

Circular economy

A new research field?

Kirchherr, Julian; Urbinati, Andrea; Hartley, Kris

Published in:
Journal of Industrial Ecology

DOI:
[10.1111/jiec.13426](https://doi.org/10.1111/jiec.13426)

Publication date:
2023

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Kirchherr, J., Urbinati, A., & Hartley, K. (2023). Circular economy: A new research field? *Journal of Industrial Ecology*, 27(5), 1239-1251. <https://doi.org/10.1111/jiec.13426>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

Take down policy

If you believe that this document breaches copyright please contact rucforsk@kb.dk providing details, and we will remove access to the work immediately and investigate your claim.

Circular economy

A new research field?

Julian Kirchherr^{1,2,3}  | Andrea Urbinati⁴ | Kris Hartley⁵

¹Department of Social Sciences and Business, Roskilde University, Roskilde, Denmark

²Innovation Studies Group, Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, The Netherlands

³Cambridge Center for Environment, Energy and Natural Resource Governance, University of Cambridge, Cambridge, UK

⁴School of Industrial Engineering, LIUC Università Cattaneo, Castellanza, Varese, Italy

⁵Department of Public and International Affairs, City University of Hong Kong, Hong Kong, China

Correspondence

Julian Kirchherr, Department of Social Sciences and Business, Roskilde University, Roskilde, Denmark.
Email: j.kirchherr@uu.nl

Editor Managing Review: Xin Tong

Abstract

Action to pursue the circular economy (CE) transition is burgeoning in the government and the private sector. Does this action signal that CE is a distinct field of research with a unique disciplinary identity? This article argues that CE has reached field status, through its own epistemic communities characterized by increasingly shared methodological perspectives and normative ideals, and through institutionalized knowledge development through research journals and authority structures. The recent growth of CE research points toward more contextualized and nuanced operationalizations of the concept, evidence that the field is approaching a threshold state of maturity. Drawing on observations from academic literature and discussions with researchers and experts, we trace the process by which CE has arrived at the status of a field. The article concludes with reflections on research directions.

KEYWORDS

academia, applied research, circular economy, environmental policy, industrial ecology, sustainability

1 | INTRODUCTION

Recent decades have seen the emergence of numerous scholarly ideas and concepts about sustainability pathways. Examples are industrial ecology (Ehrenfeld, 2004), cleaner production (Kjaerheim, 2005), sustainable consumption and production (Tukker, 2004), cradle-to-cradle (Braungart & McDonough, 2009), biomimicry (Mathews, 2011), the blue economy (Smith-Godfrey, 2016), the green economy (Loiseau et al., 2016), and green growth (Hallegatte et al., 2012). These and other terms, viewed critically, characterize what Engelman (2013, p. 3) labels “sustainababble”—budding ideas that become empty signifiers rather than substantive pathways toward sustainability.

A recent addition to the list of potential sustainababble is the circular economy (CE), an idea that has been called “superficial” (Korhonen et al., 2018) and a “patch” (Fitch-Roy et al., 2019) in part because it is “almost exclusively developed and driven by practitioners” (Corvellec et al., 2021, p. 422, referencing Korhonen et al., 2018).¹ At the same time, practical implementation of CE appears to remain at an early stage; the *Circularity Gap Report* found that the world was only 8.6% circular in 2021 and declining (Circle Economy, 2021, 2023).

Notwithstanding this arrested progress, the CE concept is thriving in scholarship, and this article considers whether CE research displays traits of an academic field with its own unique disciplinary identity. Some literature already recognizes CE as a field (Ferasso et al., 2020; Kirchherr & van Santen, 2019) but uses the categorization only incidentally. As far as we are aware, no study specifically discusses the potential of CE to be a distinct field of scholarship. We maintain that there exists a set of generally shared beliefs and concepts around the “how,” “what,” and “why” of CE, but also

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *Journal of Industrial Ecology* published by Wiley Periodicals LLC on behalf of International Society for Industrial Ecology.

that these are not free of controversy and debate. Additionally, we observe that epistemic communities dedicated to CE have emerged through conferences, scholarly societies, and other knowledge exchange platforms. These developments suggest that the CE concept is mature enough to be considered a distinct field of scholarship.

Our argument builds on a long history of research that contemplates the threshold at which emergent ideas become a field or discipline (Tight, 2020). Examples of eventual fields undergoing such analysis are English (Randel, 1958), statistics (Minton, 2012), cultural studies (During, 2006), innovation studies (Fagerberg & Verspagen, 2009), nursing education (Findlow, 2011), health and marketing (Stremersch, 2008), international business (Michailova & Tienari, 2014), and gender studies (Rollmann, 2013). We argue that it is time for CE to receive the same analysis. The remainder of this article is structured as follows: Section 2 outlines our core assumptions. Section 3 outlines our observations and the degree to which they demonstrate CE as a field of scholarship and its level of institutionalization. Section 4 concludes with a broader reflection about research directions.

2 | BACKGROUND ASSUMPTIONS

Production of formal knowledge in the academy has traditionally been organized along the boundaries of distinct disciplines. Within these disciplines emerged sub-disciplines cross-cutting in concept and scope (van den Besselaar & Heimeriks, 2013; Whitley, 2000). Whereas some general realms of scholarly inquiry (e.g., mathematics) have existed for centuries, the modern notion of a discipline as a ring-fenced, coherent, and institutionalized body of knowledge and community of research emerged only in the early 18th century (Finkelstein, 1997). The earliest disciplines evolved over time, while new and “offshoot” disciplines emerged when “parent” disciplines reached a threshold level of breadth and complexity (e.g., statistics, originally a sub-discipline of mathematics; Tight, 2020). In response to evolving societal interests, other disciplines faded in relevance (e.g., theology; Krishnan, 2009).

The academy’s organization into distinct disciplines has been said to breed a dogmatic and siloed research culture. A principle focus on basic (non-applied) research has also drawn criticism. According to Whitley (2000, p. xx), disciplines have been defined by their “purely intellectually driven research without any consideration of useful outcomes.” Partly in response to such criticisms, quasi-disciplines or “research fields” have emerged in parallel to traditional disciplines, weakening the epistemic and territorial hegemony that academic elites (i.e., long-serving faculty entrenched in their disciplines) have held over their respective fields (Whitley, 2000). Academic disciplines are now characterized by increasing interdisciplinarity and epistemic and methodological diversity, while in some cases emphasizing practical applicability and a “mission orientation” (see Ledford, 2015; Okamura, 2019).

Whitley (2000) labels traditional disciplines “Mode 1” knowledge production systems and research fields “Mode 2” knowledge production systems. Mainstream scholars typically seek funding for research in “Mode 1” systems, often leading to “siloed” research (see Maisuria & Hemes, 2020; Slaughter & Rhoades, 2000). “Mode 2” systems are typically grant-funded, at least at their inception, with policymakers and businesses often playing the role of major funders. Examples of fields where “Mode 2” systems prevail are innovation studies (Fagerberg & Verspagen, 2009), sustainability transitions (Köhler et al., 2019), sustainable business models (Lüdeke-Freund & Dembek, 2017), and industrial ecology (Ehrenfeld, 2004).

