

RESEARCH ARTICLE

Towards a framework for corporate disclosure of circular economy: Company perspectives and recommendations

Katelin Opferkuch^{1,2}  | Anna M. Walker^{3,4}  | Erik Roos Lindgreen⁵  |
Sandra Caeiro^{1,2}  | Roberta Salomone⁵  | Tomás B. Ramos² 

¹Department of Science and Technology,
Universidade Aberta, Lisbon, Portugal

²CENSE, Center for Environmental and
Sustainability Research, NOVA School of
Science and Technology, NOVA University
Lisbon, Caparica, Portugal

³Department of Economic Studies, University
"G. d'Annunzio" – Pescara, Chieti, Italy

⁴Copernicus Institute of Sustainable
Development, Utrecht University, Utrecht,
the Netherlands

⁵Department of Economics, University of
Messina, Messina, Italy

Correspondence

Katelin Opferkuch, Department of Science and
Technology, Universidade Aberta, Rua
Almirante Barroso 38, Lisbon 1000-113,
Portugal.
Email: katelin.opferkuch@uab.pt

Funding information

European Union's Horizon 2020 Framework
Programme, Grant/Award Number: 765198

Abstract

Circular economy (CE) is becoming an increasingly mandatory material issue within corporate sustainability reporting, however, what remains unaddressed within literature are the perspectives and capacities of the companies which must soon adapt to meet the evolving reporting requirements. This research aims to capture insights from companies engaged with CE in order to develop recommendations that support the integration of CE within corporate sustainability reports. To do this, a series of semi-structured interviews and focus groups were conducted with companies operating in Italy or the Netherlands, not limited by sector. The results provide a list of challenges experienced- and benefits gained- by companies from externally communicating CE. Companies are urged to consider not only risks associated with staying in the linear economy but also those associated with the implementation of new circular practices, to communicate potential sustainability trade-offs and reduce potential claims of CE-related greenwashing. Practical recommendations are offered for developing targets and indicators for CE as well as identifying and reporting CE-specific risks and opportunities.

KEYWORDS

circular economy, circularity indicator, corporate social responsibility, due diligence, EU taxonomy regulation, value creation

1 | INTRODUCTION

Within recent years, academics and industry groups have criticised the practice and efficacy of corporate sustainability reports. This practice is intended to provide stakeholders with consistent and objective information so that they can evaluate the company's approach to value creation, including their non-financial ambitions and performance (Gray, 2006). Generally, companies follow the guidance provided within a growing number of disclosure frameworks, most commonly those from the Global Reporting Initiative (GRI) and the International Integrated Reporting Council (IIRC) (Peršić et al., 2017). However, as observed by Boiral

and Heras-Saizarbitoria (2019), despite various developments within the content and structure of such disclosure frameworks, there has not been a direct increase in the quality of sustainability reports being published. Furthermore, some authors argue that even the term 'sustainability reporting' is moving further away from the concept of sustainability proposed in the Brundtland definition (Hahn & Kühnen, 2013).

To address these issues, several stakeholders involved with the setting of sustainability reporting standards are now calling for the 'harmonisation' of disclosure frameworks, for example, World Economic Forum (2020) and the International Financial Reporting Standards Foundation (IFRS) Foundation (2021). These calls work to resolve the current lack of

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. *Corporate Social Responsibility and Environmental Management* published by ERP Environment and John Wiley & Sons Ltd.



comparability of sustainability data and any confusion caused by the proliferation of disclosure frameworks in recent years (Siew, 2015). However, some academics state that any attempts to 'harmonise' the guidelines of disclosure frameworks are actually advocating for changes which serve solely the interests of investors (Adams & Abhayawansa, 2022). These authors acknowledge that many companies are broadening their concept of value from being solely profit-related to now including value for the company and value for society. However, the constant changes to disclosure frameworks risk the discourse shifting yet again towards 'enterprise value creation', which focuses on the economic evaluation of the whole enterprise (as seen in Impact Management Project, 2020).

Because of those criticisms, new initiatives have emerged which seek to rethink how companies account and report their value creation and associated impacts. These initiatives, such as the value balancing alliance (VBA, 2021) and impact-weighted accounts (Serafeim & Trinh, 2020), offer alternative pathways to integrating financial and non-financial value, through the measurement of- and responsibility for- impacts on the environmental, social and economic dimensions. These approaches advocate for a more holistic, integrated and stakeholder-oriented approach to developing and communicating a company's value proposition (VBA, 2021). Ultimately, allowing companies to internally embed sustainability and become more resilient to evolving sustainability challenges.

One such approach to realising sustainable development, which encourages a rethinking of how value is perceived and created, is the circular economy (CE) model. Despite its many definitions (Cecchin et al., 2021; Kirchherr et al., 2017), CE expands waste and resource management processes and can be defined as a system where *'the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimised'* (European Commission (EC), 2015). CE has become a major centrepiece of broader sustainability policies and projects from international organisations, such as the United Nations Environmental Programme's (UNEP) Circularity Platform (UNEP, 2022) and the European Union's (EU) Green Deal (European Commission, 2019). To achieve the targets set out in these initiatives, CE has recently been prioritised as one of six key environmental objectives within two European sustainable finance-related regulations. First, the EU Taxonomy Regulation (European Parliament and Council, 2020), which is a classification system designed to assist investors to determine whether an economic activity is environmentally sustainable. And second, the recently agreed upon proposal for the corporate sustainability reporting directive (CSRD), which includes revisions to increase the quantity and quality of sustainability data a company must disclose, in order to prevent instances of corporate greenwashing (European Commission, 2021; Uyar et al., 2020). Sustainability reporting and investment professionals have evolved to embrace climate-related risks and are now moving towards defining and accepting CE-related risks, which concern the use and availability of resources and materials (UNEP, 2020). The aforementioned regulatory developments will lead to an increase in the following aspects: (1) the number of companies required to disclose CE data within their corporate sustainability reports and (2) the amount of investments to companies engaging with- and reporting- CE data in the coming years.

To meet this increasing demand for CE data, several academic studies have started to develop assessment approaches for CE (Corona et al., 2019; Sassanelli et al., 2019). However, as determined by Stumpf et al. (2021), the actual implementation of these approaches within industry is trivial. Furthermore, the application of these CE assessment approaches to select data for inclusion within external communication is also negligible (Opferkuch et al., 2022). Recently, in the authors previous work, a review of disclosure frameworks suggested that guidance on how to disclose CE-related issues is mainly absent (Opferkuch et al., 2021). Therefore, companies which are engaging with CE and preparing sustainability reports most likely exclude CE or simply qualitatively describe the circularity measures they have in place, specifically related to waste management (Opferkuch et al., 2021). In addition, research exploring evidence of CE within corporate sustainability reports has suggested that the reporting of CE is most often inconsistent and largely unquantified (Stewart & Niero, 2018).

Despite these academic and regulatory advancements, what remains unknown are the perspectives and experiences of companies which will need to adapt and implement processes in order to meet these evolving CE-reporting requirements. To address this gap, this research aims to capture insights from companies that have experience with integrating CE content within their sustainability reports. Specifically, this research has three objectives: (1) to identify and highlight the current challenges companies face when externally communicating CE; (2) to determine what value disclosing CE activities has for companies; and (3) propose recommendations to improve the feasibility of companies moving towards the meaningful reporting of their CE activities. The findings of this research are relevant for companies of all sizes, across sectors and countries, wishing to produce either a voluntary or mandatory corporate sustainability report integrating CE aspects. The proposed recommendations can assist companies to develop a roadmap towards improved CE implementation. Furthermore, the findings presented in this article are beneficial for those involved with standard setting and development of disclosure frameworks, as it provides them with the specific reporting capabilities and expectations of companies engaging with CE.

The remainder of this article is structured as follows. First, a brief theoretical overview is presented, summarising what is known on the topics informing the research and highlighting the research gap (Section 2). Next, the qualitative methods employed (Section 3), and the results from interviews and focus groups with selected companies are provided (Section 4). Then, practical recommendations are presented to support companies preparing CE content within their corporate sustainability reports (Section 4.3). Finally, the article makes critical reflections on the results of the study (Section 4.4) and closes with some concluding remarks, limitations and suggestions for future research (Section 5).

2 | THEORETICAL OVERVIEW

As mentioned previously, the implementation of CE strategies encourages companies to rethink how they perceive, create and measure value. This in turn, requires companies to re-evaluate how they

communicate and report these changes within their value creation story. This section presents a brief theoretical overview of the main concepts supporting this research so that an overview is made clear. Namely, an introduction to CE and value creation (Section 2.1), an exploration of CE's emergence within the domains of corporate sustainability reporting (Section 2.2) and sustainable finance (Section 2.3). This section concludes with a culminating statement that highlights the research gap motivating this research.

2.1 | Defining value in a circular economy

CE is most simply described as re-designing the traditional 'take-make-dispose' linear pattern of production and consumption (Geng & Doberstein, 2008). A common classification of strategies to operationalise the CE concept are the value retention strategies or '10R framework' (Potting et al., 2017; Reike et al., 2018). This framework consists of 10 value retention strategies of decreasing priority in terms of circularity, from R0 (refuse) to R9 (recovery). The potential benefits of implementing CE activities are well documented—as pointed out by the Ellen MacArthur Foundation (2015). However, an increasing number of studies highlight the ambiguity of the relationship between CE and sustainability (Schroeder et al., 2018; Walker, Opferkuch, Roos Lindgreen, Raggi, et al., 2021). For example, CE is primarily an environmental-economic model that rarely considers the implications of CE activities on the social dimension of sustainability (e.g. inequality or health and wellbeing) (Murray et al., 2017; Walker, Opferkuch, Roos Lindgreen, Simboli, et al., 2021). The ambiguity between CE and sustainability is exacerbated by the identification of sustainability trade-offs and rebound effects when making decisions on which CE activities to implement (Geissdoerfer et al., 2017; Korhonen et al., 2018). Recent articles have begun to explore combining the assessment of risk and sustainability, to reveal these trade-offs and increase robustness of decision making (Hauschild et al., 2022; Kravchenko et al., 2021). To ensure that these rebound effects are prevented, it is imperative that companies can adequately assess and report their performance with respect to their CE objectives, as well as to demonstrate how these objectives align with their broader value creation story.

