

# Assessing the social sustainability of circular economy practices: industry perspectives from Italy and the Netherlands

## Abstract

Despite the frequent association of circular economy (CE) with sustainability, most CE practices have yet to prove they actually contribute to achieving the sustainable development goals (SDGs), and social aspects in particular. To attain the consensually established targets in the SDG framework, it is vital to assess the impact of CE practices. As most of these practices are carried out in a network of actors, sustainability assessment approaches from the fields of industrial ecology and supply chain management are particularly suitable. However, both fields are known for their limited inclusion of the social dimension. While scholars have already started to explore the assessment of social sustainability within the context of CE practices, little is known about the perspectives and experiences concerning social assessment of businesses actively engaged with CE. Thus, the authors conducted 43 semi-structured interviews with frontrunner companies engaged with CE in Italy and the Netherlands to obtain a better picture on (1) how these firms view the importance of the social dimension as part of the assessment of CE practices, (2) what the barriers to conducting social assessment are, and (3) whether they have experience with assessing social sustainability aspects within their companies and supply chains. Through a thematic analysis, it was found that most companies deem the social dimension to be relevant to CE assessment and either consider it an integral part of CE or of sustainability. However, a majority of the companies did not conduct any type of social assessment. Most companies which implemented assessments did so in a qualitative manner or used industry-based sustainability indicator frameworks. Notwithstanding the prevalence of social life cycle assessment in the academic realm, almost all interviewees mentioned barriers to its application related to its complexity and the lack of a standardised approach.

**Keywords:** circular economy, social sustainability, social life cycle assessment, interviews, qualitative research

## 1 Introduction

Circular economy (CE) is seen by many as a tool to achieve the sustainable development goals (SDGs) (Schröder et al., 2019). These SDGs are composed of environmental, social and economic goals which are meant to be addressed in a balanced manner. However, while the positive effects of CE on the economic and environmental dimensions of development are discussed frequently in CE literature (Ghisellini et al., 2016), CE's contribution to the social dimension is mainly referenced as not being fully developed, or lacking empirical evidence (Murray et al., 2015; Suárez-Eiroa et al., 2019). In their literature review of the social dimension in CE and related assessment methods, Padilla-Rivera et al. (2020) underline the importance of including this dimension in the assessment of CE, given the wide-ranging effects of CE practices (i.e. circular business models, strategies and product solutions) on the social and natural environment. It is thus important to assess CE practices in the light of the SDGs, a framework promising a holistic sustainable development, instead of only focusing on the assessment of economic and environmental parameters, prevalent in circular performance assessment (De Pascale et al., 2020; Sassanelli et al., 2019). Given the SDGs are based on anthropocentric development and thus should benefit humans in a holistic way (Schröder et al., 2020), initially, the absence of social assessment approaches seems to be a paradox situation. Yet, the assessment of social impacts of CE practices presents some inherent issues: even though the social domain encompasses topics from employee health and safety to corruption, job creation is often the only indicator mentioned, when analysing literature on measuring circularity or the sustainability impacts of a CE (Kravchenko et al., 2019; Padilla-Rivera et al., 2020; Roos-Lindgreen et al., 2020). This reductionist perspective is not in line with the reality of CE practices, the life cycle perspective of which often implies collaboration of firms that are part of supply chain networks, so-called circular inter-firm networks (Walker et al., 2021). Thus, it would be prudent to also consider the social impact of these supply chain partners on

their immediate and extended environments (Wieland, 2020). Recurring supply chain incidents or human rights violations in developing and emerging economies, and the repercussions of these incidents on consumers as well as local communities portray the danger of unmanaged supply chain risks (Cunha et al., 2019; Govindan et al., 2020). When looking at the development of CE literature however, it becomes evident that two research fields which deal extensively with CE, namely industrial ecology (IE) and supply chain management (SCM) (Homrich et al., 2018), both addressing company networks, have been struggling with similar criticisms for several years. Hence, there is a general lack of uniformly applied social metrics, even for assessments that do not concern CE practices explicitly (Ahi and Searcy, 2015). Nevertheless, the social dimension is now more frequently discussed in these two fields (Kühnen and Hahn, 2018), whereas CE research on this topic, especially on an inter-firm level, is still scarce (Merli et al., 2018). Moreover, besides Padilla-Rivera et al. (2021), who have, amongst others, included some experts from the private sector in their Delphi study on the importance of social indicators in CE, the perspective of business on social assessment of CE practices has not yet been captured.

The goal of this article is therefore to obtain an improved understanding of how industry practitioners gauge the importance of the social dimension in their assessment of CE practices in supply chains, and if the aforementioned issues in literature are reflected. The research further aims to identify the main barriers that the companies encounter in this process, and the social sustainability assessments already implemented. For this purpose, the authors conducted in-depth interviews with front-running CE companies engaged with CE practices, as part of a larger study by Walker et al. (2020). These companies are located in Italy and the Netherlands and are all members of CE networks. Both countries have a rich ecosystem of CE networks and are engaged in the implementation of CE practices (Circular Economy Network, 2020; Ghisellini and Ulgiati, 2020; Institut National de l'Économie Circulaire and ORÉE, 2020). Deeper insights into the perception of industry practitioners can help scholars in directing their research efforts to develop more refined social assessment approaches that anticipate potential challenges and thereby have a higher chance of being implemented. The industry perspectives also provide an important reality check – by companies at the forefront of CE development – for approaches which have been primarily championed in academia, such as the social life cycle assessment (S-LCA) (D'Eusanio et al., 2019).

In order to advance knowledge on how organizations could be assisted in assessing the social aspects of CE practices, Section 2 continues with a brief overview of the conceptualisation of the social dimension and its assessment in the sustainable development literature as well as in the fields of IE and SCM. The overview is complemented with novel CE literature on the social dimension to frame its importance from an academic perspective. In Section 3, the qualitative research method is explained in more detail, while Section 4 presents the results of the thematic analysis. The discussion in Section 5 reflects on the implications of the findings, proposes recommendations for researchers and practitioners when developing and implementing social sustainability assessment approaches, lays out future research avenues, and presents the limitations of this study. It is followed by Section 6, the conclusion.