3 | CIRCULAR ECONOMY AS A FIELD OF SCHOLARSHIP

Definitions abound regarding what constitutes an academic discipline versus a field (Ehrenfeld, 2004; Goodchild, 1991; Krishnan, 2009; Squires, 1992). While both can share conceptual and institutional footings, “the field is not, or at least not yet, [as] organized as [...] disciplines” (Fagerberg & Verspagen, 2009, p. 218). We observe Ehrenfeld’s (2004) definition of fields, which consists of four criteria: (i) foundational beliefs and concepts that lend a common meaning to all players; (ii) practical resources like textbooks and standard tools; (iii) authoritative structure maintaining quality and (some) conceptual coherence; (iv) community of actors participating in the aforementioned activities. In this section, we consider CE through the perspective of these four characteristics (summarized in Table 1). The section concludes with a brief discussion about the institutionalization of CE as a field.

3.1 | Shared beliefs and concepts

Ehrenfeld (2004, p. 826) states that an academic field must be rooted in “a set of foundational beliefs that lend a common meaning to all players [...] and allow communication across boundaries of the field.” It is well documented that CE is a contested idea (Blomsma & Brennan, 2017; Korhonen et al., 2018). Kirchherr et al. (2017) distinguish among sources of this contestation: core principles (the “how” of CE), aims (the “why” of CE), and enablers (the “what” of CE). While some recent scholarship recognizes diversity in beliefs and concepts regarding CE (Calisto Friant et al., 2020; Leipold et al., 2021), we argue that scholars have begun to agree about CE’s core principles (sufficiency/“reduce” as a core strategy; systemic change)

TABLE 1 Conceptualizing circular economy as a field of scholarship.

Criteria	Status regarding CE	Examples
Shared beliefs and concepts	Core principles ("what")	Sufficiency/"reduce" as prime CE strategy; systemic shift needed for transition Bocken and Short (2020); Bocken et al. (2020); Desing et al. (2020)
	Aims ("why")	"Partial" sustainability (reconciling economic growth and environmental sustainability); some concerns about whether reconciling growth and environmental sustainability is possible Kirchherr (2021b); Hobson and Lynch (2016)
	Enablers ("how")	Circular business models; policy interventions; consumers Geissdoerfer et al. (2020); Urbanati et al. (2017); Milios (2021); Kuah and Wang (2020)
Practical resources	Practical guides	Numerous general and industry-specific guides and handbooks about CE "The Circular Economy: A User's Guide" (Stahel, 2019); "The Circular Economy Handbook: Realizing the Circular Advantage" (Lacy et al., 2020)
Authority	Tools	Increasing attempts to align CE tools at the micro, meso, and macro levels; best-developed tools exist at the micro level Sassanelli et al. (2019); Scarpellini et al. (2019); Kristensen and Mosgaard (2020)
	Journals	Journals about CE (Somewhat rebranded) <i>Journal of Industrial Ecology</i> ; <i>Circular Economy and Sustainability</i>
	University structures	Newly launched Academic Chairs dedicated to CE TU Berlin: Chair of Circular Economy and Recycling Technology; Polytechnic University of Milan: Chair of Circular Economy Business Models
Community of actors	Conferences	Conferences specifically dedicated to CE Sustainability and Circular Economy Summit; World Circular Economy Forum (WCEF)
	Societies	Societies and knowledge exchange platforms regarding CE International Society for Circular Economy (IS4CE); Platform for Accelerating the Circular Economy (PACE)

Abbreviation: CE, circular economy.

and core enablers (business models, policies, and consumers). At the same time, there remains some contestation regarding CE's aims (e.g., partial sustainability, or reconciling economic growth and environmental sustainability).

Early CE literature either portrayed CE as both an ends and a means or ignored what the adoption of circularity principles was intended to achieve altogether; Kirchherr et al. (2017) found that only 12% of the 114 CE definitions examined mentioned the concept of sustainable development. However, we observe that the literature has begun to view CE as an instrument to achieve sustainability—apparent in the increasing use of the term “sustainable circular economy” (Jaeger-Erben et al., 2021; Velenturf & Purnell, 2021) and in the high citation count (over 5000 in Google Scholar) of an article by Geissdoerfer et al. (2017) exploring CE as a paradigm for sustainable development.

Convergence in the CE-sustainability narrative can be found, for example, in calls for a sufficiency-based CE (e.g., Bocken & Short, 2020; Bocken et al., 2020); this idea considers how the private sector, public sector, and consumers can collaborate on CE initiatives that ensure that consumption and production do not exceed planetary boundaries (O'Neill et al., 2018). Other examples include the salience of the “reduce” concept and the idea that CE implementation necessitates a systemic shift. The systems perspective emerged from an early contribution by Boulding (2013) concerning “economics of the coming spaceship earth”—often viewed as a foundational article in CE literature (Geissdoerfer et al., 2017; Kirchherr et al., 2017). Examples of later CE literature adopting the systems perspective are Figge et al. (2021), Kanda et al. (2021), Desing et al. (2020), Iacovidou et al. (2020), and Blomsma et al. (2022). While there are no identifiable articles arguing explicitly against a CE-based systemic shift, few articles have focused on what such a shift may entail.

Even with this increased focus of CE literature on sustainability, we maintain that environmental and economic sustainability is the primary topic, with less attention on social sustainability (Amorim de Oliveira, 2021; Kirchherr, 2021a; Mies & Gold, 2021; Repp et al., 2021). In this way, the literature demonstrates a preference for “partial sustainability.” Regarding environmental and economic sustainability, the mainstream view appears to remain that a de-coupling of environmental degradation and economic growth is possible, but a smaller and more critical line of scholarship challenges this view (Corvellec et al., 2021; Hobson & Lynch, 2016; Kirchherr, 2021b; Lazarevic & Valve, 2017; Merli et al., 2018). Even scholars who argue that de-coupling is possible often acknowledge that circular practices do not necessarily enhance sustainability and that “circular rebound”² may occur (Blum et al., 2020; Leipold et al., 2021; Masi et al., 2017; Urbinati et al., 2019; Zink & Geyer, 2017).

Other CE enablers providing grounds for shared beliefs and concepts are business models and policy intervention. Circular business models have emerged as a commonly discussed enabler and one of the most vibrant sub-fields of study within CE literature (Bocken et al., 2016a; Geissdoerfer et al., 2020; Ünal et al., 2019; Urbinati et al., 2021). According to Kirchherr et al. (2017), a “CE understanding lacking business model is one with no driver at the steering wheel” (p. 228). An additional enabler receiving increasing attention is public policy, with scholars arguing that CE transition requires direct government intervention on regulation, infrastructure, education, and other factors (Hartley et al., 2020; McDowall et al., 2017; Milios, 2017; 2021). Regarding the role of consumers in CE transition, some literature has emerged (Coderoni & Perito, 2020; Kuah & Wang, 2020; Testa et al., 2020), but this enabler remains under-researched and thus no consensus seems to have formed.

3.2 | Practical resources

The second criterion for a field is the presence of practical resources, including standards-based guides, handbooks, tools, and metrics (Ehrenfeld, 2004). Efforts to create and consolidate resources across academia, companies, and supporting organizations suggest that CE is progressing into a field. CE-related handbooks and guides have proliferated in recent years (Table 2), many of which are written by practitioners (e.g., Lacy et al., 2020; Stahel, 2019) even as most are printed by academic publishers. This trend confirms the argument by Corvellec et al. (2021) that the CE discourse is driven by practitioners—atypical of most fields related to sustainability.