The transition towards a CE requires companies to not just create new value from waste (Romero-Hernández & Romero, 2018) but to enhance quality of life through the creation, delivery and capture of value by implementing circular strategies which extend the lifetime of resources within the system (Nußholz, 2017). To this end, an increasing number of articles are investigating what this *value* looks like. Building on research from Bocken et al. (2015), Haines-Gadd and Charnley (2019) propose a taxonomy of value for CE. This taxonomy separates four aspects of tangible value: (1) resource value, (2) consumer value, (3) data/knowledge value, and (4) relationship value and five aspects of intangible value: (1) stability and control, (2) symbiosis, (3) positive social impact, (4) altruism, and (5) behaviour change. These nine aspects demonstrate the range of impacts companies can experience -and should monitor- when implementing CE activities and

circular business models. However, how feasible and relevant it is for companies to assess, monitor and, ultimately, integrate CE-related impacts within a company's corporate sustainability report remains unaddressed within literature.

2.2 | Circular economy within corporate sustainability reporting

Despite evolving academic discussions on the actual sustainability potential of CE, early evidence suggests that within both disclosure frameworks and current sustainability reporting trends, the representation of CE remains limited. In a literature review conducted by Opferkuch et al. (2021), 15 reporting frameworks and approaches were analysed which were deemed relevant for companies looking for guidance on how to produce a sustainability report (e.g. GRI and the Integrated Reporting Framework). The findings showed that only a few approaches had incorporated CE issues (Opferkuch et al., 2021). The representation of CE observed within these disclosure frameworks was most often: (i) based on the definition from the EMF often illustrated with the butterfly diagram (Ellen MacArthur Foundation, 2015); (ii) linked to only the environmental dimension of sustainability; and (iii) the choice of which assessment approach(es) to be used to produce CE-data relevant for reporting is the responsibility of the reporting company (Opferkuch et al., 2021). This, as Pauliuk (2018) suggests, leaves room for companies to cherry-pick CE data to report which best suits their corporate narrative and therefore, potentially engage with greenwashing practices. The field of literature discussing the various forms- and evolution of- greenwashing is extensive, with the term describing companies seeking corporate legitimacy and improved reputation by making false and unsubstantiated corporate social responsibility (CSR) claims and commitments (Ashforth & Gibbs, 1990; Brammer & Pavelin, 2006; Calabrese et al., 2013). Given the context of the aforementioned changing corporate sustainability reporting regulations designed to prevent instances of greenwashing, the need for research to support companies complying with these disclosure requirements and to not engage with greenwashing is pertinent.

The effects of the vague and inconsistent guidance on CE disclosure highlighted in previous studies is already being reflected in the CE content observed within corporate sustainability reports, as identified in Stewart and Niero (2018) and Dagilene et al. (2020). In 2018, Stewart and Niero conducted a content analysis of the sustainability reports of 46 companies within the fast-moving consumer goods sector. Their analysis found that companies were most often still associating CE with only recycling or reuse strategies, primarily in the product and packaging domain and without connection to the social aspects of CE (Stewart & Niero, 2018). Similarly, through a content analysis of 226 sustainability reports from companies within the manufacturing sector, Dagilene et al. (2020) found that companies were still not reporting much information about CE and if so, generally described reuse, recycle and recover strategies. In the authors most recent work, a content analysis was performed on 138 reports of



94 European sustainably ranked companies (Opferkuch et al., 2022). The analysis identified the presence of CE within five sustainability reporting elements: CEO's message, materiality assessments, references to the SDGs, targets and indicators for CE. The results showed that all but one company was found to be explicitly mentioning CE within their reports, however, only 7% of companies are integrating CE within all five reporting elements. In addition, of the one third of companies reporting both targets and indicators for CE, targets generally focussed on higher-ranking CE strategies, most often aiming to eliminate and/or replace non-renewable resources within packaging (e.g. '50% plastic packaging made from recycled materials'). Indicators for CE, however, generally measure references to the linear economy (e.g. volume of waste going to landfill) or low-ranking CE strategies (e.g. % material recycled or recovered). The work of de Freitas Netto et al. (2020) suggests that in order for companies to refute claims of greenwashing, appropriate targets and indicators must be reported as to increase the transparency of the company's sustainability ambitions and performance. This is true across all sustainability issues, as was determined by Calabrese et al. (2022) whose analysis of companies' contributions towards the SDGs revealed that firms most often disclose symbolic descriptions for legitimacy-seeking purposes. However, for the case of CE it remains unclear how many and which targets and indicators are appropriate to reject those claims (Opferkuch et al., 2022).

2.3 | Circular economy within sustainable finance

As mentioned earlier, existing policies and financial instruments have been designed to finance traditional linear processes (European Investment Bank [EIB], 2019). For example, credit pricing has been traditionally determined through the creditworthiness of an individual company, with no consideration of their broader supply chain partners (EIB, 2019). However, in a CE, these supply chain partners are becoming increasingly important as their relations are built on continuous material exchanges (Walker, Vermeulen, Simboli, & Raggi, 2021). Until recently, circular business models have been observed by financial institutions as high-risk with uncertain returns and thus, some innovative companies were the exception rather than the rule (United Nations Environmental Programme [UNEP] Finance Initiative, 2020). However, in light of the EC's integration of CE objectives within the EU Taxonomy Regulation (European Parliament and the Council, 2020), financial institutions have begun to incorporate CE-specific terminology and metrics within their operations. This is being done to develop a more comprehensive understanding of risk management within a CE. As a result, there has been a steep increase in the number of financial instruments related to CE, for example, private and public equity funds, venture capital, as well as CE-specific adaptations to current bank lending, insurance and project financing procedures (EMF, 2022). Key actors driving these changes are international financial regulators, for example, the EIB, private investment management firms; such as Blackrock, and banks; including International Nederlanden Groep (ING) and Intesa Sanpaolo. Early research

findings suggest that the more circular a company is, the lower its risk of defaulting on debt (Zara & Ramkumar, 2022), highlighting the appeal for the financial community to identify and support companies prioritising CE strategies.

Along this line of reasoning, financial institutions have developed screening and eligibility criteria to categorise companies as substantially contributing to CE. For example, the EIB utilises a list of 14 CE categories organised into four groups: (1) Circular design and production models; (2) Circular use models; (3) Circular value recovery models; and (4) Circular support (EIB, 2019). Another example is from the Italian bank Intesa Sanpaolo, which in collaboration with the EMF, developed a plafond of up to 5 billion euros available to companies that adopt circular business models. Administered through the *Intesa Sanpaolo Innovation Centre* (Intesa Sanpaolo, 2019), funds from the CE-eligible loans are provided to companies that have been evaluated against five eligibility criteria: (1) Product life extension; (2) Renewable resources; (3) Resource efficiency and effectiveness; (4) Recyclable products; and (5) Enabling technologies (Intesa Sanpaolo, 2021). These types of CE-specific screening and eligibility criteria make it imperative that companies can adequately describe their CE activities in line with their business models and then include it within their corporate sustainability reports.

In addition to a company's business model being categorised as contributing to the CE, there are other factors which influence the possibility of projects and/or companies being eligible for CE financing. Companies must openly communicate their intentions and goals to contribute to CE objectives and demonstrate how their own actions have positive impacts for broader society (ABN Amro, ING, & Rabobank, 2018; EIB, 2019). This is mostly in line with the increasingly popular principles of impact investing, which are investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return (Global Impact Investing Network, 2022; O'Donohoe et al., 2010). Furthermore, companies must integrate CE within their due diligence processes, ensuring that potential CE-specific risks to -and opportunities for- long term value creation are acknowledged within the company and reported externally to all stakeholders. Using a combined literature review and survey approach, Dulia et al. (2021) analysed the importance of 36 risk factors for circular supply chains, grouped into 10 risk categories; for example, Governmental risks and Technological risks, adapted from Tang (2006). The authors determined some of the highest ranked risk factors were: 'quality degradation of recycled products', 'lack of proper vision such as goals, objectives, targets and indicators for circular supply chains' and 'lack of sufficient law implementation' (Dulia et al., 2021).

Ultimately, financial institutions and regulators play a significant role not only in financing the transition towards a CE, but in shaping what this transition looks like. Despite the evolving integration of CE within both corporate sustainability reporting practices and sustainable finance-related regulations, evidence suggests the uptake of CE within corporate sustainability reports has been slow (Opferkuch et al., 2022; Scarpellini et al., 2020). The reasons why there has been

such a slow uptake and what challenges to CE disclosure currently exist for companies remains unknown.

Recent research, exploring the assessment practices of companies engaged with CE, identified what the main barriers to- and benefits of- conducting CE assessments were (Roos Lindgreen et al., 2022). The most frequently mentioned benefits were related to external communication and collaboration, namely: (i) marketing and improving company reputation; and (ii) communicating and reporting to stakeholders (Roos Lindgreen et al., 2022). Therefore, there seems to be challenges preventing motivated companies from taking their CE assessment results and integrating them within their corporate sustainability reports. To clarify this gap, research is needed which provides insights on the feasibility and relevance of CE disclosure for companies in relation to their broader sustainability reporting practices.

3 | METHODOLOGICAL APPROACH

This study combines qualitative research approaches in three distinct phases in order to achieve the research aims (as seen in Figure 1). Phase 1—Exploratory (Section 3.2), consists of exploratory semi-structured interviews with companies actively engaged with CE activities, to ensure that all participants have knowledge of- and experience with- the implementation and communication of CE activities. In phase 2—Consensus & Co-creation (Section 3.3), a series of focus groups were held with a subset of the interviewed companies to dive deeper into trends observed within the interview responses as well as discuss the feasibility and relevance of CE aspects within corporate sustainability reporting. Furthermore, the focus groups allowed for the co-creation of critical factors of -and desired goals for- companies reporting their CE activities. Phase 3—Synthesis (Section 3.4), combines findings from the first two phases with those from literature in order to propose recommendations to support companies disclosing their CE activities.

3.1 | Sample data description

During previous research, a semi-quantitative survey designed to explore the conceptualisation and assessment of CE within companies engaged with CE was completed by 155 respondents, as described in Walker et al. (2022). Purposive sampling was used to identify the

original sample of surveyed companies (Hibberts et al., 2012), by targeting companies who met the following sampling criteria: (1) members of national or international CE networks; thus, actively engaging with- and having knowledge of- CE and (2) currently operating in either Italy or the Netherlands, both countries which are considered frontrunners in terms of CE policies and innovations (Ghisellini & Ulgiati, 2020; Kristensen & Mosgaard, 2020). Upon completion of the original survey, 43 companies self-selected to participate in a round of interviews which form the basis of this article. Thus, the interviewees form a subset of the survey respondents. After the interviews, companies were invited to participate in focus groups, if they met two additional selection criteria: (1) publish a sustainability report and (2) willing to communicate in English. Ultimately, eight of the previously interviewed companies were able to participate in the focus groups. The distribution of companies participating within the interviews and focus groups and their characteristics, are summarised in Table 1 and Appendix A (Table A1).