## **2 Theoretical background**

To better understand how social performance can be assessed in circular inter-firm networks, it is essential to delimit its scope. There is no definite consensus on what exactly the social dimension of the SDGs entails, given the multiple perspectives on the issue and its strong dependence on context (Kühnen and Hahn, 2018). One of the most cited sustainability assessment frameworks from which indicators could be derived was developed by Labuschagne et al. (2005), and states that companies can affect four aspects of social sustainability. The first are the companies' own employees, then the external population, also referred to as local community, the third is stakeholder participation with a focus on sharing information and inclusion in decision-making, and the fourth is macro-social performance. The last category is particularly interesting as it goes beyond issues traditionally labelled as social, including also socio-economic issues, such as taxation, corruption and property rights. These economic aspects are external, while internal economic effects denominate company-level financial indicators such as costs and profits, which is mostly what scholars infer when claiming to assess the economic dimension of sustainability (Vermeulen, 2018). However, from a societal perspective, profits and costs are rather a means to an outcome as opposed to ends in themselves

(Figuière and Rocca, 2008; Pope et al., 2004). Therefore, the much-discussed idea of prosperity instead of profit is linked more closely to socio-economic, than to purely economic indicators (Vermeulen, 2018). This is also in line with the guidelines of the Global Reporting Initiative (GRI), which label the external economic impacts, the socio-economic impacts, as “*an organisation’s impacts on the economic circumstances of its stakeholders and on economic systems at the local, national and global levels*” (2016, p. 4). Socio-economic indicators are mostly related to either political institutions, such as an open political system, fair taxation, distributional systems, and roles of free association, or economic institutions, where property rights, land and resource ownership, price formation, fair competition, as well as worker and consumer rights are important (Vermeulen, 2018). To translate these concepts into useful metrics for the private sector, the focus ought to be less on costs and profits of companies, and rather on the kind of activities private actors undertake to improve or adhere to political and economic institutions. It becomes clear that indicators based on political and economic institutions would potentially be more contested, because they position companies as governance actors embedded in a network of power relations (Sahkinan, 2016). These blurred lines between the economic and social dimension have further aggravated holistic social assessment uptake by companies and scholars alike. Another important reason for the limited application of social assessments could be that the unstandardised nature of the assessment does not allow companies to benchmark against competitors which is one of the main aims of conducting social assessment approaches. Other benefits of social assessment are more informed decision-making regarding product portfolios, investment, and corporate engagement programmes, as well as reporting companies’ impact to relevant SDGs (Goedkoop et al., 2018; Rosenbaum et al., 2015). Kühnen and Hahn (2018) note however that there is growing consensus on what type of indicators should be considered. To further increase the assessment’s applicability to the respective context and its legitimacy, significant involvement of stakeholders is recommended.

## 2.1 Social dimension in IE & SCM

While social sustainability assessment has been frequently discussed from a general perspective, its uptake in both the fields of IE and SCM has been more recent. These two fields provide a rich repertoire of sustainability assessment approaches for circular inter-firm networks and can be seen as complementary and overlapping at times (Walker et al., 2021). CE practices from these fields include e.g. reverse logistics, closing intra-sectoral material loops, or industrial symbiosis, building cross-sectoral supply chains (Masi et al., 2017). Therefore, this sub-section briefly outlines how the social sustainability dimension has manifested in IE and SCM through an analysis of the epistemological contribution and current discussion. Finally, it also presents one of the most promising social assessment approaches applied in both fields, the S-LCA. A direct comparison of the two fields is presented in Table 1.

**Table 1.** Social dimension of sustainability in IE and SCM.

	<b>Industrial Ecology</b>	<b>Supply chain management</b>
Underlying theory	Stakeholder network analysis, institutional theory, recently towards multi-theoretical approach (Doménech and Davies, 2009; Hoffman, 2003)	Stakeholder theory, resource-based view, agency theory, systems theory, recently towards multi-theoretical approach (Nakamba et al., 2017)
Main discussion	In terms of social embeddedness to enable “rooting” of eco-industrial parks, economy as a social science (Aparisi, 2016; Boons and Howard-Grenville, 2009)	In terms of management of stakeholders and reputation (corporate social responsibility), supplier selection, social performance (Yawar and Seuring, 2017)
Epistemology	Positivism moving towards more critical theory (Hoffman, 2003)	Though beginning positivist, earlier involvement of stakeholders and movement towards critical theory (Nakamba et al., 2017)
Underlying fields	Engineering, natural sciences: importance of biophysical flows (Cohen-Rosenthal, 2000)	Operational management: importance of costs, time and quality aspects (Barbosa-Póvoa et al., 2018)
Proposed assessments	Indicators derived from social capital (human or community capital), S-LCA (Kurup, 2007; McBain, 2015; Valenzuela-Venegas et al., 2016)	Indicators from frameworks, e.g. GRI or OECD Guidelines for Multinational Enterprises, S-LCA, social input-output models (D'Eusario et al., 2019; Hutchins and Sutherland, 2008, Kühnen and Hahn, 2018)

### 2.1.1 IE and the social dimension

Sahakian (2016) argues the apolitical stance of IE does not consider social power relations and thus inhibits the practicality of the concept. The previously sparse integration of social theory into IE, merely applied when IE practices such as industrial symbiosis were actually implemented, has slowed the mainstreaming of IE considerably (Gibbs and Deutz, 2007). Vermeulen (2006) explains that it is in part due to the limited analysis of the social context in which IE practices were meant to be embedded. A social perspective is especially relevant as various scholars (Boons and Baas, 1997; Chertow, 2007; Gibbs, 2009) established that cooperation and trust of inter-firm networks cannot be forced or extensively planned. Economic incentives to drive coordination instead of competition are not enough for actors to take up IE practices. (Boons and Howard-Grenville, 2009). Therefore, scholars propose to support private actors with analytical and planning management tools to better assess social impact as well as to further cooperation (Vermeulen, 2006).