Tools aiding CE implementation, including assessment of circularity performance, are not commonly used by companies or public sector entities (Sassanelli et al., 2019). However, the topic has seen growing research attention (Corona et al., 2019; de Pascale et al., 2021; Kristensen & Mosgaard, 2020; Moraga et al., 2019; Saidani et al., 2019; Sassanelli et al., 2019; Scarpellini et al., 2019), suggesting that some conceptual convergence may eventually arise. CE indicators, as a subset of tools, have been proposed at the micro-, meso-, and macro-levels, with micro-level indicators around circular business model implementation the best developed (de Pascale et al., 2021; Kristensen & Mosgaard, 2020). Tools for meso-level implementation of CE have received the least attention in scholarship and practical application (Ghisellini et al., 2016; Scarpellini et al., 2019).

3.3 | Authority

A field must entail an “authoritative structure maintaining quality and [some] conceptual coherence,” and academic journals typically play this role when a field of scholarship emerges (Ehrenfeld, 2004; p. 826). The *Journal of Cleaner Production* is currently a leader in volume of CE research published (Centobelli et al., 2020; Merli et al., 2017), although the journal is not dedicated specifically to CE. Several journals have re-branded toward CE, including the *Journal of Industrial Ecology*—which states that it “publishes sustainability and circular economy research” (JIE, 2021) even as its

TABLE 2 Recent guides and handbooks on circular economy.

#	Book	Details	Author(s) & date	Publisher
1	<i>The Handbook to Building a Circular Economy</i>	Calls for architects, designers, and built environment professionals to create a regenerative built environment; emphasizes the use of new materials in the beginning of the CE design process	Cheshire, 2021	Routledge
2	<i>Waste to Energy in the Age of the Circular Economy: Best Practice Handbook</i>	Discusses current technologies, presents a conceptual example of municipal solid waste planning, and provides commentary on waste-to-energy initiatives in the Asia-Pacific region; emphasizes the importance of openness to technologies and CE business models	Asian Development Bank, 2020	Asian Development Bank
3	<i>Handbook of Research on Entrepreneurship Development and Opportunities in Circular Economy</i>	Collection of research that aims to advance the understanding of CE-related entrepreneurship development, entrepreneurship policies, and other promotion programs	Baporikar, 2020	IGI Global
4	<i>Handbook of the Circular Economy</i>	Explores a broad range of CE themes such as recycling systems, new business models, and consolidation of multiple and disparate practices; audience is students, academics, policymakers	Brandão et al., 2020	Edward Elgar Publishing
5	<i>The Circular Economy Handbook: Realizing the Circular Advantage</i>	Featuring insights on CE implementation gained from authors' experience and an analysis of 1500 case studies; offers a practical view on how organizations can take transformative steps toward CE	Lacy et al., 2020	Palgrave Macmillan
6	<i>The Routledge Handbook of Waste, Resources and the Circular Economy</i>	Studies CE from a range of sectors and geographical perspectives, including both Global North and Global South contexts	Tudor & Dutra, 2020	Routledge
7	<i>A Circular Economy Handbook: How to Build a More Resilient, Competitive and Sustainable Business</i>	Provides an overview of main CE-related concepts and a framework to explore the range of circular interventions, including product and supply chain design, material choice, and supporting business models	Weetman, 2020	Kogan Page
8	<i>The Circular Economy: A User's Guide</i>	Presents main themes for managers and policymakers, including the newest thinking about CE from a leader in the field	Stahel, 2019	Routledge
9	<i>Designing for the Circular Economy</i>	Explores "state of the art" research and industrial practices on designing for CE; highlights CE as a source of new business opportunities, radical business change, disruptive innovation, social change, and new consumer attitudes	Charter, 2018	Routledge
10	<i>Business Models in the Circular Economy: Concepts, Examples and Theory</i>	Develops rationale for adopting circular business models; connects circular business model research to management studies	de Angelis, 2018	Springer
11	<i>Source Separation and Recycling: Implementation and Benefits for a Circular Economy</i>	Presents source separation technologies that form the basis for recycling and other modern approaches to waste management	Maletz et al., 2018	Springer
12	<i>The Re-use Atlas: A Designer's Guide towards a Circular Economy</i>	Uses maps, photos, infographics, and statistics to demonstrate how designers can navigate the field of resource management and CE	Baker-Browns, 2017	RIBA Publishing

Abbreviation: CE, circular economy.

name suggests its original emphasis. The journal *Frontiers in Sustainability* created a dedicated CE subsection, while Springer recently launched the journal *Circular Economy and Sustainability*. A group of scholars has also recently launched the Journal of Circular Economy, an open access outlet that is outside the mainstream academic publishing realm. The growing volume of CE research will likely strengthen the demand for CE-specific special issues, subsections, and dedicated journals.

Authority also manifests itself in CE-specific research units within universities (e.g., the Circular Economy Centre at the University of Cambridge) and chair positions focused on CE-related research. For example, the Technical University of Berlin (TU Berlin) maintains a *Chair of Circular Economy and Recycling Technology*, the University of Freiburg a *Chair of Societal Transition and Circular Economy*, and the Polytechnic University of Milan a *Chair of Circular Economy Business Models*. The University of Turku in Finland is creating a CE chair with endowment funding in excess of 600,000 EUR. These chaired faculty positions are often supported by funding for additional research staff, enabling the development of focused research groups. While no “Department of Circular Economy” within a university has yet been publicly launched, these chairs reflect relatively permanent commitments that indicate CE is becoming institutionalized as a field.

3.4 | Community of actors

Shared beliefs and concepts, practical resources, and authorities are all developed and maintained by communities of actors, manifest in part through issue-specific conferences and societies (Ehrenfeld, 2004). Ehrenfeld's (2004) example is the *International Society for Industrial Ecology*, which was instrumental in establishing a community of actors around industrial ecology and advancing the emergence of the field. CE is now a prominent topic at various disciplinary conferences, while conferences dedicated specifically to CE are increasingly common. Further, the *International Society for Circular Economy* (IS4CE) was launched in 2020, providing additional indication of CE as an emerging field.

CE is now often the topic of dedicated panels at major academic conferences, including the Annual Meetings of the American Association of Geographers and the American Economic Association. Conferences dedicated to CE have recently been held in Europe, Latin America, the United States, Australia, and Asia (Table 3). Notably, almost all of these conferences bring together academics and practitioners, but the focus is primarily on application. Our discussions with experts suggest that this phenomenon is unique to CE in comparison to other sustainability-related fields. This phenomenon may also reflect the highly applied nature of the field, suggesting that theoretical novelty is scarce—particularly in comparison to sustainability-allied disciplines like economics, public policy, political economy, and others. Possibly due to the dominance of practitioners, CE-dedicated conferences and their keynote speakers tend to be well-funded, according to experts with whom we held discussions. This high level of resourcing seems to be a peculiar characteristic of the CE field, given that funding for sustainability-related research has traditionally been rather meagre (Fritz & Binder, 2020; Rau et al., 2018).