The allocation of interviewed companies between the two countries was almost even, with 23 companies operating in the Netherlands and 20 in Italy. With regards to sector, companies were most frequently offering consultancy services (29% from 'Other service activities' and 'Professional, scientific and technical activities') or active in the 'Manufacturing sector' (20%). Companies indicated their own sectoral classification according to the NACE classification system (Eurostat, 2018). Interviewed companies were most often micro companies (49% with less than 10 employees), whilst the remaining companies were either small and medium enterprises (SMEs) (26%) or large companies (25%). Finally, interviewees generally held positions with decision-making power and/or had knowledge of sustainability as 53% were CEO's (or founders) and 30% were from the sustainability and/or CSR department.

Zooming in on the focus group participants listed in Table 1, seven of the eight companies operate in the Netherlands and the remaining one in Italy. Concerning the companies' sector, companies were mostly from the 'Manufacturing' ($n = 3$) and 'Water and Waste Management' ($n = 3$) sectors. The distribution of company size was even with 50% of participants representing large companies and the other 50% representing SMEs (no micro companies were invited to participate in the focus groups). Furthermore, most participants worked in the sustainability and/or CSR department ($n = 6$), whilst the remaining participants worked in general management positions ($n = 2$).

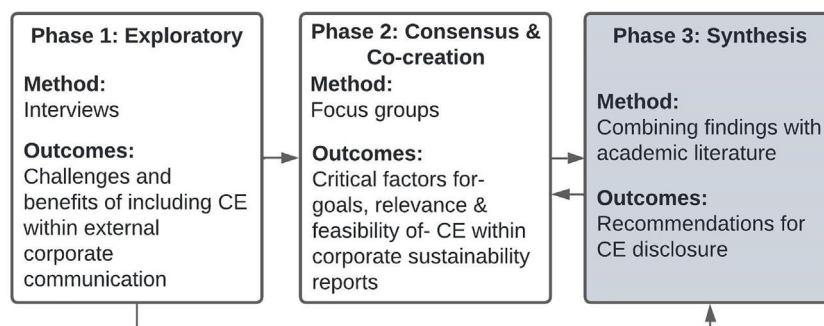


FIGURE 1 Overview of three phases constituting the research approach.

TABLE 1 Company sectors, size and location of interview and focus group participants.

Main characteristics	Interview respondents (n = 43)	Focus group participants (n = 8)
Company sector		
Accommodation and food service activities	9%	–
Construction	10%	–
Electricity, gas, steam and air conditioning supply	4%	12.5%
Information and communication	7%	–
Manufacturing	20%	37.5%
Other	12%	–
Other service activities	15%	12.5%
Professional, scientific and technical activities	14%	–
Water and waste management	9%	37.5%
Company size		
Micro companies (1–9 employees)	49%	0%
SMEs (10–249 employees)	26%	50%
Large companies (250+ employees)	25%	50%
Company location		
Italy	46.5%	12.5%
The Netherlands	53.5%	87.5%
Participant's position		
CEO or founder or owner	53%	25%
Sustainability and CSR department	30%	75%
Research and development	12%	–
Marketing and sales	5%	–

3.2 | Phase 1: Exploratory

The 43 semi-structured interviews were conducted by three interviewers via video-call between May and June 2020, lasting between 45 to 90 min each. The semi-structured format enabled each of the interviewers to ask the same questions, whilst having space for interviewees to clarify and contextualise relevant issues when necessary (Bryman, 2012). The interviews were conducted in the preferred language of the interviewee, either in Italian ($n = 17$), Dutch ($n = 16$) or English ($n = 10$), with one interviewer per language. All interviewers followed the same interview guidelines and the interview questions discussed within this article are summarised in Table 2.

The exploratory nature of the research allowed for open questions to gather as much information as possible. As the interviewees consisted of many micro companies, which did not necessarily have experience with producing corporate sustainability reports, interview questions focussed on the integration of CE within external communication in general (e.g. within social media, newsletters). Sub-questions were designed to ensure that insights could be captured from all

TABLE 2 Interview questions concerning the external communication and reporting of CE activities.

Interview questions	Results presented in
1. Should circular economy content be included within corporate sustainability reports?	Section 4.1
Sub-questions	<i>If does produce a sustainability report:</i> Why or why not? What does this content look like, quantitative and/or qualitative? <i>If does not produce a sustainability report:</i> Do you think circular economy content should be integrated into sustainability reporting or should it be separated? (only in other external communication formats, for example, website, individual report)
2. What value does your company see in communicating circular economy externally?	Sections 4.2 and 4.3
Sub-questions	<i>If company does assess circular economy:</i> If you have already implemented assessment approaches for circularity (at either product or company level) what value does your company see in communicating (in any format) these results externally? <i>If company does not assess circular economy:</i> does your company see value in communicating (in any format) circular economy goals/activities/progress in communicating circularity in a narrative/qualitative format?

companies within the sample, regardless of whether they produce a sustainability report or conduct any form of CE assessment. Interviewers followed the systematic and reflexive interviewing and reporting (SRIR) method from Loubere (2017). When utilising the SRIR method, interviewers are advised to both record and take notes during the interviews, then hold weekly meetings between themselves to discuss the evolving findings of the interviews. This process ensures a regular evaluation and consistent interpretation of the interview questions, thus, reducing interviewer variability (Bryman, 2012). Interview notes were translated into English, and then combined with company attributes before being imported into NVivo R1 (QSR International, 2020) software for thematic analysis using inductive coding (Braun & Clarke, 2006). To analyse the answers to the questions presented in Table 2, coding was conducted by one researcher, respondent by respondent, who then presented the coding to the other interviewers for review, in order to reduce the possibility of interviewer-related errors. After the coding was reviewed, responses for question 2 were aggregated into two themes: (1) challenges of externally communicating CE issues (Section 4.1.2); and (2) benefits experienced when externally communicating their CE activities (Section 4.1.3).

3.3 | Phase 2: Consensus and co-creation

A focus group is delineated as a group discussion on a tightly defined topic, ran by a moderator (Merton et al., 1956). Its design allows for interaction between the participants, generating data on multiple levels (individual, group and interaction) (Cyr, 2016). Three focus groups were conducted via video-call during March 2022, each lasting around 2 h and hosting two to three companies (as seen in Appendix A). Once the focus group commenced, the moderator outlined the purpose of the research and assured participants the confidentiality of the meeting's discussion. In addition, participants were guided to use an online collaboration platform: Miro digital whiteboard, which was created specifically for the focus groups. The purpose of this interactive tool is to facilitate discussion as well as readily capture responses and insights from group participants and has been used in several academic studies (Delgadillo et al., 2021; Santa-Maria et al., 2022). During the focus groups, data was collected by: (1) assigning post-it notes containing responses to questions onto the Miro digital whiteboard (within designated sections); and (2) additional note taking by the support moderator of the opinions shared verbally by participants. The contents and structure of each focus group was organised into four main parts (summarised in Table 3).

The evaluation performed within Part 2 of the focus groups was done individually on a scale from 'Not Feasible/Relevant at all' to 'Extremely Feasible/Relevant'. The scores of the eight participants were grouped for each individual report element and the median results are presented in Section 4.2. The report elements with the lowest scores for feasibility were identified and selected for inclusion within Phase 3: Synthesis, where recommendations are proposed. In

TABLE 3 Guiding questions used during the focus group discussions.

Part	Guiding question(s)	Results presented in
1	What are critical factors that should be included within a company's CE disclosure?	Section 4.1
2	Feasibility: what are the most important aspects to enable your company to develop and publish a sustainability report? How does this differ when you report CE content?	Section 4.2
3	Evaluate the integration of CE within seven report elements for sustainability reports on two dimensions: (1) feasibility and (2) relevance. The seven report elements as stated in the Non-Financial Reporting Directive (EC, 2014) are: (1) Stakeholder inclusiveness, (2) Business model, (3) Risks and opportunities, (4) Strategy, (5) Materiality, (6) Sustainability outlook and performance and (7) Governance.	Section 4.2
4	Establishing desired goals for companies disclosing CE within their sustainability reports.	Section 4.2

Part 4 of the focus groups, companies were presented with a list of six goals companies should aim for when disclosing CE, based on previous findings from literature. They were then asked to individually rank these goals, offer any modifications or suggest new ones, ensuring all participants agreed on the final list of goals. Finally, each focus group ended with the possibility for companies to share general feedback or reflections on the progress of integrating CE within corporate sustainability reports. To examine the data collected from the focus groups, responses for each part were grouped and analysed to identify the frequency of answers, common themes and contrasting differences, in line with qualitative thematic analysis (Braun & Clarke, 2006). Due to the limited number of interview respondents and focus group participants, no generalisation of findings according to sector, company size or country could be made.

3.4 | Phase 3: Synthesis and development of recommendations

The third phase of the methodological approach involved a qualitative synthesis, which is defined as 'the synthesis of individual qualitative research reports that relate to a specific topic or focus in order to arrive at new or enhanced understanding about the phenomenon under study' (p. 1, Paterson, 2012). Within this article, primary data collected from the interviews and focus groups was supported with secondary findings from relevant academic literature. The latter entailed the CE-specific eligibility criteria from financial institutions and CE-specific risk categorisation implemented in Dulia et al. (2021), discussed in Section 2.3. In line with the second and third research objectives, the aim of the synthesis was to: (i) outline the value for companies integrating CE within their corporate sustainability reports; and (ii) develop recommendations to improve the feasibility of companies collecting and selecting relevant data to report their CE activities (Section 4.3).

4 | RESULTS AND DISCUSSION

4.1 | Company perspectives on the integration of CE within corporate sustainability reports

This section presents an overview of company perspectives on the inclusion of CE within sustainability reports, lining out a potential format and critical factors as well as the challenges and benefits of CE disclosure.

4.1.1 | CE within corporate sustainability reports: Ideal format and critical factors

The analysis of the 43 interview responses provided an overview of the sustainability reporting practices of the companies, as well as reflections on the ideal format for CE content within these reports.

