increasingly employed as tool that can effectively veil the fundamental tensions between the current capitalist economic model, environmental sustainability and poverty alleviation (Hickel and Kallis 2019; Parrique et al. 2019). Therefore, if CE framing doesn’t consider systemic socio-ecological implications, the term could easily become discredited as a new sophisticated form of greenwashing, yet embedded in the growth-capitalistic rhetoric (Genovese and Pansera 2020).

Ultimately, CE provides an avenue for blurring the tensions between conflicting policy goals: with economic growth being continuously coupled with environmental protection, the success of the current CE narrative could be employed as a tool for stabilising existing institutions, through a depoliticisation of the sustainability debate through the promotion of implausible socio-technical imaginaries. In this sense, as Kovacic, Strand, and Völker (2019) have rightly noticed, CE policy as the one promoted by the EU can play the role of a new policy ‘nexus’ able to combine the compelling urgency of addressing environmental issues with the ideological mandate of pursuing economic growth. This is potentially highly problematic because as they state, ‘the apparent consensus

around the circular economy and the consensus logic of nexus policies not only exclude controversy from the circular economy imaginary, but also annul the capacity to diagnose policy ineffectiveness, and possibly failure' (Kovacic, Strand, and Völker 2019, 137). In short, many of the problematic aspects of current discourses around CE are rooted in its framing as a purely technical endeavour.

Moving beyond technocratic framings of Circular Economy

While CE is often presented as an interdisciplinary field, techno-managerial aspects dominate. Science, technology and, above all, innovations are considered absolutely central for the transition towards a CE. Nevertheless, the viability of CE at a socio-political level has been not sufficiently explored. As a consequence, CE remains an essentially apolitical agenda, despite the fact that its implementation could have profound political implications. According to many analysts, given the right economic incentives, a transition to a CE can automatically happen in Western market economies; the role of people, class relations and power asymmetries, local communities, care and social reproductive work, and nonhuman nature (plants and animals in particular) is generally overlooked (politically and in research) (Genovese and Pansera 2020). The details about how such a revolution in the way we produce and consume would happen, are generally vague and, probably intentionally, underspecified. Therefore, there is a risk that economic imperatives to 'close the loop' as quickly and efficiently as possible conflict with the inevitable frictions and demands of democratic governance. A key issue that is often ignored is: *who is going to decide where and how to implement closed-loop production and consumption systems?* Since CE does not question issues of justice and power relations, the societal implications (e.g. the levels of freedom and democracy) of such a paradigm transition are not explicit, suggesting a predominantly technocratic agenda underlying the CE.

In response to a technocratic transition to circularity, a number of critical voices have called to re-politicise CE. In this sense, interesting insights come from Responsible Innovation (RI) scholars (Inigo and Blok 2019), environmental governance studies (Friant, Vermeulen, and Salomone 2020; Korhonen, Honkasalo, and Seppälä 2018), STS scholars (Kovacic, Strand, and Völker 2019) and post-normal science (Giampietro and Funtowicz 2020). But still many questions remain answered, such as: *Which theoretical frameworks inform the dominant and alternative perspectives on CE? Which ideological positions underpin them? Which are the industrial sectors driving CE research and policy developments, and which ones are instead neglected? What is the role of science and technology institutions in such a transition? Which stakeholder groups are included and in which roles, and which are excluded and why?* This list is far from exhaustive. Many questions about labour organisation, international trade and the North–South relations that govern globalised supply chains also need to be posed to lead to a CE that will possibly enable not only a truly sustainable economic system but also more just and responsible futures.

Why do we need a responsible Circular Economy?

CE requires much broader analytical lenses than are currently deployed, given the profound 'transformative change' advocates speak of

A CE is not simply going to emerge through policy shift alone. A just transition towards a CE will have to be,

imagined and built, fabricated and realised, coded and created. This will involve the channelling of enormous amounts of creative labour and inventive praxis. It will also involve the construction of public spaces and public institutions where new knowledge practices can meet. (White 2020)

An important aspect that is usually neglected by CE literature is the dimension of responsibility in science, technology and innovation, e.g. who decides (and how) about different technological paths and how this process is done responsibly. That's why we advocate for a new and alternative agenda for CE that is informed by the debates that emerge within the field of RI. CE is likely to require important technological innovations in many fields and innovation has the power to create *futures* that can be full of opportunities as well as unexpected consequences.