The presence of societies also indicates the growing maturity of the field. For example, the *International Society for Circular Economy* (IS4CE) is a new academic society focused on CE, holding its inaugural conference in July 2020. While the IS4CE may thus far be the most ambitious effort in academia to foster a CE community of actors, an equivalent effort among practitioners may be the Platform for Accelerating the Circular Economy (PACE)—launched in 2018 as a collaboration among the World Economic Forum, World Resources Institute, Philips, Ellen MacArthur Foundation, United Nations Environment Programme, and over 40 other partners (IS4CE, 2021). A predecessor to PACE, the Ellen MacArthur Foundation's CE100 Network is a community of companies, policymakers, and scholars working on CE and is currently marketed as “the world's leading circular economy network” (Zarin, 2019).

3.5 | Institutionalization

This section closes by considering the institutionalization of CE. Fields vary in their degree of institutionalization and are typically less institutionalized than disciplines (Holbrook, 2013; Krishnan, 2009; Tight, 2020; Trowler, 2014). Ehrenfeld (2004, p. 828) proposes four characteristics of institutional structures: “(i) a system of beliefs about how the world works, (ii) strategies and norms governing what one should do when addressing a particular domain of action, (iii) a common set of tools and technologies to be used toward meeting one's objectives in that domain, and (iv) a set of legitimating authorities.”

Activity on all of these fronts suggests that the CE field is becoming more institutionalized. Along with the growth in scholarship, the concept of CE has gained traction among governments in the past decade, with institutionalization most evident in China and the EU (both in constituent countries and in the EU governance system overall). For example, the Circular Economy Action Plan is one of the main building blocks of the European Green Deal of the European Commission (EC, 2022b), and the Dutch government has committed to establishing a fully circular economy by 2050 (Reike et al., 2022).

Beyond these efforts, there remains little debate about what CE transition entails, and tools and technologies aiding the achievement of CE policy goals continue to be developed. Importantly, institutionalization tends to be a self-perpetuating process—additional drivers (e.g., journals and faculty chairs) require and encourage the pursuit of more specific CE initiatives to justify resource commitments; in turn, the resulting deeper

TABLE 3 Conferences dedicated to circular economy (selection).

#	Conference	Details	Last held	Location
1	EU-LATAM Circular Economy Summit	Promotes innovation and technology transfer on CE in EU and Latin America; organized by Andalusian Knowledge Agency, Madrid Foundation for Knowledge, and Enterprise Europe Network	12.01.21–12.02.21	Online only
2	Nordic Circular Summit	Targets mostly practitioners in the Nordic countries; co-hosted by Nordic Circular Hotspot and Nordic Innovation; Official World Circular Economy Forum (WCEF) Side Event	11.23.21–11.26.21	Copenhagen, Denmark
3	Circular Economy Hotspot Catalonia	Aims to facilitate business initiatives, R&D projects, and government strategies for CE in Catalonia, Spain; includes panel presentations and guided tours; hosted by Circular Economy Hotspot Catalonia	11.15.21–11.19.21	Barcelona, Spain
4	B for Planet	Brings together mostly Spanish CE practitioners (large global companies, SMEs, start-ups, and government); organized by City of Barcelona and Spanish national government	09.22.21–09.23.21	Barcelona, Spain
5	Ellen McArthur Foundation Summit	Brings together mostly established companies such as IDEO, Nestlé, Walmart, Unilever, and Philips, regarding how CE can help reconcile growth and sustainability; organized by the Ellen McArthur Foundation	06.08.21–06.10.21	Online only
6	NL-LATAM Mission on CE and Waste Management	Knowledge exchange between CE practitioners in the Netherlands and Latin America; some involvement of research institutions; organized by the Dutch national government	04.14.21–04.23.21	The Hague, the Netherlands
7	Asia Manufacturing Summit: Creating a Circular Economy for Plastics	Focuses on recycling technologies and sustainability in the packaging industry; oriented mostly toward practitioners; organized by the Malaysian national government	12.02.20	Kuala Lumpur, Malaysia

(Continues)

TABLE 3 (Continued)

#	Conference	Details	Last held	Location
8	Australian Circular Economy Conference	Discusses progress, innovation, and benefits of CE; brings together universities, government, and industry leaders in the Asia-Pacific; hosted by the Waste Transformation Research Hub at the University of Sydney	11.07.20–12.11.20	Online only
9	Circular Economy Stakeholder Conference	Focuses on implementation of the European Commission (EC) Circular Economy Action Plan; open to any interested party; organized by the EC and the European Economic and Social Committee (EESC)	11.03.20	Brussels, Belgium
10	Interdisciplinary Circular Economy Conference	Aims at exploring CE at the meso-level; focuses on scholarship; organized by the International Society for Industrial Ecology (ISIE)	09.21.20–09.22.20	Freiburg, Germany
11	Norwegian Circular Economy Conference	Aims to facilitate knowledge exchange on CE in Norway for policymakers, researchers, and companies; organized by Innovation Norway, SINTEF, and Norwegian University of Science and Technology (NTNU)	09.03.20	Oslo, Norway
12	Sustainability and Circular Economy Summit	Brings together a diverse group of CE decision-makers from across sectors regarding CE initiatives and benchmark strategies; organized by the United States Chamber of Commerce	08.15.19–08.16.19	Washington, United States
13	World Circular Economy Forum (WCEF)	Focuses on the system-level changes to accelerate CE transition; aimed at practitioners; keynote speaker Inger Andersen, Executive Director of the United Nations Environment Program (UNEP); co-organized by Government of Canada and Finnish Innovation Fund Sitra	08.13.20–08.15.20	Toronto, Canada
14	International Society for the Circular Economy (IS4CE)	Aims to be the premiere conference on CE, bringing together knowledge from scholars and practitioners; keynote speaker Walter Stahel (Founder, Product Life Institute); organized by IS4CE	07.06.20–07.07.20	Exeter, United Kingdom

Abbreviation: CE, circular economy.

knowledge reveals new researchable and actionable CE topics. CE institutionalization suggests more realizable pathways to implementation and deserves further research.

4 | CONCLUSION

When a field is recognized by scholars and institutionalized through academic authority structures, knowledge development is further enabled. If a sociologist begins studying CE while failing to consider the topic as a research field, the scholar may be concerned only with addressing research gaps in sociology. However, when considering CE as a field, that scholar's perspective can become more integrated, interdisciplinary, and multi-methodological. From the resulting engagement emerge jointly conceived research agendas and progress toward more holistic theorizing. Moreover, status as a field also commands certain prestige in the academy. While practitioners may not be concerned where advice originates (provided that it works), "it would remain relatively easier for others in the academy [...] to ignore the findings" (Tight, 2020; p. 416) if the topic is not recognized as a field. Such recognition can broaden the visibility of research to scholars in allied fields and attract new researchers and resources.

Recognition and institutionalization of a field also imply a certain epistemic stability. While authorities give in-principal and rhetorical support to interdisciplinarity and conceptual novelty, commitment to disciplinary silos remains embedded in how organizations (e.g., universities) are structured and how the research community (e.g., an editorial board) evaluates work. As such, researching a topic like CE can be considered a risky career choice in comparison to researching traditional disciplines (Ledford, 2015; Okamura, 2019; Rhoten & Parker, 2004); it can be mistakenly perceived as unfocused or arbitrary. Broad consideration of CE as a field would ensure a more solid base for emerging thinkers to position their work.