Just over half (53% or $n = 23$) of interviewed companies produce a sustainability report, even considering the high proportion of micro companies within the sample. Some reasons that companies did not voluntarily produce a sustainability report were either: (a) the company is too small ($n = 4$), (b), their website contains enough information ($n = 2$), or (c) they only report financial information ($n = 1$). However, most of these interviewees expressed a desire to produce a sustainability report in the future. A small group of companies ($n = 5$) stated that they do not see any value in producing a voluntary sustainability report, as their clients are not interested in one and/or sustainability is seen in everything that they do, therefore, they do not need to ‘...formally prove they are sustainable in one document...’ (Interviewee #7, Manufacturing sector).

The majority of interview respondents (93% or $n = 40$) agreed that CE content is relevant within a sustainability report, whereas three companies suggested a separate circularity report should be produced. Several interviewees from micro-companies and SMEs stressed the growing importance of continued engagement with their clients, consumers and the community. For this reason, communicating CE using other external communication formats such as, social media, their website and newsletters is important. All interview respondents agreed that both quantitative and qualitative CE data is important within corporate external communication, however, the majority stated that they currently only publish CE-related data in a qualitative format. Some examples include the following topics: the CE-related projects they are involved in; the resulting new partnerships made; the CE assessment tools being used internally; and targets developed for their CE objectives. Overall, several companies mentioned that they are closely watching the development of guidelines for both CE assessment and reporting, with one interviewee stating ‘...if there was a standard format for reporting CE this would be very valuable and integrated immediately...’ (Interviewee #24, Construction sector), further emphasising the need from companies for a more standardised approach to CE disclosure.

Within the focus groups, participants were asked to list and discuss critical factors they think should be included within a company's CE disclosure (main findings presented in Table 4 and full list in Appendix B Table B1). These seven factors were grouped under three categories: (i) content; (ii) quality; and (iii) structure (listed completely in Appendix B). Primarily, the focus group discussions centred on suggestions for the first category. All focus groups touched on the need for balance within sustainability reports, namely between: tangible and intangible aspects of circularity; qualitative and quantitative data for CE; short-term and long-term ambitions; and consideration of internal (adopter) vs external (enabler) CE activities. Participants expressed that they observe some other companies that only report progress on their external CE activities, which enable other companies to improve their circularity (e.g. % of recycling by-product recycled by suppliers), however, do not communicate progress on the circularity of their own internal CE activities (e.g. % waste generated during recycling processes). Furthermore, participants working within the sustainability or CSR departments were generally familiar with the ‘10 R-hierarchy’, categorisation of CE strategies from Potting et al. (2017).

TABLE 4 Critical factors to be included within a company's CE disclosure.

#	Critical factors
Content	
Balance between:	
1	Tangible vs intangible aspects of circularity
2	Qualitative vs quantitative data for CE
3	Short-term vs long-term ambitions
4	Consideration of internal (adopter) vs external (enabler) CE activities
5	CE activities described according to the ‘10R-hierarchy’
Quality	
6	Moving towards external assurance of CE data
Structure	
7	Clearly link CE to other significant material issues

These focus group participants described how companies should utilise this framework to communicate CE performance and ambitions on each of these 10 individual CE strategies (when possible). In terms of critical factors for the second category ‘quality’, companies frequently mentioned moving towards involving external assurers of CE data and including the intended time for companies to achieve their CE-specific targets. With respect to the structure of a company's CE disclosure, the participants generally agreed that there are issues with reporting significant material issues, such as CE, in isolation from one another. Therefore, companies should keep in mind when producing CE content that it should be clearly linked with other significant material issues, for example, climate change, in order to present a holistic and complete picture of their organisation's sustainability ambitions and performance.

4.1.2 | Challenges of including CE within external corporate communication

Three main challenges were identified during the interviews which influence the quantity and quality of CE content being included within the companies' external communication.

1. Lack of standardised assessment or reporting method for CE activities

The majority of companies cited this as the reason why quantitative CE data (e.g. ‘% reuse rate’) was excluded from external communication. Without a benchmark, companies declared that there is a significant risk of opening themselves up to claims of greenwashing. Some companies highlight the context-specific nature of CE implementation, making the comparability of CE assessment results between sectors, locations and product groups extremely difficult. For example, Interviewee #24 (Construction sector) is hesitant to report either: (1) ‘circularity scores’ of their buildings or (2) resource-oriented indicators for CE, for example, ‘volume of renewable materials used’,

as each project has different goals, supply chains (based on location and materials used), design restrictions from both their clients and end-users, as well as numerous regulatory regulations affecting their ability to use secondary materials (e.g. in government funded tenders). Ultimately, without providing transparent evidence of the methods behind these circularity scores and CE-related single indicators, their comparison becomes meaningless. Linked to this issue, a few ($n = 3$) large companies acknowledged the role of external assurers. Currently, the lack of assessment benchmark for CE combined with the rapidly evolving landscape of CE assessment and reporting, creates uncertainty for assurers to determine whether the methods chosen, and data collected is adequate for inclusion within sustainability reports at the time of their audit and/or review.

2. Complexity of CE concept and data

A group of companies ($n = 8$) stated that although they believe it is critically important to communicate quantitative data for CE, it can be seen as very complex and difficult to understand for their consumers as well as the readers of their sustainability reports. For example, *Interviewee #37*, (Manufacturing sector) described their decision to report Life Cycle Assessment (LCA) data, which they use to measure progress on their CE objectives. The company acknowledged that simply stating the results of the LCA is not enough for the reader to understand due to the complex nature of LCA's (as discussed in Finnveden et al., 2009). Therefore, this communication requires additional explanation and resources to ensure the LCA results are understood. It was suggested by interviewees that visualisations of CE-related data can be an effective tool in overcoming the complexity of CE (e.g. Sankey diagrams of resource flows).

3. Low market awareness and consumer acceptance of circular products

As already discussed in previous studies (Ritzén & Sandström, 2017), consumer awareness and overall acceptance of products designed with CE strategies remains low. *Interviewee #10* (Other services sector) described how providing too many details about the CE strategies their company employs to produce their products (e.g. increased share of recycled material within the product) may discourage consumers from buying the product, as they assume the product has a lower quality. From another angle, a company's position in the value chain can also impact their ability to influence overall societal awareness of CE (e.g. a company with a 'business-to-business' model).

4.1.3 | Benefits of including CE within external corporate communication

During the interviews, participants were asked what value externally communicating CE has for their company. Through the deductive coding, four benefits of externally communicating CE experienced by companies were frequently mentioned and will be explained further below.

1. CE is a powerful story telling tool

The majority of interviewed companies stated that CE is a core value and part of their overall strategy. Therefore, by communicating narrative descriptions of their CE ambitions, projects and progress, it helps to tell the overall story of their company. More specific examples include publishing stories which detail how CE enables the company to engage more with the community, developing new innovations, and improving the sustainability of existing products, among others. These stories help to ignite a sense of pride among employees as well as attract the right kind of new talent/employees.

2. CE is a tool to promote sustainability education

Similarly, a constant theme arising from interviewees was that communicating CE-content enables their company to embrace their corporate responsibility to inform and educate the community. As *Interviewee #18* (Waste and Water management sector) noted, it is important that CE is defined by upper management and embedded within the company rather than only coming from those in the marketing department. Also, as quantitative CE-data is not easily understood by the community, companies must ensure that a qualitative format is used to ensure the right emotions are evoked to facilitate the education of people and clients on their CE objectives as well as the CE concept in general.

3. CE requires and drives transparency

Several companies stated their commitments to transparency and how voluntarily publishing CE data can provide new opportunities for collaboration. As *Interviewee #19* (Manufacturing sector) explained, in order for CE strategies to work, '...secondary resources must become more attractive for manufacturers and this can be done through sharing of knowledge regarding CE...'. Transparency of information and traceability of materials must be offered from companies throughout the supply chain. This will not only make recycling processes more efficient but can work to identify new collaborations and foster trust between existing partnerships. In line with this need for transparency, some companies mentioned the use of material passports and platforms which have been developed to help facilitate this sharing of CE data, for example, Excess Materials Exchange (n.d.) & Madaster (n.d.).

4. Improved reputation and eligibility for future incentives

All companies suggested that by externally communicating their CE objectives they are positioning themselves as outwardly sustainability-oriented and ultimately, as frontrunners of CE implementation. This can then improve their reputation and attract new clients and employees. Several companies were not shy to declare that by publicising their commitments towards advancing CE, they are able to capitalise from the growing public attention on CE as a 'buzzword' topic. This then allows companies to apply for and receive CE-specific

financial incentives awarded by numerous governmental and/or financial institutions (as discussed in Section 2.3).

4.2 | Feasibility and relevance of CE within corporate sustainability reporting

The focus group participants discussed the most important aspects which make sustainability reporting feasible within their company. The most frequently mentioned aspects were: (1) use of clear guidelines or standards to ensure comparability and structure of sustainability report contents; (2) cooperation of all stakeholders, increasingly with suppliers and customers; (3) a clear vision, support and leadership from upper management; and (4) internal capacity—factors such as time, data availability, resources, ownership. Participants were then asked if these aspects for the feasibility of sustainability reporting were different for CE aspects. Unanimously, all companies agreed that there is no difference. Participants from larger companies suggested that the materiality processes are key to increasing the internal capacity of companies to collect, assess and report data for CE. If, through the materiality process, a company and its stakeholders have identified CE as a significant material issue then it *must* allocate resources to collect data and adequately report on it.

In order to offer practical suggestions, focus group participants evaluated the feasibility and relevance of CE reporting/disclosure to seven key report elements of sustainability reports as defined in the CSRD (EC, 2021) (results shown in Table 5).

As all participants represent companies which are actively engaged with CE, it is no surprise that overall, companies found CE to be relevant content and relatively feasible to integrate throughout their sustainability reports. With respect to the dimension of relevance, the key content element of (7) Governance was determined to be the least relevant as companies generally did not include many CE-specific roles or criteria within their governance structures. Zooming in on the results for the dimension of feasibility, (3) Risks and Opportunities and (6) Sustainability Outlook and Performance were deemed to be the least feasible report elements to integrate CE within. Companies discussed the difficulty with CE-specific target and indicator selection for their sustainability reports as well as how to communicate the various risks and opportunities for CE. To address this, these two report elements were selected to discuss further and develop

ideas on how best to support companies to improve the feasibility of integrating CE content.