While the underlying theoretical frameworks originally used in the IE strand of research were mostly institutional theory and stakeholder network theory, research has shifted towards multi-theoretical approaches (Doménech and Davies, 2009; Hoffman, 2003). Similarly, the originally positivist epistemology of the field has made way for a critical theory perspective, allowing for a multitude of simultaneous realities (Hoffman, 2003). The positivist outlook can be explained by the field of study IE is rooted in, namely engineering, based on natural science with objective truths and a focus on biophysical flows, not necessarily including social and economic aspects (Cohen-Rosenthal, 2000). Given the recent surge in involvement of social scientists to aid the rooting of IE systems in their context, e.g. through social network analyses (Aparisi, 2016), the field has become more open towards conflicting truths. These are typically encountered when dealing with sustainability and in particular social sustainability issues (Zijp et al., 2016).

To assess social aspects, indicator frameworks used are mainly derived from the concept of social capital (Kurup, 2007; McBain, 2015). A comprehensive list of sustainability indicators designed for use in an eco-industrial park also contains social indicators and was presented by Valenzuela-Venegas et al. (2016), who underline the importance of pragmatism, relevance, understanding, and partial representation of sustainability during the indicator selection.

### *2.1.2 SCM and the social dimension*

While one of the main drivers to assess the social dimension in IE was the embeddedness of IE systems in their local contexts, SCM requires social sustainability assessment to manage the relationships with company stakeholders and corporate reputation. Examples of the application of social sustainability assessment are supplier selection according to sustainability principles, as well as monitoring and managing the health and safety of the employees (Yawar and Seuring, 2017). The social dimension in companies is usually understood as corporate social responsibility (CSR), which has in itself developed into a large stream of literature (Carter and Easton, 2011). CSR is understood not only as a set of policies in a company, but also describes a firm's relation with and social effects on the environment under its sphere of influence. While incidents of corporate misconduct regarding social issues become more pressing (Genovese et al., 2020), the inclusion of social factors – even in SCM fields that are considered more sensitive to social issues, such as sustainable and green SCM – is still limited (Ahi and Searcy, 2015). The same is true in a majority of publications on closed-loop SCM, mainly focused on assessing environmental and economic impacts (Masi et al., 2017; Winkler, 2011). In their review of social sustainability in SCM, Nakamba et al. (2017) found that the underlying theories used in most papers on this topic are stakeholder theory, resource-based view, agency theory, and systems theory. Similar to IE, researchers use theory rather sparsely or combine theories, as they have to accommodate the views of increasingly diverse stakeholders. The rising stakeholder involvement also shifted the epistemology of the field slightly earlier than IE from a positivist to a more constructivist perspective, acknowledging that knowledge can be subjective (Nakamba et al., 2017). A further factor which potentially sped up this process was that SCM is based on operational management science, which is in itself a social science. So even though the field of SCM was initially focused on costs, time and quality management (Barbosa-Póvoa et al., 2018), a more pluralistic epistemology might have facilitated the incorporation of social objectives.

Regarding assessment approaches, the most commonly used social indicators are derived from international frameworks, such as the GRI or the OECD Guidelines for Multinational Enterprises (Dreyer et al., 2006). This indicates considerable involvement of the business community to address social issues.

### *2.1.3 S-LCA bridging IE and SCM*

Notwithstanding the large diversity of methods, there is a social assessment method which is increasingly applied in both IE and SCM. The S-LCA method is derived from environmental life cycle assessment (LCA) and captures both positive and negative (potential) social impacts of a product during its whole life cycle. Instead of looking at biophysical flows, S-LCA focuses on the firms constituting the supply chain of a product and how these affect their respective stakeholders, categorised into workers, local community, value chain actors, consumers, and society (UNEP, 2009). It offers one of the most comprehensive social assessments, given that it also covers socio-economic indicators mainly in its “value chain actors” and “society” stakeholder category. An influx of social scientists has advanced the development of S-LCA in the field of IE, where life cycle thinking is at the base of most methodologies. Especially amongst SCM scholars, S-LCA has also become popular to assess the social impacts of company supply chains, even though it originated from the field of IE (D'Eusonio et al., 2019; Hutchins and Sutherland, 2008). A group of researchers and private industry actors have taken a first attempt at standardising the methodology by creating the S-LCA Guidelines (UNEP, 2009), which have recently been revised and are currently being tested (UNEP, 2020). However, the uptake of the methodology has been slow, though it accelerated in recent years (Ramos Huarachi et al., 2020).

## 2.2 The social dimension of CE practices

There are two main lessons from IE and SCM which could help to better understand how social assessment of CE practices may develop in companies and their networks. First, the limited development of the social dimension in IE and SCM might have affected its conceptualization in CE. Various CE scholars and practitioners consider the sustainability dimensions implicitly included in CE to be environmental and economic (Calisto Friant et al., 2020). Walker et al. (2020) have shown in their qualitative survey, that a