There remain other challenges to CE's progress as a field. Much CE research continues to be carried out in Whitley's (2000) academy-focused "Mode 1" knowledge production system. While some of the most influential CE research has been authored by practitioners and practice-oriented researchers, the field has become more academic and new scholarly ideas may not always support practical implementation. For example, recent research has focused on the relationship between CE and economic growth, including degrowth (Hobson, 2020; Hobson & Lynch, 2016; Kirchherr, 2021b). Some practitioners with whom we spoke for this article expressed concern that this trend may lead the field to become increasingly dogmatic; arguably, few businesses would embrace academically "critical" discourses (Henry et al., 2020, 2022).

Furthermore, the challenges of practical implementation (van Keulen & Kirchherr, 2021; Vecchio et al., 2022) may compromise the ability of the CE concept to deliver on its promise of fostering sustainability. CE may thus become too complex or contradictory for at-scale implementation (Korhonen et al., 2018, 2018), while the "circular economy paradox"—that is, ample effort but little progress—may turn practitioners and eventually academics away from the field. CE would then suffer the fate of topics like cradle-to-cradle (Braungart & McDonough, 2009) and biomimicry (Mathews, 2011), which once drew attention and resources but ultimately became niches superseded by the next sustainability buzzword (Henry et al., 2021).

CE may be the most celebrated sustainability idea of the past decade, and its salience is likely to endure in the coming decade. Ten years after publication of the Ellen MacArthur Foundation's flagship report (EMF, 2013), CE draws attention across academic disciplines and practitioner communities. We propose that CE has indeed emerged as a field of scholarship with an increasingly coherent set of shared beliefs and concepts, numerous practical resources, enabling authorities, and a vibrant community of actors. The field connects scholars and practitioners to an extent that is unique among sustainability-related research subfields. Further, the institutionalization of CE is well-advanced in academia and progressing in industry and government, suggesting that the concept is a robust and durable field of both scholarship and practice.

ACKNOWLEDGMENTS

We thank Maarten Heerink for his help as a research assistant. We also thank Thomas Bauwens and the reviewers from *Journal of Industrial Ecology* for comments on an earlier draft of this article.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

ORCID

Julian Kirchherr  <https://orcid.org/0000-0001-6272-8900>

NOTES

¹ We use the CE definition proposed by Kirchherr et al. (2017, p. 229) in a study of 114 CE definitions: “an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling, and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation, and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations.”

² According to Zink and Geyer (2017, p. 593), circular rebound is a phenomenon whereby “circular economy activities can increase overall production, which can partially or fully offset their benefits.”

REFERENCES

- ADB. (2020). Waste to energy in the age of the circular economy. <https://doi.org/10.22617/TIM200330-2>
- Amorim de Oliveira, Í. (2021). Environmental justice and circular economy: Analyzing justice for waste pickers in upcoming circular economy in Fortaleza. *Brazil. Circular Economy and Sustainability*, 2021, 1–20. <https://doi.org/10.1007/S43615-021-00045-W>
- Baker-Brown, D. (2017). *The re-use atlas: A designer's guide towards a circular economy*. RIBA Publishing.
- Baporikar, N. (2020). *Handbook of research on entrepreneurship development and opportunities in circular economy* (N. Baporikar, Ed.). IGI Global. <https://doi.org/10.4018/978-1-7998-5116-5>
- Blomsma, F., & Brennan, G. (2017). The emergence of circular economy: A new framing around prolonging resource productivity. *Journal of Industrial Ecology*, 21(3), 603–614. <https://doi.org/10.1111/JIEC.12603>
- Blomsma, F., Thomas, B., Weissbrod, I., & Kirchherr, J. (2022). The ‘need for speed’: Towards circular disruption—What it is, how to make it happen and how to know it's happening. *Business Strategy and the Environment*, 32(3), 1010–1031. <https://doi.org/10.1002/BSE.3106>
- Blum, N. U., Haupt, M., & Bening, C. R. (2020). Why “circular” doesn't always mean “sustainable”. *Resources, Conservation and Recycling*, 162, 105042. <https://doi.org/10.1016/J.RESCONREC.2020.105042>
- Bocken, N., Morales, L. S., & Lehner, M. (2020). Sufficiency business strategies in the food industry—The case of Oatly. *Sustainability*, 12(3), 824. <https://doi.org/10.3390/SU12030824>
- Bocken, N. M. P., Pauw, I., Bakker, C., & Grinten, B. (2016). Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, 33(5), 308–320. <https://doi.org/10.1080/21681015.2016.1172124>
- Bocken, N. M. P., & Short, S. W. (2020). Transforming business models: Towards a sufficiency-based circular economy. *Handbook of the circular economy* (pp. 250–265). Edward Elgar Publishing. <https://doi.org/10.4337/9781788972727.00028>
- Boulding, K. E. (2013). The economics of the coming spaceship earth. In *Environmental quality in a growing economy* (pp. 3–14). RFF Press.
- Brandão, M., Miguel, M. R., Lazarevic, D., & Finnveden, G. (2020). *Handbook of the circular economy* (p. 528). Edward Elgar Publishing.
- Braungart, M., & McDonough, W. (2009). *Cradle to cradle*. Random House.
- Centobelli, P., Cerchione, R., Chiaroni, D., Del Vecchio, P., & Urbinati, A. (2020). Designing business models in circular economy: A systematic literature review and research agenda. *Business Strategy and the Environment*, 29(4), 1734–1749. <https://doi.org/10.1002/bse.2466>
- Charter, M. (2018). *Designing for the circular economy*. Routledge.
- Cheshire, D. (2021). *The handbook to building a circular economy*. Routledge.
- Circle Economy. (2021). The circularity gap report. <https://www.circularity-gap.world/2021>
- Circle Economy. (2023). The circularity gap report. <https://www.circularity-gap.world/2023>
- Coderoni, S., & Perito, M. A. (2020). Sustainable consumption in the circular economy. An analysis of consumers' purchase intentions for waste-to-value food. *Journal of Cleaner Production*, 252, 119870. <https://doi.org/10.1016/J.JCLEPRO.2019.119870>
- Corona, B., Shen, L., Reike, D., Rosales Carreón, J., & Worrell, E. (2019). Towards sustainable development through the circular economy—A review and critical assessment on current circularity metrics. *Resources, Conservation and Recycling*, 151(2019), 104498. <https://doi.org/10.1016/j.resconrec.2019.104498>
- Corvellec, H., Stowell, A. F., & Johansson, N. (2021). Critiques of the circular economy. *Journal of Industrial Ecology*, 26(2), 421–432. <https://doi.org/10.1111/JIEC.13187>
- de Angelis, R. (2018). *Business models in the circular economy: Concepts, examples and theory* (pp. 1–112). Springer. <https://doi.org/10.1007/978-3-319-75127-6>
- De Pascale, A., Arbolino, R., Szopik-Decpzyńska, K., Limosani, M., & Ioppolo, G. (2021). A systematic review for measuring circular economy: The 61 indicators. *Journal of Cleaner Production*, 281, 124942. <https://doi.org/10.1016/J.JCLEPRO.2020.124942>
- Desing, H., Brunner, D., Takacs, F., Nahrath, S., Frankenberger, K., & Hischier, R. (2020). A circular economy within the planetary boundaries: Towards a resource-based, systemic approach. *Resources, Conservation and Recycling*, 155, 104673. <https://doi.org/10.1016/J.RESCONREC.2019.104673>
- During, S. (2006). Is Cultural Studies a Discipline?: And Does It Make Any Political Difference? *Cultural Politics*, 2(3), 265–280. <https://doi.org/10.2752/174321906778531673>
- EC. (2022a). EU mission: Climate-neutral and smart cities. https://www.research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
- EC. (2022b). Programme: Horizon Europe - Cluster 6 - Destination 3: Circular economy and bioeconomy sectors. https://www.research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-6-food-bioeconomy-natural-resources-agriculture-and-environment_en
- Ehrenfeld, J. (2004). Industrial ecology: A new field or only a metaphor? *Journal of Cleaner Production*, 12(8–10), 825–831. <https://doi.org/10.1016/J.JCLEPRO.2004.02.003>
- EMF. (2013). Towards the circular economy: An economic and business rationale for an accelerated transition. <https://www.ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-and-business-rationale-for-an>
- EMF. (2022). Circular economy examples and case studies. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/examples>
- Engelman, R. (2013). Beyond Sustainability. *State of the World 2013: Is Sustainability Still Possible?* (pp. 3–16). Island Press. https://doi.org/10.5822/978-1-61091-458-1_1
- Fagerberg, J., & Verspagen, B. (2009). Innovation studies—The emerging structure of a new scientific field. *Research Policy*, 38(2), 218–233. <https://doi.org/10.1016/J.RESPOL.2008.12.006>

- Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T., & Ribeiro-Soriano, D. (2020). Circular economy business models: The state of research and avenues ahead. *Business Strategy and the Environment*, 29(8), 3006–3024. <https://doi.org/10.1002/bse.2554>
- Figge, F., Thorpe, A. S., & Good, J. (2021). Us before me: A group level approach to the circular economy. *Ecological Economics*, 179, 106838. <https://doi.org/10.1016/J.ECOLECON.2020.106838>
- Findlow, S. (2011). Higher education change and professional-academic identity in newly 'academic' disciplines: The case of nurse education. *Higher Education*, 63(1), 117–133. <https://doi.org/10.1007/S10734-011-9449-4>
- Finkelstein, M. (1997). From tutor to specialized scholar: Academic professionalization in eighteenth and nineteenth century America. In *The history of higher education annual*. Pearson Learning Solutions.
- Fitch-Roy, O., Benson, D., & Monciardini, D. (2019). Going around in circles? *Conceptual Recycling, Patching and Policy Layering in the EU Circular Economy Package*, 29(6), 983–1003. <https://doi.org/10.1080/09644016.2019.1673996>
- Friant, C., M, V., V, W. J., & Salomone, R. (2020). A typology of circular economy discourses: Navigating the diverse visions of a contested paradigm. *Resources, Conservation and Recycling*, 161, 104917. <https://doi.org/10.1016/J.RESCONREC.2020.104917>
- Fritz, L., & Binder, C. R. (2020). Whose knowledge, whose values? An empirical analysis of power in transdisciplinary sustainability research. *European Journal of Futures Research*, 8(1), 1–21. <https://doi.org/10.1186/S40309-020-0161-4>
- Geissdoerfer, M., Pieroni, M. P. P., Pigosso, D. C. A., & Soufani, K. (2020). Circular business models: A review. *Journal of Cleaner Production*, 277, 123741. <https://doi.org/10.1016/J.JCLEPRO.2020.123741>
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The circular economy—A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768. <https://doi.org/10.1016/J.JCLEPRO.2016.12.048>
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
- Goodchild, L. F. (1991). Higher education as a field of study: Its origins, programs, and purposes, 1893–1960. *New Directions for Higher Education*, 1991(76), 15–32. <https://doi.org/10.1002/HE.36919917604>
- Hallegatte, S., Heal, G., Fay, M., & Treguer, D. (2012). *From growth to green growth—A framework* (Working Paper 17841). National Bureau of Economic Research. <https://doi.org/10.3386/W17841>
- Hartley, K., van Santen, R., & Kirchherr, J. (2020). Policies for transitioning towards a circular economy: Expectations from the European Union (EU). *Resources, Conservation and Recycling*, 155, 104634. <https://doi.org/10.1016/j.resconrec.2019.104634>
- Henry, M., Bauwens, T., Hekkert, M., & Kirchherr, J. (2020). A typology of circular start-ups: An analysis of 128 circular business models. *Journal of Cleaner Production*, 245, 118528. <https://doi.org/10.1016/J.JCLEPRO.2019.118528>
- Henry, M., Hoogenstrid, T., & Kirchherr, J. (2022). Motivations and identities of “grassroots” circular entrepreneurs: An initial exploration. *Business Strategy and the Environment*, 32(3), 1122–1141.
- Henry, M., Schraven, D., Bocken, N., Frenken, K., Hekkert, M., & Kirchherr, J. (2021). The battle of the buzzwords: A comparative review of the circular economy and the sharing economy concepts. *Environmental Innovation and Societal Transitions*, 38, 1–21. <https://doi.org/10.1016/J.EIST.2020.10.008>
- Hobson, K. (2020). The limits of the loops: Critical environmental politics and the circular economy. *Environmental Politics*, 30(1–2), 161–179. <https://doi.org/10.1080/09644016.2020.1816052>
- Hobson, K., & Lynch, N. (2016). Diversifying and de-growing the circular economy: Radical social transformation in a resource-scarce world. *Futures*, 82, 15–25. <https://doi.org/10.1016/J.FUTURES.2016.05.012>
- Holbrook, J. B. (2013). What is interdisciplinary communication? Reflections on the very idea of disciplinary integration on. *Synthese*, 190, 1865–1879.
- Iacovidou, E., Hahladakis, J. N., & Purnell, P. (2020). A systems thinking approach to understanding the challenges of achieving the circular economy. *Environmental Science and Pollution Research*, 28(19), 24785–24806. <https://doi.org/10.1007/S11356-020-11725-9>
- IS4CE. (2021). Home. <https://www.is4ce.org/en/>
- Jaeger-Erben, M., Jensen, C., Hofmann, F., & Zwiers, J. (2021). There is no sustainable circular economy without a circular society. *Resources, Conservation and Recycling*, 168, 105476. <https://doi.org/10.1016/J.RESCONREC.2021.105476>
- JIE. (2021). About.
- Kanda, W., Geissdoerfer, M., & Hjelm, O. (2021). From circular business models to circular business ecosystems. *Business Strategy and the Environment*, 30(6), 2814–2829. <https://doi.org/10.1002/BSE.2895>
- Kirchherr, J. (2021a). Towards circular justice: A proposition. *Resources, Conservation and Recycling*, 173, 105712. <https://doi.org/10.1016/J.RESCONREC.2021.105712>
- Kirchherr, J. (2021b). Circular economy and growth: A critical review of “post-growth” circularity and a plea for a circular economy that grows. *Resources, Conservation and Recycling*, 179(4), 106033. <https://doi.org/10.1016/J.RESCONREC.2021.106033>
- Kirchherr, J., Bauwens, T., & Ramos, T. B. (2022). Circular disruption: Concepts, enablers and ways ahead. *Business Strategy and the Environment*, 32(3), 1005–1009. <https://doi.org/10.1002/BSE.3096>
- Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., Huibrechtse-Truijens, A., & Hekkert, M. (2018). Barriers to the circular economy: Evidence from the European Union (EU). *Ecological Economics*, 150, 264–272. <https://doi.org/10.1016/j.ecolecon.2018.04.028>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Kirchherr, J., & van Santen, R. (2019). Research on the circular economy: A critique of the field. *Resources, Conservation and Recycling*, 151(2–3), 104480. <https://doi.org/10.1016/j.resconrec.2019.104480>
- Kjaerheim, G. (2005). Cleaner production and sustainability. *Journal of Cleaner Production*, 13(4), 329–339. [https://doi.org/10.1016/S0959-6526\(03\)00119-7](https://doi.org/10.1016/S0959-6526(03)00119-7)
- Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., Alkemade, F., Avelino, F., Bergek, A., Boons, F., Fünfschilling, L., Hess, D., Holtz, G., Hyysalo, S., Jenkins, K., Kivimaa, P., Martiskainen, M., McMeekin, A., Mühlemeyer, M. S., ... Wells, P. (2019). An agenda for sustainability transitions research: State of the art and future directions. *Environmental Innovation and Societal Transitions*, 31, 1–32. <https://doi.org/10.1016/J.EIST.2019.01.004>
- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/J.ECOLECON.2017.06.041>
- Korhonen, J., Nuur, C., Feldmann, A., & Birkie, S. E. (2018). Circular economy as an essentially contested concept. *Journal of Cleaner Production*, 175, 544–552. <https://doi.org/10.1016/J.JCLEPRO.2017.12.111>