4.2.1 | Goals of integrating CE within corporate sustainability reports

Focus group participants discussed what goals they would like to achieve through producing a CE disclosure (summarised in Table 6). Answers were then organised in seven goals which outline the value of CE within corporate sustainability reporting, according to these companies' experiences. Across all three focus groups, Goal #7 was raised as an increasingly critical outcome. In addition, Goal #6 was gaining importance within most companies.

4.3 | Recommendations for the integration of CE within corporate sustainability reports

The following section presents the results of the synthesis phase and provides practical contributions to support companies: (i) describing their CE activities (Section 4.3.1); (ii) identifying and reporting risks for CE (Section 4.3.2); and (iii) developing and disclosing CE-specific targets and indicators (Section 4.3.3). These proposed recommendations are applicable with the reporting requirements of common disclosure frameworks, including those from the GRI and IIRC.

4.3.1 | Describing circular economy activities

To simplify dialogue on a company's value creation story and align with the suggested criteria proposed by financial institutions (as discussed in Section 2.3), it is recommended that companies consider how their CE activities result in long-term growth of the company's key objectives. To frame this description, companies may utilise the approach built from the findings of this research (shown in Figure 2). This approach encourages companies to consider three aspects when developing the description of their current and planned CE activities: (1) their position in the value chain (illustrated with seven stages adapted from Kalmykova et al. (2018)); (2) the attributes of the entity; either adopter (internal) or enabler (external) and

No.	Key content element	Feasibility to integrate CE	Relevance to CE
1	Stakeholder inclusiveness	3	3
2	Business model	3	3
3	Risks and opportunities	2	2.5
4	Strategy	3	3
5	Materiality	3	3
6	Sustainability outlook and performance	2	3
7	Governance	3	2

TABLE 5 Median values of focus groups participants' ratings of each from 1 (not relevant/feasible) to 3 (very relevant/feasible).

Note: Values lower than 2.5 (highlighted in red) were determined to be the least relevant/feasible.

(3) which of the strategies in the '10R framework' are being employed. For example, a company working in the waste management sector that collects and recycles waste from other companies may state 'Recycling waste products of other companies' (End of life × Enabler × Recycle). Alternatively, a company in the manufacturing sector may describe one of their CE activities as 'Designing products with improved modularity for easier repair' (Design × Adopter × Repair). In addition, companies should consult the description of CE business models described by the EIB (2019), financial institutions, and other relevant stakeholders to confirm that descriptions of their CE implementation will ensure their eligibility for certain CE-specific financing opportunities.

TABLE 6 List of seven goals for companies to achieve when integrating CE aspects within corporate sustainability reports.

No.	Description of goals
1	Increase awareness of- and promote- an understanding of circular economy to stakeholders and the wider community
2	Drive internal cultural change and employee engagement towards circular economy
3	Implement processes to identify relevant risks and opportunities for circular economy
4	Communicate their circular economy vision, through descriptions of their current and planned circular economy activities
5	Reevaluate targets and indicators, in line with the company's established circular economy objectives as well as relevant international policies
6	Meet common screening criteria for circular economy incentives through achieving eligibility developed by financial and non- financial institutions
7	Attract and retain new talent who share the company's circular economy values and ambitions

4.3.2 | Risks and opportunities for circular economy

Risks and opportunities are topics that may influence the long-term growth of a company's business model, acknowledging ongoing developments throughout society as well as the business environment (UNEP, 2021). Within a company's CE disclosure, it is recommended that they describe the key risks and opportunities that arise from their implementation of CE strategies and which may influence their long-term value creation strategy. By doing so, companies can ensure they stay ahead of any upcoming policies and market trends, before external issues force them to change their business models. To support the identification of relevant CE-related risks, companies may utilise the approach to risk identification adapted from Dulia et al. (2021). This approach groups risks and opportunities into 10 categories: (1) Technical; (2) Market; (3) Institutional; (4) Social/Cultural; (5) Economic; (6) Knowledge and skills; (7) Organisational; (8) CE framework; (9) Financial; and (10) Logistics. An example of how to use this approach for four of the categories in the context of CE are provided in Table 7. Once risks associated with the transition to a CE have been identified, companies should evaluate the likelihood of each risk occurring as well as determine their prioritisation to address within their specific business and sustainability context. Following this, companies can assess all potential risks and transform them into opportunities (as is shown in Table 7). Alternatively, companies may approach the identification of risks and opportunities according to each stage of the product life cycle (as shown in Figure 2) which may also serve as a basis for indicator development and for use within decision making.

4.3.3 | Circular economy outlook and performance

As required by the CSRD, corporate sustainability reports should present the company's performance with respect to progress towards

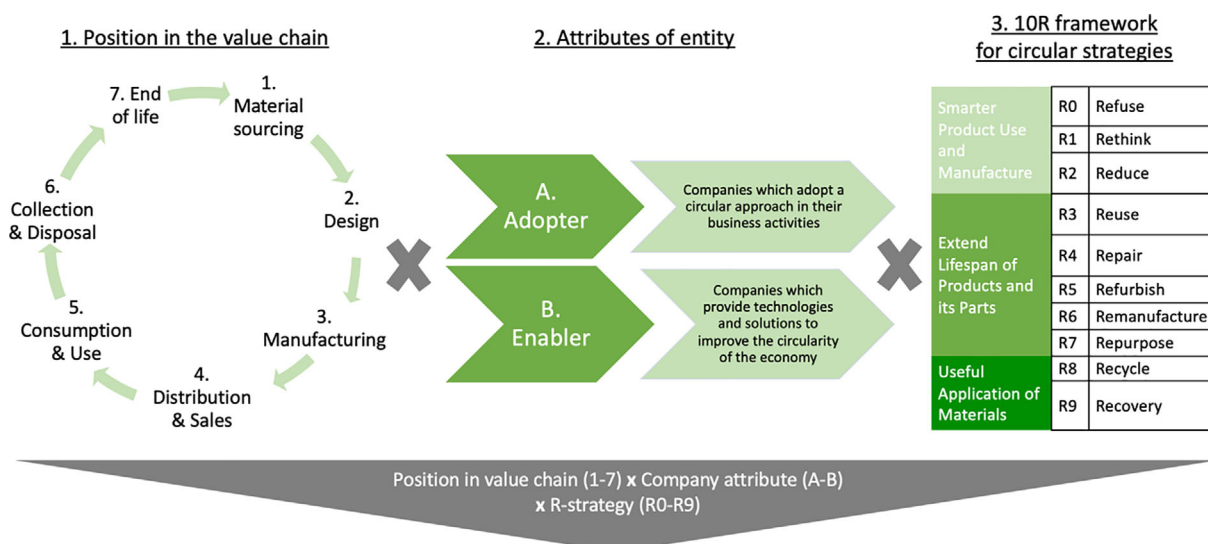


FIGURE 2 Overview of an approach to support the identification and communication of CE activities and ways to frame their relevance to the company's business model.

**TABLE 7** Approach to support the identification of CE-related risks and opportunities grouped into four categories with examples (using the CE-risks and opportunities listed in Table 6 and categories adapted from Dulia et al. (2021)).

Risk categories	Risks associated with:		Opportunities created with: The transition to a circular economy
	Relying on the linear economy	Adopting CE strategies	
Technical	Equipment used within linear production lines become outdated	Quality degradation of recycled/reused products and materials	Reduction in manufacturing costs through recycling waste and by-products
Market	Higher resource prices and greater volatility due to resource depletion	Inefficient accounting and valuation methods for secondary materials	Improvement in supply chain resilience through becoming less dependent on non-renewable resources as primary inputs
Institutional	Increasing GHG emission regulations for manufacturing and end-of-life incineration	Anticipated developments to regulations with stricter requirements regarding packaging requirements, use of plastics	Company's preparedness for future regulatory changes will allow company to becoming CE front runner
Social/Cultural	Damage to the company's reputation due to company's use of materials producing high environmental impacts	Consumer rejection of remanufactured goods due to quality concerns	Attracting talent who support CE and broader sustainability initiatives

their established CE objectives, linked to their sustainability performance context. Until a formalised benchmark/standard for CE assessment and reporting containing mandatory indicators for CE is finalised, it is recommended companies focus on developing both targets and indicators for CE in line with their own CE objectives, as outlined in their corporate strategy. In addition, companies shall review the relevant targets for sustainability published by regional, national, international and sectoral policy makers and regulators, for example the targets of the Sustainable Development Goals (United Nations, 2016). By linking the company's own targets with those set by international policies, companies can demonstrate more clearly how their business model and strategy are in line with society's sustainability objectives. However, if a company chooses to do this, they must ensure that they are reporting indicators to measure their progress towards these broader sustainability goals or they may open themselves up to claims of greenwashing, or more specifically 'SDG-washing' (Heras-Saizarbitoria et al., 2021). The process of developing targets and indicators should be completed after identifying the risks and opportunities associated with implementing CE strategies. The following subsections will demonstrate potential approaches companies may use to select and develop appropriate targets and indicators for CE which can then be included within their sustainability report.

Development of targets and indicators for circular economy

Targets for CE are guideposts for executing strategies to advance the company's CE vision and overall sustainability strategy (Moraga et al., 2019). It is recommended that companies should first evaluate their CE objectives and how they integrate within their business model. From here, the company may take two approaches to develop relevant targets for CE (both quantitative and qualitative). The first approach is to base targets and indicators for CE on the specific CE strategies implemented within the company (outlined in Figure 2); for example, a company that is implementing the strategy of 'R2 – Reduce' to eliminate non-renewable materials within the packaging

used for their own products. An appropriate target may be '50% of all plastic packaging made from recycled or renewable sources by 2024' and a corresponding indicator would be 'In 2023, 40% of total plastic packaging was made from recycled or renewable sources'. With this approach, companies can warrant that they are disclosing targets and indicators for not only 'low-ranking' CE activities (e.g. recycle) but also 'high-ranking' CE activities (e.g. reduce). It is also important that companies do not combine multiple CE strategies within one target or indicator, for example, '% of waste that is recycled, reused or recovered'. By doing this, stakeholders are unable to determine if increases to this value are due to improved CE performance (e.g. more waste being reused) or in fact, decreased CE performance (e.g. less waste being reused or recycled but more waste being recovered).

The second approach a company may use to develop targets and indicators is based on the CE-specific risks and opportunities identified. Examples of this approach are shown in Table 8.

Finally, if the company chooses to report any single metrics—for example, a circularity score—or the results of any industry-designed assessment approaches for CE—for example, the Circulytics from EMF (2022)—the results must be accompanied with an explanation of the methodology used to derive them, to demonstrate the company's commitment to transparency.