Given the profound 'transformative change' CE advocates speak of, CE requires much broader analytical lenses than those deployed so far. Analysing such a transition through the lens of RI would illuminate how the innovations required to create a CE are socially and politically entangled, whether unintentionally or by design. Furthermore, to the date, most CE projects have focused on 'how' to produce circularly but not really on 'what' or 'how much' to produce. The 'what' question relates to issues of democracy (at both society and workplace level), planning, participation, gender and global justice that are in turn connected to the capacity of any society to reflect about what kind of futures its members desire. These are questions asked in the literature on RI (Inigo and Blok 2019). In general, the dimensions of public engagement, anticipation and reflexivity are absent from CE literature and practices. Many CE practices unreflectively embrace a technocratic governance that abstracts away the complexity of human and social factors (Sadowski 2020). How bottom-up practices (including social activism) can re-appropriate and reshape the CE discourse is crucial to enable a fair and just transition. The 'how much' question relates to the need to decouple economic growth from welfare to keep global consumption of natural resources within limits that are compatible with the ecosystems that sustain life on the planet. This also implies questioning the need for endless and unchecked economic growth (de Saille et al. 2020) and thinking of participatory production planning and wealth distribution mechanisms that would combine an awareness of environmental limits with a fair and just access to natural resources (Bruynseels 2020).

A Just Transition to Circular Economy

With support from the European Union's H2020 programme, the recently launched project 'A Just Transition to Circular Economy' (JUST2CE)¹ seeks to broaden the foundational assumptions and practices of CE. The project involves universities, companies, civic society organisations and public institutions from Europe and Africa to address the above-mentioned neglected dimensions of CE and to contribute a multi-layered conceptual framework of a just and responsible CE transition. Among a number of different themes (e.g. gender and feminist perspectives, political ecology, sustainable supply chain management, labour and geopolitical North–South relations), JUST2CE is firmly committed to embed the principles of RI within the field of CE.

To this end, JUST2CE considers that different types of uncertainty linked to the CE and ethical concerns have to be integrated in a wider reflection on the broader societal and community-based goals. Such uncertainty requires reflexive research that builds on the concept of irreducible pluralism and proposing participation (co-production) as an interface to engage with the multiple epistemologies and corresponding – and often contradictory – facts (Pereira and Funtowicz 2015). Adapting ideas drawn from the RI literature, the project will seek to provide a useful starting point for better incorporating different forms of knowledge, including traditional and indigenous (Ludwig and Macnaghten 2020), into CE discourses and to respond to the concerns and priorities of local communities. We are very much aware that engaging into a re-politicization of the CE would also entails the generation of what Rayner (2012) defined as ‘uncomfortable knowledge’ associated with irreducible uncertainty and epistemic pluralism especially when dealing with ‘wicked problems’. But we also think that promoting responsible science and innovation requires engaging with political controversies and conflict negotiation.

The central idea underpinning responsible CE, as illustrated by the aspirations of the JUST2CE project, is that a successful transition towards a sustainable CE does not merely depend on the development of new technologies – artefacts or processes – but also on governance processes that recognise the socio-political nature of technological innovations. Realising this transition will require a reconfiguration of governance and knowledge production processes so as to enable democratic and participatory means of designing and managing technology. The JUST2CE project seeks to understand the conditions under which such reconfigurations are possible.

Note

1. JUST2CE has been funded with 3.6M euros within the Call ‘Greening the economy in line with the Sustainable Development Goals’ (Call identifier: H2020-SC5-2018-2019-2020) under the Topic: ‘Understanding the transition to a circular economy and its implications on the environment, economy and society’. The project is expected to start in September 2021 and end in 2024.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The work underlying this perspective has been partially funded by the following European Commission’s research programmes: H2020-MSCA-ITN-2018 scheme, Grant Agreement 814247 (ReTraCE project); H2020-MSCA-RISE-2018 scheme, Grant Agreement 823967 (ProCEedS project); ERC Starting Grant PROSPERA (GA 947713).

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Andrea Genovese is Professor of Logistics and Supply Chain Management, Head of the Operations Management and Decision Sciences Subject Group. He has leading expertise in sustainable supply chain management, with particular emphasis on the development of Decision Support Systems for dealing with complex problems arising in the coordination of production and distribution units. Prof. Genovese has published in leading international journals in the field of supply chain and operations management and serves as associate editor for *Socio-Economic Planning Sciences*. He is currently supervising a number of Early Stage Researchers and doctoral students in the area of decision support for green and circular supply chain management, and leading the ProSFeT (H2020-MSCA-RISE), ProCEedS (H2020-MSCA-RISE) and ReTraCE (H2020-MSCA-ITN) projects in the area of Circular Economy.

Maddalena Ripa, PhD holds a PhD in 'Environment, Resources and Sustainable Development' at Parthenope University of Naples (Italy). More recently she got interested in analysing how quantitative evidence and complexity are mobilised in sustainability issues through the distinctive 'sociotechnical' lens of Post Normal Science (PNS) and Science & Technology Studies (STS), both calling for epistemological relativism in technological change and its imbrications with society and the natural environment. She worked as a researcher within the research group on Integrated Assessment: Sociology, Technology and the Environment – IASTE at the Institute of Environmental Science and Technology (ICTA) of the Autonomous University of Barcelona (UAB). Currently, she's research fellow at the UAB Business Department.

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