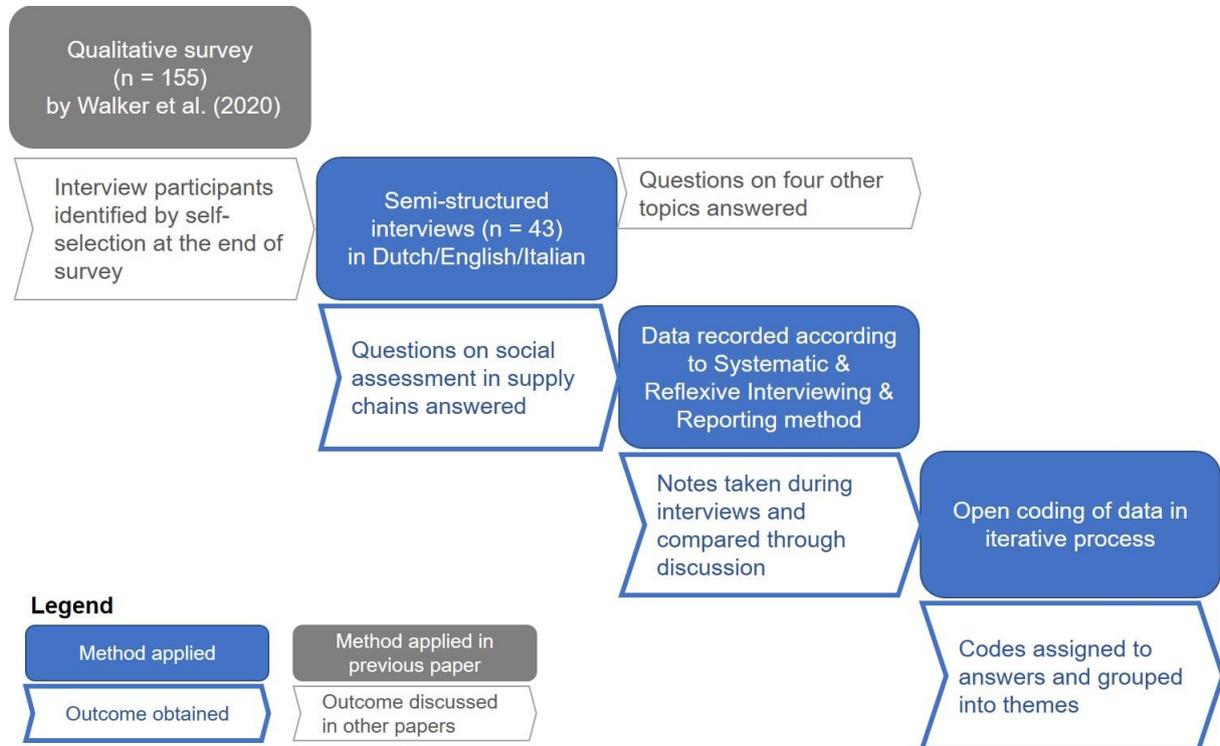
majority of respondents from a purposive sample of frontrunner companies engaged with CE practices perceived the environmental dimension to be most relevant to CE. This was followed by social benefits of supply chain actors and increased economic profitability, while a reduction of social inequality was least expected. The focus on environmental and economic implications has led to a proliferation of assessment approaches in these two dimensions, while the assessment of social sustainability in CE is not yet clearly defined and methodologically challenging (Kravchenko et al., 2019). Sassanelli et al. (2019), De Pascale et al. (2020) and Saidani et al. (2019) show in their reviews of circular performance assessment methods and indicators that the social dimension is the least covered dimension by the assessments. Even so, do not outline in what way CE and sustainability assessment are integrated, let alone the integration of the social dimension. This is confirmed by Schöggel et al. (2020), who find a decline of the social dimension's salience with regard to CE throughout literature published in 2019. Besides the vague conceptual integration of the social dimension within CE, its diverse assessment strategies bear extra hurdles when aggregating and weighting results within as well as among the different sustainability dimensions (Iacovidou et al., 2017). Limited standardisation and the fuzzy conceptualisation of social metrics and evaluation methodologies further complicate social impact assessment (Sousa-Zomer and Cauchick-Miguel, 2017).

Second, in line with a majority of sustainability research, IE and SCM mostly focus on traditional social indicators concerning employees, and at times the local community and stakeholder participation, not socio-economic indicators on a macro level (apart from S-LCA). The reason for this might be the often-indirect effect of companies in inter-firm networks on macro-economic issues, which is difficult to delimit and assess. However, it is essential not to lose sight of these indicators, since CE requires well-functioning institutions to advance implementation (Moreau et al., 2017; Padilla-Rivera et al., 2020). In this regard, Schröder et al. (2020) have developed an integrated human development index (HDI) for a CE, connecting circularity and human development indicators. However, this index is only focused on the macro-level and does not take into account more direct impacts of companies on their immediate surroundings. Concerning company and supply chain metrics, to date, Roos Lindgreen et al., (2020), Padilla-Rivera et al. (2020) and Walker et al. (2021) have found that job creation is the most prevalent social metric utilised in academic literature to assess the impact of CE practices on a company and inter-firm level. While this impact on the local community is certainly important, it is by no means the only social category affected by CE practices, which can have large effects on actors such as (re)manufacturers, product users, as well as collectors of the product at the end-of-life. Indeed, the most recent handbook on product social impact assessment (PSIA), a methodology derived from S-LCA, developed by businesses, already features two ways how CE practices can affect social aspects. CE practices either close material loops, in which case the main affected stakeholder groups are the workers, or they support more efficient product use, in which case the user is most affected (Goedkoop et al., 2018). Another pertinent finding in the above literature was that most authors (with the exception of e.g. Reinales et al., 2020) did not necessarily propose S-LCA as an assessment method for the social dimension, but rather reverted to simple indicator-based assessments, at times combined with multi-criteria decision analysis methods. Pointing into the same direction, the results of the survey including companies engaged with CE practices showed that S-LCA was the least implemented assessment approach (Walker et al., 2020). A reason for the limited uptake of S-LCA could be that the research on this methodology is still considered a niche which CE scholars are not familiar with, or find too complex (Roos Lindgreen et al., 2020; Walker et al., 2021). Yet, S-LCA guidelines and the PSIA handbook are publicly available (Goedkoop et al., 2018; UNEP, 2009). In summary, the inclusion of the social dimension has been analysed both within CE performance assessment literature and sustainability assessment literature applied to CE practices. However, empirical data on how companies view the integration and assessment of the social dimension in CE is still rare. Furthermore, the question of why firms perceive social assessment of CE practices to be relevant or not remains to be addressed.