4.4 | Discussion

This study engaged with companies operating in Italy and the Netherlands that are experienced with CE implementation and it captured their experiences with- and perspectives on- the fast-evolving landscape of CE disclosure. This section offers a reflection on the results in the context of two central themes: (i) acknowledging CE-related trade-offs within risk management; and (ii) communicating CE value creation within corporate sustainability reporting.

As mentioned before, despite the increasing popularity of CE to address sustainability challenges, the benefits of implementing CE

TABLE 8 An example of using the identification of risks and opportunities to develop relevant targets and indicators for CE disclosure.

	Risk of relying on the linear economy	Opportunity	Target examples	Indicator examples
Market	Losing customers because of increasing demand for sustainable products, materials and services	Enter new markets and attract new customers seeking sustainable products, materials and services	40% of products and services designed with circular economy strategies by 2025 25% of revenue generated from the sale of products and services designed with circular economy principles by 2025	- The percentage of products and services designed with circular economy principles - Share of revenue generated from the sale of products and services designed with circular economy principles

activities must not be assumed, as numerous potential sustainability trade-offs exist (Harris et al., 2021). Industry and research efforts continue to develop relevant assessment approaches for CE—for example, Circulytics from EMF (2022) or Circularity Transition Indicators from WBCSD (2020), however, these approaches are generally designed to produce CE-specific targets and indicators for internal use only (Opferkuch et al., 2022). For the context of sustainability reporting, the results of this research highlight synergies with recent CE-specific developments in sustainable finance, in particular the screening and eligibility criteria being proposed by relevant financial institutions (EIB, 2019). Scholars from these two fields of research can align efforts to further clarify what CE-specific content should be included within corporate sustainability reports. These efforts can support the need for all stakeholders to continuously drive transparency of CE data, in particular in the context of sustainability data management within the digital transition (Centobelli et al., 2018; Pattnaik et al., 2021). Furthermore, this research contributes to the evolving research area integrating risk management processes to identify and balance sustainability trade-offs (Hauschild et al., 2022).

In addition, previous studies have suggested that for the identification of CE-specific risks and opportunities, companies should acknowledge the risks of staying in the linear economy (Dulia et al., 2021; EIB, 2019). However, what has been largely ignored are the new potential risks associated with implementing CE activities (outlined in Table 7). In line with the aforementioned research efforts to encourage companies to evaluate CE-related trade-offs, the results of this research encourage companies to identify and disclose risks associated with the following: (i) remaining in the linear economy; but also (ii) risks associated with implementing CE strategies. This will allow companies to demonstrate the true trade-offs associated with CE (and more broadly sustainability) to their external stakeholders and reduce potential claims of CE-related greenwashing.

The increasing number of changes within the sustainability reporting landscape which attempt to simplify issues across frameworks, can in fact exacerbate the discourse that sustainability reporting is a burden and a ‘tick the box’ exercise for companies (Aureli et al., 2020; Michelin et al., 2015). Nevertheless, researchers have previously demonstrated that sustainability reporting processes can act as a driver facilitating change towards corporate sustainability both within a company (Adams & McNicholas, 2007; Lozano

et al., 2016) and improvements to corporate reputation and legitimacy (Ashforth & Gibbs, 1990; Brammer & Pavelin, 2006). The results of this study suggest that companies which are externally communicating their CE activities can experience a range of benefits and value creation. These findings reflect the various types of tangible and intangible value associated with CE as categorised by Haines-Gadd and Charnley (2019). However, comparing these different types of value with the existing evidence of CE within corporate sustainability reports suggests that companies are not disclosing their CE activities to recognise these types of value being created (Opferkuch et al., 2022). Therefore, it remains unknown, if CE can act as a transformative model to drive integrated thinking (as suggested by Barnabè & Nazir, 2022) as there is a risk companies will continue to adopt and communicate their CE activities through a limited set of resource-based indicators. Nevertheless, the recommendations proposed within this article aim to avoid this and encourage companies to understand the full potential of the CE model within their value proposition.

5 | CONCLUSIONS

This exploratory study aimed to capture the perspectives of companies actively integrating their CE-related activities into their external communication and sustainability reporting processes. Furthermore, this article contributes practical recommendations to improve the feasibility of companies reporting their CE activities. To achieve this, 43 semi-structured interviews and subsequent focus groups were conducted with companies operating in either Italy or the Netherlands, not limited by sector, but considered frontrunners in CE implementation. The results compiled a list of major challenges of and benefits from- externally communicating their CE activities that companies experienced. Namely, three main challenges were identified: (1) lack of CE assessment and/or reporting benchmark; (2) complexity of CE data; and (3) the lack of consumer awareness and customer acceptance of circular products. Complementarily, the four benefits experienced by companies were: (1) CE is a powerful storytelling tool; (2) CE is a tool for sustainability education; (3) CE requires and drives transparency; and (4) CE allows for improved reputation and eligibility for future incentives. Additional findings highlight seven



critical factors which should be considered by companies preparing CE content for their corporate sustainability report, including: a balance between qualitative and quantitative data, internal (adopter) and external (enabler) activities as well as describing CE activities as individual strategies utilising the 10R framework originally proposed by Potting et al. (2017). Findings also demonstrate the relevance of- and feasibility to- integrate CE within specific report elements, revealing that companies find it least feasible (and therefore will require assistance) to include CE content within: (i) risk and opportunity identification as well as (ii) target and indicator selection within the sustainability performance report section. To address this, this article has proposed recommendations based on a synthesis of the study's findings and academic literature to improve the feasibility for companies incorporating CE aspects within their voluntary or mandatory corporate sustainability report.

As the authors have stated in previous studies, future work should help to build the capacity for companies to assess and report various sustainability issues in general, not only exclusively for CE. The findings of this study encourage researchers to explore the influence of increasing CE implementation on existing risk identification and management processes, potentially connecting sustainability trade-off research with due diligence processes. In addition, the frameworks of financial institutions to evaluate and screen corporate reporting of CE should align with efforts from academic research on CE (e.g. considering the social impacts of implementing CE strategies). In particular, ensuring that academic discussions on the various conceptualizations of CE and sustainability are not ignored by those institutions which are now evaluating CE implementation. Finally, in order to increase the demand for transparency and reduce instances of greenwashing of CE activities, translating academic CE research into meaningful educational resources should be prioritised, in order to increase both societal awareness and understanding of CE and ultimately, pro-sustainable production and consumption behaviour.

ACKNOWLEDGEMENTS

The authors would like to thank all of the companies involved for their time, valuable insights and ongoing support of this research. This project has received funding from the European Union's Horizon 2020 research and innovation programme under Marie Skłodowska-Curie grant agreement No 765198. The authors acknowledge and thank the support given to CENSE by the Portuguese Foundation for Science and Technology (FCT) through the strategic project UIDB/04085/2020.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