- Krishnan, A. (2009). *What are academic disciplines? Some observations on the disciplinarity vs. interdisciplinarity debate*. BibSonomy.
- Kristensen, H. S., & Mosgaard, M. A. (2020). A review of micro level indicators for a circular economy—Moving away from the three dimensions of sustainability? *Journal of Cleaner Production*, 243, 118531. <https://doi.org/10.1016/J.JCLEPRO.2019.118531>
- Kuah, A. T. H., & Wang, P. (2020). Circular economy and consumer acceptance: An exploratory study in East and Southeast Asia. *Journal of Cleaner Production*, 247, 119097. <https://doi.org/10.1016/J.JCLEPRO.2019.119097>
- Lacy, P., Long, J., & Spindler, W. (2020). *The circular economy handbook: Realizing the circular advantage*. Palgrave Macmillan.
- Lazarevic, D., & Valve, H. (2017). Narrating expectations for the circular economy: Towards a common and contested European transition. *Energy Research & Social Science*, 31, 60–69. <https://doi.org/10.1016/J.ERSS.2017.05.006>
- Ledford, H. (2015). How to solve the world's biggest problems. *Nature*, 525(7569), 308–311. <https://doi.org/10.1038/525308A>
- Leipold, S., Petit-Boix, A., Luo, A., Helander, H., Simoens, M., Ashton, W., Babbitt, C., Bala, A., Bening, C., Birkved, M., Blomsma, F., Boks, C., Deutz, P., Domenech, T., & Ferronato, N. (2021). Lessons, narratives and research directions for a sustainable circular economy. *Journal of Industrial Ecology*, 27(1), 6–18. <https://doi.org/10.21203/RS.3.RS-429660/V1>
- Leipold, S., Weldner, K., & Hohl, M. (2021). Do we need a 'circular society'? Competing narratives of the circular economy in the French food sector. *Ecological Economics*, 187, 107086. <https://doi.org/10.1016/J.ECOLECON.2021.107086>
- Loiseau, E., Saikku, L., Antikainen, R., Droste, N., Hansjürgens, B., Pitkänen, K., Leskinen, P., Kuikman, P., & Thomsen, M. (2016). Green economy and related concepts: An overview. *Journal of Cleaner Production*, 139, 361–371. <https://doi.org/10.1016/J.JCLEPRO.2016.08.024>
- Lüdeke-Freund, F., & Dembek, K. (2017). Sustainable business model research and practice: Emerging field or passing fancy? *Journal of Cleaner Production*, 168, 93. <https://doi.org/10.1016/j.jclepro.2017.08.093>
- Maisuria, A., & Helmes, S. (2020). *Life for the academic in the neoliberal university*. Routledge.
- Maletz, R., C. D., & Ziyang, L. (2018). *Source separation and recycling* (R. Maletz, C. Dornack, & L. Ziyang, Eds., Vol. 63). Springer International Publishing. <https://doi.org/10.1007/978-3-319-69072-8>
- Masi, D., Day, S., & Godsell, J. (2017). Supply chain configurations in the circular economy: A systematic literature review. *Sustainability (Switzerland)*, 9(9), 1602. <https://doi.org/10.3390/su9091602>
- Mathews, F. (2011). *Towards a Deeper Philosophy of Biomimicry*, 24(4), 364–387. <https://doi.org/10.1177/1086026611425689>
- McDowall, W., Geng, Y., Huang, B., Barteková, E., Bleischwitz, R., Türkeli, S., Kemp, R., & Doménech, T. (2017). Circular economy policies in China and Europe. *Journal of Industrial Ecology*, 21(3), 651–661. <https://doi.org/10.1111/JIEC.12597>
- Merli, R., Preziosi, M., & Acampora, A. (2017). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, 178, 703–722. <https://doi.org/10.1016/j.jclepro.2017.12.112>
- Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, 178, 702–722.
- Michailova, S., & Tienari, J. (2014). What's happening to international business?: University structural changes and identification with a discipline. *Critical Perspectives on International Business*, 10(1), 51–64. <https://doi.org/10.1108/CPOIB-06-2013-0018/FULL/XML>
- Mies, A., & Gold, S. (2021). Mapping the social dimension of the circular economy. *Journal of Cleaner Production*, 321, 128960. <https://doi.org/10.1016/J.JCLEPRO.2021.128960>
- Milios, L. (2017). Advancing to a Circular Economy: Three essential ingredients for a comprehensive policy mix. *Sustainability Science*, 13(3), 861–878. <https://doi.org/10.1007/S11625-017-0502-9>
- Milios, L. (2021). Overarching policy framework for product life extension in a circular economy—A bottom-up business perspective. *Environmental Policy and Governance*, 31(4), 330–346. <https://doi.org/10.1002/EET.1927>
- Minton, P. D. (2012). The visibility of statistics as a discipline. *The American Statistician*, 37(4a), 284–289. <https://doi.org/10.1080/00031305.1983.10483121>
- Moraga, G., Huysveld, S., Mathieux, F., Blengini, G. A., Alaerts, L., Van Acker, K., de Meester, S., & Dewulf, J. (2019). Circular economy indicators: What do they measure? *Resources Conservation and Recycling*, 146, 452–461. <https://doi.org/10.1016/J.RESCONREC.2019.03.045>
- Okamura, K. (2019). Interdisciplinarity revisited: Evidence for research impact and dynamism. *Palgrave Communications*, 5(1), 1–9. <https://doi.org/10.1057/s41599-019-0352-4>
- O'Neill, D. W., Fanning, A. L., Lamb, W. F., & Steinberger, J. K. (2018). A good life for all within planetary boundaries. *Nature Sustainability*, 1(2), 88–95. <https://doi.org/10.1038/s41893-018-0021-4>
- Pfeffer, J. (1993). Barriers to the advance of organizational science: Paradigm development as a dependent variable. *Academy of Management Review*, 18(4), 599–620. <https://doi.org/10.5465/AMR.1993.9402210152>
- Randel, W. (1958). English as a discipline. *College English*, 19(8), 359. <https://doi.org/10.2307/372034>
- Rau, H., Goggins, G., & Fahy, F. (2018). From invisibility to impact: Recognising the scientific and societal relevance of interdisciplinary sustainability research. *Research Policy*, 47(1), 266–276. <https://doi.org/10.1016/J.RESPOL.2017.11.005>
- Reike, D., Negro, S. O., & Hekkert, M. P. (2022). Understanding circular economy transitions: The case of circular textiles. *Business Strategy and the Environment*, 32(3), 1032–1058.
- Repp, L., Hekkert, M., & Kirchherr, J. (2021). Circular economy-induced global employment shifts in apparel value chains: Job reduction in apparel production activities, job growth in reuse and recycling activities. *Resources, Conservation and Recycling*, 171, 105621. <https://doi.org/10.1016/J.RESCONREC.2021.105621>
- Rhoten, D., & Parker, A. (2004). Risks and rewards of an interdisciplinary research path. *Science*, 306(5704), 2046. https://doi.org/10.1126/SCIENCE.1103628/SUPPL_FILE/RHOTEN.SOM.PDF
- Rollmann, H. (2013). What's in a name? Reflections on what we call our discipline, and who gets to decide it. *Journal of Gender Studies*, 22(4), 444–451. <https://doi.org/10.1080/09589236.2013.785939>
- Saidani, M., Yannou, B., Leroy, Y., Cluzel, F., & Kendall, A. (2019). A taxonomy of circular economy indicators. *Journal of Cleaner Production*, 207, 542–559. <https://doi.org/10.1016/J.JCLEPRO.2018.10.014>
- Sassanelli, C., Rosa, P., Rocca, R., & Terzi, S. (2019). Circular economy performance assessment methods: A systematic literature review. *Journal of Cleaner Production*, 229, 440–453. <https://doi.org/10.1016/j.jclepro.2019.05.019>