### **3 Methods**

The authors opted for a qualitative research approach, deemed useful especially for exploratory research which aims to identify underlying reasons of phenomena (Flick, 2009). In this case, it was important to identify why companies engaged with CE practices are hesitant to implement social sustainability assessment procedures, which was previously established in a survey by Walker et al. (2020). To answer this question, a

series of semi-structured interviews (Adams, 2015) were conducted. Given the novelty of linking CE and the social dimension and the use of this research method in social supply chain literature (Hannibal and Kauppi, 2019; Mani et al., 2020), semi-structured interviews are thus deemed suitable for obtaining first insights on the social dimension of CE in companies and their supply chains. The individual methodological steps and their respective outcomes are depicted in Figure 1.



**Figure 1.** Composition of overall research method and respective outcomes of each step.

### 3.1 Sample data

The 43 interviewees had self-selected into participating in the interviews, after filling in the survey described in Walker et al. (2020), and thus constitute a subset of a total of 155 survey respondents. The original selection of surveyed companies was based on purposive sampling (Hibberts et al., 2012), given the necessity to survey only companies which were already engaged with CE practices. Therefore, companies are part of CE networks, to ensure that respondents have an elevated knowledge of CE practices and respective assessment approaches. Furthermore, the surveyed firms operate in Italy and the Netherlands, two countries in which the authors are well connected to CE actors on the one hand, and that are considered frontrunners in terms of implementing CE practices on the other (Circular Economy Network, 2020; Institut National de l'Économie Circulaire and ORÉE, 2020). For further details on how adequate CE network coverage and response rates of the companies within these networks were ensured, reference should be made to Walker et al. (2020). It also needs to be noted that the distribution of company attributes such as size and are highly similar sector in interview sample and the survey sample. Assuming the survey sample appropriately covers the survey population, given the description above, the interview sample can also be regarded as valid. Most interviewees were CEOs and upper-level managers (60%), followed by CSR (20%) or sustainability managers (20%). This upper-level management involvement warrants for the credibility of the information, which is mostly provided directly by decision makers in management positions influencing firms on a strategic level. The distribution of companies across countries was almost equal, with 23 firms operating in the Netherlands and 20 in Italy, reducing the risk of a country bias in the results. Almost half of the interviewees came from micro companies with less than 10 employees (49%), while the rest were representatives of small and medium enterprises (SMEs) that have 10-249 employees (28%) or of large companies with more than 250 employees (23%). Categorised according to the statistical classification of

economic activities in the European Community (NACE) (Eurostat, 2008), the largest share of the participants came from the manufacturing sector (19%), while consultancies (other service activities (16%) and professional service activities (12%)) also made up a large share. Further sectors were construction (12%), accommodation and food service activities (9%), waste and water management (7%) and others (25%). The results are therefore representative for a wide array of sectors and different company sizes of firms which have implemented CE practices. An overview of the individual companies and their characteristics is presented in Appendix.

### 3.2 Interview process

After having completed the survey between July and September 2019, the companies which had indicated their availability for a follow-up interview were interviewed between May and June 2020. The semi-structured interviews were held via video-call and had a duration of 45 to 90 minutes each. They were held in the preferred language of the interviewee, either in Dutch (16), English (10), or Italian (17). All three interviewers, each interviewing in one language only, followed the same interview guidelines (Adams, 2015), covering a range of five topics. This paper focuses on the evaluation of one subset of the total topics discussed, presented in Table 2.

**Table 2.** Excerpt of interview guidelines on social dimension.

Questions for interviewees	Function of question
Scholars and practitioners have started to discuss the possibility of assessing impacts on social sustainability along the supply chains (in particular S-LCA). In what way do you think it is applicable or necessary when assessing the circularity performance of your company?	- Establish understanding of social dimension and social sustainability assessment along supply chain
Sub-questions	
1) <i>If company does not assess along supply chain:</i> Do you have specific methods/indicators to assess social impacts within your company?	- Identify existing social assessment methods within company boundaries
2) <i>If your company does not assess CE:</i> Do you think it is generally important for social impacts to be assessed along the supply chain when a company implements CE practices? (is this type of assessment (social) important specifically for CE)?	- Inquire importance attributed to social assessment by companies who do not yet implement assessment
3) <i>If your company does OR does not assess CE:</i> Is it currently possible for a company to adequately assess/address social impact of CE practices? (are the tools available adequate and is there a push for social assessment to be done etc.?)	- Identify current applicability of social assessment methods to CE as well as potential barriers

In line with the literature gap lined out in Section 2.2, the open questions attributed special attention to how companies perceive the social dimension's importance in the CE concept and in what way they have assessed social aspects of their business activities along their supply chains. As a first step, the questions mainly aim at establishing an understanding of the social dimension and its assessment along supply chains. In the sub-questions, the application of social assessment methods as well as its importance and barriers thereto are to be identified.

### 3.3 Data recording and analysis

Since interviews were held in three languages, no full transcripts were drafted. Instead, the authors followed Loubere's (2017) Systematic and Reflexive Interviewing and Reporting (SRIR) method, requiring them to hold weekly meetings to discuss the newest findings and impressions of their interviews, while ensuring consistency in the interpretation of the interview guidelines. In line with the SRIR method, the interviewers

took notes during the interviews and recorded them. To avoid interviewer-related errors, the interview recordings were then revisited, and the notes complemented, if necessary, and translated into English language. The notes and the company attributes such as size, sector and country were subsequently imported case by case, into the NVivo R1 software for a thematic analysis through open coding (Braun and Clarke, 2006). The coding was done by one researcher, who assigned codes by analysing, per interview participant, all of the answers to the questions discussed in Table 2 at once. This ensured the overall context of each respondent was adequately understood and the answers to the sub-questions not separated from each other in terms of meaning, thus preventing the loss of viable information (Bryman, 2001). These codes were then refined, grouped, and aggregated into themes which emerged during this iterative process (Braun and Clarke, 2006).