ORCID

Katelin Opferkuch <https://orcid.org/0000-0001-6820-1966>

Anna M. Walker <https://orcid.org/0000-0001-7420-4864>

Erik Roos Lindgreen <https://orcid.org/0000-0002-7207-6261>

Sandra Caeiro <https://orcid.org/0000-0002-6079-3554>

Roberta Salomone <https://orcid.org/0000-0002-0809-7949>

Tomás B. Ramos <https://orcid.org/0000-0002-8270-4022>

REFERENCES

- ABN Amro, ING, & Rabobank. (2018). *Economy Circular Guidelines Finance*. 2018(July), 1–4. https://www.abnamro.com/nl/images/Documents/040_Duurzaamheid/Publications/ABN_AMRO_Circular_Economy_Finance_Guidelines_2018.pdf
- Adams, C. A., & Abhayawansa, S. (2022). Connecting the COVID-19 pandemic, environmental, social and governance (ESG) investing and calls for 'harmonisation' of sustainability reporting. *Critical Perspectives on Accounting*, 82, 102309. <https://doi.org/10.1016/j.cpa.2021.102309>
- Adams, C. A., & McNicholas, P. (2007). Making a difference: Sustainability reporting, accountability and organisational change. *Accounting, Auditing and Accountability Journal*, 20(3), 382–402. <https://doi.org/10.1108/09513570710748553>
- Ashforth, B. E., & Gibbs, B. W. (1990). The double-edge of organizational legitimation. *Organization Science*, 1(2), 177–194. <https://doi.org/10.1287/orsc.1.2.177>
- Aureli, S., Del Baldo, M., Lombardi, R., & Nappo, F. (2020). Nonfinancial reporting regulation and challenges in sustainability disclosure and corporate governance practices. *Business Strategy and the Environment*, 29(6), 2392–2403. <https://doi.org/10.1002/bse.2509>
- Barnabè, F., & Nazir, S. (2022). Conceptualizing and enabling circular economy through integrated thinking. *Corporate Social Responsibility and Environmental Management*, 29(2), 448–468. <https://doi.org/10.1002/csr.2211>
- Bocken, N. M. P., Rana, P., & Short, S. W. (2015). Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, 32(1), 67–81. <https://doi.org/10.1080/21681015.2014.1000399>
- Boiral, O., & Heras-Saizarbitoria, I. (2019). Sustainability reporting assurance: Creating stakeholder accountability through hyperreality? *Journal of Cleaner Production*, 243, 118596. <https://doi.org/10.1016/j.jclepro.2019.118596>
- Brammer, S. J., & Pavelin, S. (2006). Corporate reputation and social performance: The importance of fit. *Journal of Management Studies*, 43(3), 435–455. <https://doi.org/10.1111/j.1467-6486.2006.00597.x>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford University Press. <https://doi.org/10.1017/CBO9781107415324.004>
- Calabrese, A., Costa, R., Levaldi Ghiron, N., Tiburzi, L., & Villazon Montalvan, R. A. (2022). Is the private sector becoming cleaner? Assessing the firms' contribution to the 2030 agenda. *Journal of Cleaner Production*, 363, 132324. <https://doi.org/10.1016/j.jclepro.2022.132324>
- Calabrese, A., Costa, R., Menichini, T., & Rosati, F. (2013). Does corporate social responsibility hit the mark? A stakeholder oriented methodology for CSR assessment. *Knowledge and Process Management*, 20(2), 77–89. <https://doi.org/10.1002/kpm.1406>
- Cecchin, A., Salomone, R., Deutz, P., Raggi, A., & Cutaia, L. (2021). What is in a name? The rising star of the circular economy as a resource-related concept for sustainable development. *Circular Economy and Sustainability*, 1(1), 83–97. <https://doi.org/10.1007/s43615-021-00021-4>
- Centobelli, P., Cerchione, R., & Esposito, E. (2018). How to deal with knowledge management misalignment: A taxonomy based on a 3D fuzzy methodology. *Journal of Knowledge Management*, 22(3), 538–566. <https://doi.org/10.1108/JKM-10-2016-0456>
- 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, 104498. <https://doi.org/10.1016/j.resconrec.2019.104498>
- Cyr, J. (2016). The pitfalls and promise of focus groups as a data collection method. *Sociological Methods & Research*, 45(2), 231–259. <https://doi.org/10.1177/0049124115570065>
- Daglieni, L., Frendzel, M., Sutiene, K., & Wnuk-Pel, T. (2020). Wise managers think about circular economy, wiser report and analyze it. Research of environmental reporting practices in EU manufacturing companies. *Journal of Cleaner Production*, 274, 121968. <https://doi.org/10.1016/j.jclepro.2020.121968>
- de Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., & Soares, G. R. D. L. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe*, 32(1), 1–12. <https://doi.org/10.1186/s12302-020-0300-3>
- Delgadillo, E., Reyes, T., & Baumgartner, R. J. (2021). Towards territorial product-service systems: A framework linking resources, networks and value creation. *Sustainable Production and Consumption*, 28, 1297–1313. <https://doi.org/10.1016/j.spc.2021.08.003>
- Dulia, E. F., Ali, S. M., Garshasbi, M., & Kabir, G. (2021). Admitting risks towards circular economy practices and strategies: An empirical test from supply chain perspective. *Journal of Cleaner Production*, 317, 128420. <https://doi.org/10.1016/j.jclepro.2021.128420>
- EMF. (2022). Circulytics: Method Introduction. EMF. <https://ellenmacarthurfoundation.org/resources/circulytics/resource>
- European Commission. (2014). Directive 2014/95/EU on the disclosure of non-financial and diversity information by certain large undertakings and groups.
- European Commission. (2015). Closing the Loop: An Ambitious EU Circular Economy Package, COM (2015) 614. In *Communication from the COMMISSION to the European Parliament, the Council, the European economic and Social Committee and the Committee of the Regions*.
- European Commission. (2019). *The European green Deal*. <https://doi.org/10.1017/CBO9781107415324.004>
- European Commission. (2021). Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting (Issue COM(2021) 189 final). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0189&from=EN>
- European Investment Bank. (2019). *The EIB Circular Economy Guide: Supporting the circular transition*. www.eib.org/circular-economy
- European Parliament and the Council. (2020). Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending regulation (EU) 2019/2088. *Official Journal of the European Union*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0852>
- Eurostat. (2018). *Small and Medium Enterprises (SMEs)*. <https://ec.europa.eu/eurostat/web/structural-business-statistics/small-and-medium-sized-enterprises>
- Excess Materials Exchange. (n.d.). *Excess materials exchange*. <https://excessmaterialsexchange.com/nl/#home>
- Finnveden, G., Hauschild, M. Z., Ekvall, T., Guinée, J., Heijungs, R., Hellweg, S., Koehler, A., Pennington, D., & Suh, S. (2009). Recent developments in life cycle assessment. *Journal of Environmental Management*, 91(1), 1–21. <https://doi.org/10.1016/j.jenvman.2009.06.018>
- 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>
- Geng, Y., & Doberstein, B. (2008). Developing the circular economy in China: Challenges and opportunities for achieving “leapfrog development.”. *International Journal of Sustainable Development and World Ecology*, 15(3), 231–239. <https://doi.org/10.3843/SusDev.15.3:6>
- Ghisellini, P., & Ulgiati, S. (2020). Circular economy transition in Italy. Achievements, perspectives and constraints. *Journal of Cleaner Production*, 243, 118360. <https://doi.org/10.1016/j.jclepro.2019.118360>
- Global Impact Investing Network. (2022). *Global Impact Investing Network*. <https://thegiin.org/>
- Gray, R. (2006). Social, environmental and sustainability reporting and organisational value creation? Whose value? Whose creation? *Accounting, Auditing and Accountability Journal*, 19(6), 793–819. <https://doi.org/10.1108/09513570610709872>
- Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research. *Journal of Cleaner Production*, 59, 5–21. <https://doi.org/10.1016/j.jclepro.2013.07.005>
- Haines-Gadd, M., & Charnley, F. (2019). Creating a taxonomy of value for a circular economy. In *Smart innovation, systems and technologies* (Vol. 155). Springer.
- Harris, S., Martin, M., & Diener, D. (2021). Circularity for circularity's sake? Scoping review of assessment methods for environmental performance in the circular economy. *Sustainable Production and Consumption*, 26, 172–186. <https://doi.org/10.1016/j.spc.2020.09.018>
- Hauschild, M. Z., McKone, T. E., Arnbjerg-Nielsen, K., Hald, T., Nielsen, B. F., Mabit, S. E., & Fantke, P. (2022). Risk and sustainability: Trade-offs and synergies for robust decision making. *Environmental Sciences Europe*, 34(1), 1–13. <https://doi.org/10.1186/s12302-021-00587-8>
- Heras-Saizarbitoria, I., Urbieto, L., & Boiral, O. (2021). Organizations' engagement with sustainable development goals: From cherry-picking to SDG-washing? *Corporate Social Responsibility and Environmental Management*, 1–13. <https://doi.org/10.1002/csr.2202>
- Hibberts, M., Burke Johnson, R., & Hudson, K. (2012). Common survey sampling techniques. In *Handbook of survey methodology for the social sciences* (pp. 53–74). Springer.
- IFRS Foundation. (2021). *IFRS Foundation Trustees announce next steps in response to broad demand for global sustainability standards*. <https://www.ifrs.org/news-and-events/news/2021/02/trustees-announce-next-steps-in-response-to-broad-demand-for-global-sustainability-standards/>
- Impact Management Project. (2020). *Reporting on enterprise value illustrated with a prototype climate-related financial disclosure standard*.
- Intesa Sanpaolo. (2019). *Intesa Sanpaolo Innovation Centre*. <https://www.intesasanpaoloinnovationcenter.com/en>
- Intesa Sanpaolo. (2021). *Green, Social and Sustainability bond Framework*. [https://group.intesasanpaolo.com/content/dam/portalgroupp/repository-documenti/sostenibilita/italiano/2021/green-bond-2021/ISP Green, Social & Sustainability Bond Framework_MARCH2021.pdf](https://group.intesasanpaolo.com/content/dam/portalgroupp/repository-documenti/sostenibilita/italiano/2021/green-bond-2021/ISP%20Green,%20Social%20and%20Sustainability%20Bond%20Framework_MARCH2021.pdf)
- Kalmykova, Y., Sadagopan, M., & Rosado, L. (2018). Circular economy—From review of theories and practices to development of implementation tools. *Resources, Conservation and Recycling*, 135, 190–201. <https://doi.org/10.1016/j.resconrec.2017.10.034>
- 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>
- 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>
- Kravchenko, M., Pigosso, D. C. A., & McAloone, T. C. (2021). A trade-off navigation framework as a decision support for conflicting sustainability indicators within circular economy implementation in the manufacturing industry. *Sustainability (Switzerland)*, 13(1), 1–26. <https://doi.org/10.3390/su13010314>
- 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>
- Loubere, N. (2017). Questioning transcription: The case for the systematic and reflexive interviewing and reporting (SRIR) method. *Forum*