- Scarpellini, S., Portillo-Tarragona, P., Aranda-Usón, A., & Llena-Macarulla, F. (2019). Definition and measurement of the circular economy's regional impact. *Journal of Environmental Planning and Management*, 62(13), 2211–2237. https://doi.org/10.1080/09640568.2018.1537974/SUPPL_FILE/CJEP_A_1537974_SM7225.DOCX
- Slaughter, S., & Rhoades, G. (2000). *The neo-liberal university*. Sage Publications.
- Smith-Godfrey, S. (2016). Defining the Blue Economy. *Maritime Affairs: Journal of the National Maritime Foundation of India*, 12(1), 58–64. <https://doi.org/10.1080/09733159.2016.1175131>
- Squires, G. (1992). Interdisciplinarity in Higher Education in the United Kingdom. *European Journal of Education*, 27(3), 201. <https://doi.org/10.2307/1503449>
- Stahel, W. R. (2019). *The circular economy: A user's guide*. Routledge.
- Stremersch, S. (2008). Health and marketing: The emergence of a new field of research. *International Journal of Research in Marketing: IJRM; Official Journal of the European Marketing Academy*, 25(4), 229–233.
- Testa, F., Iovino, R., & Iraldo, F. (2020). The circular economy and consumer behaviour: The mediating role of information seeking in buying circular packaging. *Business Strategy and the Environment*, 29(8), 3435–3448. <https://doi.org/10.1002/BSE.2587>
- Tight, M. (2020). Higher education: Discipline or field of study? *Tertiary Education and Management*, 26(4), 415–428. <https://doi.org/10.1007/S11233-020-09060-2>
- Trowler, P. (2014). Depicting and researching disciplines: Strong and moderate essentialist approaches. *Studies in Higher Education*, 39(10), 1720–1731. <https://doi.org/10.1080/03075079.2013.801431>
- Tudor, T., & Dutra, C. J., Routledge (Firm). (2020). *The Routledge handbook of waste, resources and the circular economy*. Routledge.
- Tukker, A. (2004). Eight types of product–service system: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and the Environment*, 13(4), 246–260. <https://doi.org/10.1002/BSE.414>
- Ünal, E., Urbinati, A., & Chiaroni, D. (2019). Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *Journal of Manufacturing Technology Management*, 30(3), 561–589. <https://doi.org/10.1108/JMTM-02-2018-0061>
- Urbinati, A., Chiaroni, D., & Chiesa, V. (2017). Towards a new taxonomy of circular economy business models. *Journal of Cleaner Production*, 168, 487–498. <https://doi.org/10.1016/j.jclepro.2017.09.047>
- Urbinati, A., Chiaroni, D., & Toletti, G. (2019). Managing the introduction of circular products: Evidence from the beverage industry. *Sustainability (Switzerland)*, 11(13), 1–12. <https://doi.org/10.3390/su11133650>
- Urbinati, A., Franzò, S., & Chiaroni, D. (2021). Enablers and barriers for circular business models: An empirical analysis in the Italian automotive industry. *Sustainable Production and Consumption*, 27, 551–566. <https://doi.org/10.1016/j.spc.2021.01.022>
- Van Den Besselaar, P., & Heimeriks, G. (2013). Mapping research topics using word-reference co-occurrences: A method and an exploratory case study. *Scientometrics*, 68(3), 377–393. <https://doi.org/10.1007/S11192-006-0118-9>
- Van Keulen, M., & Kirchherr, J. (2021). The implementation of the circular economy: Barriers and enablers in the coffee value chain. *Journal of Cleaner Production*, 281, 125033. <https://doi.org/10.1016/j.jclepro.2020.125033>
- Vecchio, P. D., Urbinati, A., & Kirchherr, J. (2022). Enablers of managerial practices for circular business model design: An empirical investigation of an agro-energy company in a rural area. *IEEE Transactions on Engineering Management*, 29, 1–15. <https://doi.org/10.1109/TEM.2021.3138327>
- Velenturf, A. P. M., & Purnell, P. (2021). Principles for a sustainable circular economy. *Sustainable Production and Consumption*, 27, 1437–1457. <https://doi.org/10.1016/J.SPC.2021.02.018>
- Weetman, C. (2020). *A circular economy handbook: How to build a more resilient, competitive and sustainable business*. Kogan.
- Whitley, R. (2000). The intellectual and social organization of the sciences. *Theory and Society*, 17(2), 291–299.
- Zarin, M. (2019). ROCKWOOL Group joins Ellen MacArthur Foundation's Circular Economy 100 (CE100) Network. <https://www.rockwool.com/group/about-us/news/2019/rockwool-group-joins-ellen-macarthur-foundation-circular-economy-network/>
- Zink, T., & Geyer, R. (2017). Circular economy rebound. *Journal of Industrial Ecology*, 21(3), 593–602. <https://doi.org/10.1111/JIEC.12545>

How to cite this article: Kirchherr, J., Urbinati, A., & Hartley, K. (2023). Circular economy: A new research field? *Journal of Industrial Ecology*, 1–13. <https://doi.org/10.1111/jiec.13426>