## 4 Results

The following paragraphs describe the themes which emerged from the open coding framework. As a first step, Section 4.1 outlines what constitutes the social dimension within CE according to front-running companies engaged with CE practices. Thereafter, the question of whether the social dimension should be assessed was answered in Section 4.2, followed by Section 4.3, which presents the barriers that the sampled companies have to face when implementing social assessment approaches. Finally, Section 4.4 describes the main social sustainability assessment approaches applied by the interviewed companies, with a focus on the uptake of S-LCA.

### 4.1 Industry perspectives on the social dimension of CE practices

According to a majority of respondents, the social dimension was not well delimited. While some companies defined it similarly to the general CSR of a firm, others mentioned that “*CE being connected with [the social dimension] is something that is new and being developed now*” (Interviewee #34). According to these respondents, the social dimension of CE is not yet delineated, as CE is a new field, and the social factors affected by CE practices might not be the same as those in the traditional take-make-dispose business. For the companies that connected the social dimension to CSR, and thus did not necessarily think that CE practices would alter the dimension’s scope, the affected stakeholders are both internal and external. Table 3 shows what social practices were mentioned by the interviewees. These practices are grouped according to the different stakeholder groups proposed in the S-LCA guidelines (UNEP, 2009) to provide an overview of what aspects the respondents considered when talking about the social dimension. In terms of quantitative indications, it can only be confirmed that the importance of the stakeholder groups is ascending from left to right, according to the times these stakeholder groups were mentioned. Though employees were mainly mentioned first when talking about the stakeholder groups, external stakeholders, such as supply chain partners and the local community, were also frequently named. While internally the diversity and employee satisfaction in terms of continuous learning, as well as health and safety are of high importance for companies, externally, the wellbeing of consumers and the local community was underlined by several interviewed firms. The latter category also includes economic development in terms of job creation, particularly for “people with distance to the labour market”, an established expression in the Netherlands, designating people who have been unemployed for a longer period and need active support for their reintegration into the labour force. Another aspect underlined was short supply chains to reduce supply chain risk, increase transparency, and strengthen the local economy. Several respondents further mentioned the pertinent role and professionalisation of the third sector, meaning charities, foundations, cooperatives and associations, in managing second-hand goods or increasing the awareness about CE in general. In a similar vein, many respondents perceived the selling of their circular products had a social impact in terms of educating consumers. It was also labelled as “*cultural impact in terms of changing the mentality of clients to create awareness*” (Interviewee #1). Communication about the firms’ social values was at the same time an important part of presenting a coherent picture of themselves, because a “*more appealing story to our customers*” (Interviewee #10) helped them to create a competitive advantage. Therefore, non-financial reporting was also perceived as playing an essential role, especially by larger companies.

**Table 3.** Indicators and practices related to the social dimension mentioned by interviewees, grouped according to stakeholder categories defined in the S-LCA guidelines (UNEP, 2009).

Stakeholder categories	Workers	Local community	Value chain actors	Consumers	Society
<b>Practices</b>	<ul style="list-style-type: none"> <li>- Employee engagement</li> <li>- Continuous learning and personal development</li> <li>- Health &amp; safety precautions</li> <li>- Respect national legislation</li> <li>- Diverse hiring practices of gender, people with disabilities or distance to the labour market</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain community wellbeing</li> <li>- Improve local economy</li> <li>- Educational activities in schools and community</li> <li>- Provide pro-bono services to local community</li> <li>- Support social projects in local community</li> <li>- Local stakeholder consultation</li> <li>- Hiring local employees</li> </ul>	<ul style="list-style-type: none"> <li>- Ethical business practices</li> <li>- Collaboration with third sector organisations</li> <li>- Increase income for suppliers</li> <li>- Price transparency</li> <li>- Local supply chain (km0)</li> <li>- Educative workshops for suppliers</li> <li>- Audit of supply chain practices</li> </ul>	<ul style="list-style-type: none"> <li>- Knowledge transfer to client (mainly for consultancies)</li> <li>- Co-development of products with clients</li> <li>- Demonstrate socially ethical behaviour to customer</li> <li>- Giving consumer opportunity to participate in CE</li> <li>- Subsidise bills of low-income families</li> </ul>	<ul style="list-style-type: none"> <li>- Risk mapping of export countries</li> <li>- Limit refurbishing activities to Europe to prevent abuse</li> <li>- Positively influence lives</li> <li>- Innovation needs to benefit implementing systems</li> <li>- Public commitment and contribution to sustainability initiatives</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>- Employee turnover</li> <li>- Number of extra-professional activities</li> <li>- Hours of training</li> <li>- % trained workforce</li> <li>- Number of fulltime employees</li> <li>- No black labour (Y/N)</li> <li>- Employee shareholding</li> <li>- Gender ratio in board</li> <li>- Employment rate of people with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>- Number of jobs created (especially for people with distance to labour market)</li> <li>- Number of students or participants in activities</li> <li>- Number of hours spent volunteering</li> <li>- Amount donated to local community</li> <li>- Frequency of stakeholder consultation</li> </ul>	<ul style="list-style-type: none"> <li>- Supplier has ethical label (Y/N)</li> <li>- Number of educative workshops and number of participants</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Number of participative workshops with clients</li> <li>- B-corporation certification</li> <li>- CSR performance ladder or PSO certification</li> </ul>	<ul style="list-style-type: none"> <li>- Number of people influenced positively through social innovation</li> <li>- Communication reach of sustainability initiatives</li> </ul>

## 4.2 Assessing the social dimension of CE practices

Though a majority of the respondents agreed that assessing the social dimension of their CE practices was important, their underlying rationale was differing. Overall, two main positions emerged from the interviews, which were split into five narratives, displayed in Table 4. The first position was that the social dimension was integral to CE. Interviewee #4 mentioned: “*Yes sure, the social element is very important. There is no use in focusing only on the exploitation of the environment and not taking into account the exploitation of society, meaning humans*”, while a similar perspective was that “*being circular does not mean: no attention for social aspects*” (Interviewee #16). However, when asked whether this dimension should be assessed, the first narrative went along the lines that while the social dimension of CE was important, it was currently not possible or desirable to assess the social dimension. Especially smaller companies felt they already had a valid picture of their social impact through close interactions with their stakeholders. Yet, several interviewees underlined that they are looking into how to include the social dimension into their assessment of CE practices in the future. The second narrative of the first position was that companies should assess social impacts of CE practices, since CE is focusing on resource efficiency and “*humans are also a resource*” (Interviewee #4).