- Qualitative Sozialforschung/Forum: Qualitative Social Research, 18(2). <https://doi.org/10.17169/fqs-18.2.2739>
- Lozano, R., Nummert, B., & Ceulemans, K. (2016). Elucidating the relationship between sustainability reporting and Organisational change Management for Sustainability. *Journal of Cleaner Production*, 125, 168–188. <https://doi.org/10.1016/j.jclepro.2016.03.021>
- Madaster. (n.d.). *Madaster material passport*.
- Merton, R., Fiske, M., & Kendall, P. (1956). *The focused interview: A manual of problems and procedures*. Free Press.
- Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. *Critical Perspectives on Accounting*, 33, 59–78. <https://doi.org/10.1016/j.cpa.2014.10.003>
- 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>
- Murray, A., Skene, K., & Haynes, K. (2017). The circular economy: An interdisciplinary exploration of the concept and application in a global context. *Journal of Business Ethics*, 140(3), 369–380. <https://doi.org/10.1007/s10551-015-2693-2>
- Nußholz, J. L. K. (2017). Circular business models: Defining a concept and framing an emerging research field. *Sustainability (Switzerland)*, 9(10), 14–17. <https://doi.org/10.3390/su9101810>
- O'Donohoe, N., Leijonhufvud, C., & Saltuk, Y. (2010). *Impact Investments: An emerging asset class*. https://thegiin.org/assets/documents/Impact_investments_an_emerging_asset_Class2.Pdf
- Opferkuch, K., Caeiro, S., Salomone, R., & Ramos, T. B. (2021). Circular economy in corporate sustainability reporting: A review of organisational approaches. *Business Strategy and the Environment*, 30(8), 4015–4036. <https://doi.org/10.1002/bse.2854>
- Opferkuch, K., Caeiro, S., Salomone, R., & Ramos, T. B. (2022). Circular economy disclosure in corporate sustainability reports: The case of European companies in sustainability rankings. *Sustainable Production and Consumption*, 32, 436–456. <https://doi.org/10.1016/j.spc.2022.05.003>
- Paterson, B. L. (2012). “It looks great but do I know if it fits?”: An introduction to meta-synthesis research. In K. Hannes & C. Lockwood (Eds.), *Synthesizing qualitative research: Choosing the right approach*. John Wiley & Sons, Ltd.
- Pattnaik, S., Nayak, M. M., Abbate, S., & Centobelli, P. (2021). Recent trends in sustainable inventory models: A literature review. *Sustainability (Switzerland)*, 13(21), 1–20. <https://doi.org/10.3390/su132111756>
- Pauliuk, S. (2018). Critical appraisal of the circular economy standard BS 8001:2017 and a dashboard of quantitative system indicators for its implementation in organizations. *Resources, Conservation and Recycling*, 129, 81–92. <https://doi.org/10.1016/j.resconrec.2017.10.019>
- Peršić, M., Janković, S., & Krivačić, D. (2017). Sustainability accounting: Upgrading corporate social responsibility. In M. Aluchna & S. O. Idowu (Eds.), *The dynamics of corporate social responsibility* (pp. 285–303). Springer. https://doi.org/10.1007/978-3-319-39089-5_15
- Potting, J., Hekkert, M., Worrell, E., & Hanemaaijer, A. (2017). Circular economy: Measuring innovation in the product chain. *PBL Netherlands Environmental Assessment Agency*, 42.
- QSR International. (2020). *Qualitative Data Analysis Software NVivo*.
- Reike, D., Vermeulen, W. J. V., & Witjes, S. (2018). The circular economy: New or refurbished as CE 3.0?—Exploring controversies in the conceptualization of the circular economy through a focus on history and resource value retention options. *Resources, Conservation and Recycling*, 135, 246–264. <https://doi.org/10.1016/j.resconrec.2017.08.027>
- Ritzén, S., & Sandström, G. Ö. (2017). Barriers to the circular economy—Integration of perspectives and domains. *Procedia CIRP*, 64, 7–12. <https://doi.org/10.1016/j.procir.2017.03.005>
- Romero-Hernández, O., & Romero, S. (2018). Maximizing the value of waste: From waste management to the circular economy. *Thunderbird International Business Review*, 60(5), 757–764. <https://doi.org/10.1002/tie.21968>
- Roos Lindgreen, E., Opferkuch, K., Walker, A. M., Salomone, R., Reyes, T., Raggi, A., Simboli, A., Vermeulen, W. J. V., & Caeiro, S. (2022). Exploring assessment practices of companies actively engaged with circular economy. *Business Strategy and the Environment*, 31(4), 1414–1438. <https://doi.org/10.1002/bse.2962>
- Santa-Maria, T., Vermeulen, W. J. V., & Baumgartner, R. J. (2022). The circular Sprint: Circular business model innovation through design thinking. *Journal of Cleaner Production*, 362(May), 132323. <https://doi.org/10.1016/j.jclepro.2022.132323>
- 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., Marín-Vinuesa, L. M., Aranda-Usón, A., & Portillo-Tarragona, P. (2020). Dynamic capabilities and environmental accounting for the circular economy in businesses. *Sustainability Accounting, Management and Policy Journal*, 11, 1129–1158. <https://doi.org/10.1108/SAMPJ-04-2019-0150>
- Schroeder, P., Anggraeni, K., & Weber, U. (2018). The relevance of circular economy practices to the sustainable development goals. *Journal of Industrial Ecology*, 23(1), 77–95. <https://doi.org/10.1111/jiec.12732>
- Serafeim, G., & Trinh, K. (2020). A framework for product impact-weighted accounts. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3532472>
- Siew, R. Y. J. (2015). A review of corporate sustainability reporting tools (SRTs). *Journal of Environmental Management*, 164, 180–195. <https://doi.org/10.1016/j.jenvman.2015.09.010>
- Stewart, R., & Niero, M. (2018). Circular economy in corporate sustainability strategies: A review of corporate sustainability reports in the fast-moving consumer goods sector. *Business Strategy and the Environment*, 27(7), 1005–1022. <https://doi.org/10.1002/bse.2048>
- Stumpf, L., Schögl, J. P., & Baumgartner, R. J. (2021). Climbing up the circularity ladder? – A mixed-methods analysis of circular economy in business practice. *Journal of Cleaner Production*, 316, 128158. <https://doi.org/10.1016/j.jclepro.2021.128158>
- Tang, C. S. (2006). Perspectives in supply chain risk management. *International Journal of Production Economics*, 103(2), 451–488. <https://doi.org/10.1016/j.ijpe.2005.12.006>
- The Ellen MacArthur Foundation. (2015). *Grown Within: A Circular Economy Vision for a Competitive Europe*.
- UNEP. (2022). *UNEP Circularity Platform*. <https://buildingcircularity.org/>
- UNEP Finance Initiative. (2020). *Financing Circularity: Demystifying Finance for Circular Economies*. UNEP. https://www.unepfi.org/wordpress/wp-content/uploads/2021/03/UNEPFI_DemystifyingFinanceCircularity-2020-2.pdf
- United Nations. (2016). *The Sustainable Development Goals Report*.
- United Nations Environment Programme (UNEP). (2020). *Financing Circularity: Demystifying Finance for Circular Economies*.
- United Nations Environment Programme (UNEP). (2021). *Guidance on Resource Efficiency and Circular Economy Target Setting*. <https://www.unepfi.org/wordpress/wp-content/uploads/2021/12/PRB-Guidance-Resource-Efficiency.pdf>
- Uyar, A., Karaman, A. S., & Kilic, M. (2020). Is corporate social responsibility reporting a tool of signaling or greenwashing? Evidence from the worldwide logistics sector. *Journal of Cleaner Production*, 253, 119997. <https://doi.org/10.1016/j.jclepro.2020.119997>
- Value Balancing Alliance. (2021). *VBA Disclosure Concept for Material Sustainability Matters*. https://www.value-balancing.com/_Resources/Persistent/7/2/a/2/72a28deed4e259bc414148b2660e631e0dfe3d3/VBA_Disclosure_Concept.pdf
- Walker, A. M., Opferkuch, K., Roos Lindgreen, E., Raggi, A., Simboli, A., Vermeulen, W. J. V., Caeiro, S., & Salomone, R. (2021). What is the relation between circular economy and sustainability? Answers from



- frontrunner companies engaged with circular economy practices. *Circular Economy and Sustainability*, 2(2), 731–758. <https://doi.org/10.1007/s43615-021-00064-7>
- Walker, A. M., Opferkuch, K., Roos Lindgreen, E., Simboli, A., Vermeulen, W. J. V., & Raggi, A. (2022). Assessing the social sustainability of circular economy practices: Industry perspectives from Italy and The Netherlands. *Sustainable Production and Consumption*, 27, 831–844. <https://doi.org/10.1016/j.spc.2021.01.030>
- Walker, A. M., Vermeulen, W. J. V., Simboli, A., & Raggi, A. (2021). Sustainability assessment in circular inter-firm networks: An integrated framework of industrial ecology and circular supply chain management approaches. *Journal of Cleaner Production*, 286, 125457. <https://doi.org/10.1016/j.jclepro.2020.125457>
- WBCSD. (2020). *Circular transition indicators V1.0. Metrics for business by business*. WBCSD. <https://www.wbcsd.org/contentwbc/download/8240/127985/1>

- World Economic Forum. (2020). *Toward common metrics and consistent reporting of sustainable value creation*.
- Zara, C., & Ramkumar, S. (2022). Circular economy and default risk. *Journal of Financial Management, Markets and Institutions*, 10(01), 2250001. <https://doi.org/10.1142/s2282717x22500013>

How to cite this article: Opferkuch, K., Walker, A. M., Roos Lindgreen, E., Caeiro, S., Salomone, R., & Ramos, T. B. (2023). Towards a framework for corporate disclosure of circular economy: Company perspectives and recommendations. *Corporate Social Responsibility and Environmental Management*, 30(5), 2457–2474. <https://doi.org/10.1002/csr.2497>

APPENDIX A

TABLE A1 Overview of characteristics of interview respondents and focus group participants (n = 43).

Interviewee #	Country	Sector	Company size	Department	Focus group (1–3)
1	IT	Accommodation and food service activities	Micro	General management	
2	IT	Construction	Micro	General management	
3	IT	Other	Micro	Sustainability and corporate social responsibility	
4	IT	Accommodation and food service activities	Micro	Marketing and sales	
5	IT	Professional service activities	Micro	Research and development	
6	IT	Other	Micro	General management	
7	IT	Manufacturing	Micro	General management	
8	IT	Professional service activities	Micro	General management	
9	IT	Manufacturing	Micro	General management	
10	IT	Other service activities	SME	Sustainability and corporate social responsibility	
11	IT	Other	SME	General management	
12	IT	Accommodation and food service activities	SME	General management	
13	IT	Manufacturing	SME	Research and development	
14	IT	Manufacturing	SME	General management	
15	IT	Manufacturing	Large	Sustainability and corporate social responsibility	
16	IT	Accommodation and food service activities	Large	Sustainability and corporate social responsibility	
17	IT	Water and waste management	Large	Research and development	
18	IT	Water and waste management	Large	Sustainability and corporate social responsibility	1
19	IT	Manufacturing	Large	Sustainability and corporate social responsibility	
20	NL	Other service activities	Micro	General management	
21	NL	Other	Micro	General management	
22	NL	Construction	Micro	Research and development	
23	NL	Other	Micro	General management	

(Continues)

TABLE A1 (Continued)

Interviewee #	Country	Sector	Company size	Department	Focus group (1–3)
24	NL	Construction	Micro	Sustainability and corporate social responsibility	
25	NL	Professional service activities	Micro	General management	
26	NL	Other	Micro	General management	
27	NL	Other	Micro	Sustainability and corporate social responsibility	
28	NL	Other	Micro	General management	
29	NL	Other service activities	Micro	Sustainability and corporate social responsibility	
30	NL	Professional service activities	Micro	General management	
31	NL	Other	Micro	General management	
32	NL	Water and waste management	SME	General management	2
33	NL	Other	SME	Sustainability and corporate social responsibility	1
34	NL	Construction	SME	General management	
35	NL	Other service activities	SME	General management	2
36	NL	Other service activities	SME	General management	
37	NL	Manufacturing	SME	General management	2
38	NL	Other	SME	Research and development	
39	NL	Construction	Large	Sustainability and corporate social responsibility	3
40	NL	Other	Large	Marketing and sales	
41	NL	Manufacturing	Large	Sustainability and corporate social responsibility	3
42	NL	Other	Large	Sustainability and corporate social responsibility	1
43	NL	Other service activities	Large	General management	

APPENDIX B

TABLE B1 List of critical factors to be included within CE disclosures most commonly suggested by focus group participants ($n = 8$).

Content	Quality	Structure
• Performance on 10 R-strategies • Clearly stated definitions of equations used to determine CE targets and/or indicators • Balance of tangible and intangible aspects of circularity • Explanation of company's CE strategy/ business model • Long term CE vision • Internal (adopter) vs external (enabler) CE activities • Clear link of CE activities to energy used and waste flows • Moving towards including social impacts of CE activities	• (moving towards) External verification of data • Targets with the intended time to achieve them • Quantifiable indicators • Consistent units of measurement for comparability	• Included within sustainability report, linked with other ESG material issues to paint full sustainability picture • More frequent updates of CE projects and progress done through social media and website