**Table 4.** Narratives on assessing the social dimension of CE.

Main position	Should the social dimension be assessed?	Number of respondents
The social dimension is an integral part of CE	While the social dimension is an integral part of CE, the assessment is not yet feasible or not desirable.	13
	Yes, the social dimension is an integral part of CE and should be assessed.	9
The social dimension is part of sustainability	Yes, the social dimension is important, but as a sub-aspect of sustainability or CSR and it should be assessed	9
	While the social dimension as a sub-aspect of sustainability or CSR is important, the assessment is not yet feasible or not desirable.	7
	No, the social dimension of CE practices and its assessment are not important.	5

The second main position was that the social dimension is not part of CE itself, as “*social issues are more strongly connected to sustainability*” (Interviewee #13) or CSR more specifically. Several interviewees mentioned that there was no use in trying to fit the social dimension into the CE concept, as CE practices should not be expected to improve social aspects. Moreover, “*by trying to fit it in the circle it could take away the importance of the CE concept*” (Interviewee #30). Therefore, the third narrative was that the social dimension needs to be assessed through a traditional sustainability assessment. The fourth narrative consisted of respondents that agree that the social dimension as part of sustainability was important, but they felt assessing and reporting about the social dimension would not be feasible at the moment or even be excessive. Other reasons why these interviewees did not deem it necessary to assess the social dimension were because the countries in which they operate already have high legal standards protecting employees. Yet most of them indicated that they would like to expand their expertise on this topic. The fifth narrative, connecting to the second position stating the social dimension is part of sustainability and not CE, was that it was not important to assess the social dimension in a CE context. The main reasonings were that the social dimension was “*not necessarily within the scope or the goal of the organization*” (Interviewee #20) and that they did not perceive it as their role to be social actors. Rather they thought social issues were under the responsibility of public sector organisations or NGOs.

Finally, from Table 4 it further becomes apparent that less than half of the interviewed companies carry out social assessments, either as part of CE or sustainability. Though these two main positions subdivided into five narratives have been identified, it needs to be stressed that the borders between them are blurred and respondents indicated the semantic differentiation would not necessarily lead to more viable assessment approaches. Interviewee #16 emphasised that “*it is not necessary to be so specific about those different terms. This is fighting a rear-guard action. You can mean slightly different things, but you still want to go the same way.*” It was further mentioned that separating the three sustainability dimensions would not be expedient. Especially Interviewee #19 was “*not a proponent of this [social assessment]. It can only be a distraction. In all honesty, we should*

*bring the social factor in today's society in all our considerations as a first-line one issue. In that sense, I believe much more in the holistic approach, and less and less in the one-issue-focus, that is much too limited and is hurting us all in future perspectives."*

#### 4.3 Main barriers to social assessment

Besides companies that did not deem it a priority to assess the social dimension, there were also several respondents who underlined the importance of social assessment, but faced several barriers, as listed in Table 5. The most frequently named barrier was that social assessment generally, and in connection to CE particularly, requires specific knowledge which was mostly not present in the interviewed companies. After all, the *"social dimension is difficult to measure. There are different approaches to measure social impacts, but an international standard doesn't exist. It is the same for welfare metrics. It is still difficult to find precise metrics which can give you the effects of welfare on economic aspects"* (Interviewee #35). This statement also underlines the need of companies to make social aspects financially tangible. Especially the extended time horizon of certain social effects makes the assessment of short-term effects more difficult. In this regard, Interviewee #24 mentioned that social efforts do *"not necessarily have direct economic benefits. So, we are in competition with other companies who do not necessarily have the same set-up [re-integration into labour market, which also benefits society and the state], and thus in short-term we are not economically viable"*. At the moment, companies have only limited best practices to refer to, with respect to the assessment of social impacts on a company or supply chain level. The tools which currently exist are perceived to be too "confusing", still in their "infancy", complex, or academic. This is depicted by Interviewee #33 who said, *"we are not a research agency"*, when asked whether they conduct social assessments of their CE practices. Nevertheless, the respondent added that their organization did collect data that enabled drawing conclusions on their social and economic impacts, and that this data was subsequently processed and used by their clients. Another major deterrent for companies was that they have to date not identified a standardised methodology for their assessment goals. *"It becomes a bit dangerous when there is no standardised methodology or widely accepted method to compare the results"* (Interviewee #34). Furthermore, social labelling is not yet as successful in differentiating products as environmental labelling, which raises the question what kind of incentives could be useful in stimulating companies to assess their social impact. In that respect, Interviewee #39 stated that *"currently, there often has to be business case before initiatives related to increasing the social impact are approved. It would be nice if this would change."* Another issue is the sensitive nature of the potential assessment findings, since the *"social dimension is also often connected with discussion on ethics and that is a difficult discussion and probably why people are not promoting it so easily"* (Interviewee #38). Furthermore, some managers would not know how to deal with unfavourable feedback of their employees, making social issues more explicit.

**Table 5.** Barriers to implementing social assessment of CE according to occurrence.

<b>Barrier type</b>	<b>Occurrence<sup>a</sup></b>
Not enough knowledge on social assessment	frequent
Existing assessment approaches are too complex	sometimes
Not yet best practice to assess the social dimension, so invested resources are limited	sometimes
No standardised methodology exists	sometimes
Information on supply chains is not available	sometimes
Social aspects can be sensitive to discuss	rarely
Social labelling not common yet	rarely
Long-term nature of social effects	rarely
EU policy on CE not that explicit on social aspects	rarely

<sup>a</sup> frequent >10, sometimes 5-10, rarely 1-5.

Besides these soft barriers, in terms of data availability, the largest issue is the limited transparency of company supply chains which has a long way to go. This is especially true with regards to the origins of secondary materials, as one *"would need an investigative journalist upstream the supply chain due to its complexity. It is much easier to produce an organic product grown here [...] and get it certified"* (Interviewee #6). But then again, because of the unclear situation of suitable approaches, it would be more beneficial to find out what data is actually needed first. Finally, it was also pointed out that current EU policy does not have a clear picture of how social issues should be integrated within the CE Action Plan, which indicates a gap in the institutional framework conditions of companies (European Commission, 2015). To remedy this void, Interviewee #8 underlined that *"where sustainability aspects are not covered by regulations, they need to be covered by communication"*

about the benefits of social assessment. These barriers collectively contribute to the fact that social assessment in general is still limited among front-running companies engaged with CE in the investigated countries.

#### 4.4 Applied social assessment approaches

The social assessment approaches applied by companies engaged with CE are not necessarily referring to the assessment of CE practices, since many companies also shared their assessment approaches connected to general CSR and sustainability. Furthermore, several firms did not differentiate between assessing sustainability and circularity, because they were focusing on their actual situation at hand, which for them made the dichotomy obsolete and almost artificial, as exemplified by the following quote: *“Academics are going too far in trying to separate all different concepts, as they are overlapping and not exclusive. So, you get lost in concepts instead of educating people in how to apply them in their relative local context, which requires an applied mix of the concepts into a simple solution”* (Interviewee #9). Therefore, an integrated overview of the applied social assessment approaches is provided in Table 6.

**Table 6.** Social assessment approaches used according to their occurrence.

Social assessment type	Examples of social assessment methodologies	Occurrence <sup>a</sup>
Certifiable management frameworks from which indicators are derived	SA8000, Social Enterprises Performance Ladder, CSR Performance Ladder	sometimes
Qualitative assessment	Survey of suppliers, survey of employee satisfaction, discussions with employees and suppliers	sometimes
Self-developed indicators	See Table 3	rarely
Existing assessment frameworks	Social Return, Freedom House risk map, S-LCA	rarely

<sup>a</sup> frequent >10, sometimes 5-10, rarely 1-5.

Especially the larger companies are working with indicator frameworks, which they derived from guidelines such as the GRI or the SA8000. The SA8000 is a social accountability management system, certifiable by third parties. It was seen by several companies which do not yet apply social assessments as a suitable way to manage social impacts, given that the required audits provide some form of assessment. Though for a comprehensive list of social indicators an analysis of the companies’ sustainability reports would be necessary, Table 3 presents the mentioned indicators and best practices attributed to stakeholder categories based on the S-LCA methodology (UNEP, 2009). Hence, the indicators serve as a depiction of the variety of social aspects covered, rather than indicating their frequency, for which a more quantitative research approach such as a survey would be favourable. Yet, it was observed that most of the specific indicators companies described were for the employee stakeholder group, while community projects were often assessed more qualitatively or descriptively. In contrast to larger companies, which are exposed to more public scrutiny, smaller companies, mostly founded with a sustainable purpose and CE-based strategy, opted for a more qualitative assessment. This type of assessment consists of engaging in discussions with suppliers and other stakeholders affected by their operations, either ad-hoc or in organised workshops. In some cases, where direct contact was not possible, firms relied on the credibility of ethical distributor networks or industry consortia to assure products were up to their social requirements. One respondent acknowledged *“that you cannot take social benefits of companies for granted”* (Interviewee #9), and the social dimension should be assessed at least qualitatively, e.g. by the means of surveys to suppliers. Surveys were also a popular way to assess employee satisfaction. Another interesting aspect was raised by Interviewee #4, stating that it was *“sometimes easier to understand how many people were involved in a sustainable production process [in a quantitative way] rather than to say whether these processes are valid in terms of quality, and to whether they could be improved [in a qualitative way]”*. This underlines the fact that sometimes quantitative indicators are not enough to judge whether social quality has improved, especially if they are simplistic. Another prevalent opinion, mainly among those who saw the social dimension as distinct from CE, was that companies *“should not create new tools or indicators for social impact if they are just changing a material process or end of life process to be more circular”* (Interviewee #10). Instead, they advocated for the improvement of existing approaches, making them more applicable in practice. There were also voices stating the ideal assessment should be an integrated one, thus looking at all the three sustainability dimensions at the same time. One example of existing approaches were risk mapping tools such as Freedom House (2020) to ensure that countries where large companies export to are politically stable. Other CSR management tools linked to assessment were the certification scheme Social Enterprises

Performance Ladder (PSO), partially based on the idea of social return on investment. In the context of these interviews, social return always referred to the employment of people with a distance to a labour market. A further certification scheme was the CSR performance ladder, also paying attention to social return. It was interesting to observe that these three tools were specific to the Dutch context, while in Italy no such privately developed certification schemes for companies were used.

Concerning a more standardised social assessment approach, respondents were specifically asked about their knowledge of the S-LCA, and whether they considered it worth pursuing. However, only one large company was currently piloting a S-LCA, while most other firms were sceptical about this methodology or did not know it. The main reason referenced by interviewees was the lack of a clear standard on how to conduct it. As Interviewee #5 explained: *“I was not familiar with S-LCA [...], but I have seen there is no international scale yet. Therefore, I think it is not yet applicable.”* In addition, Interviewee #26 said, *“the formulation of the indicators in S-LCA is much more complex, meaning that the aggregated value of the indicators has multiple relations and meanings, unlike in life cycle costing and life cycle assessment.”* As already pointed out in Section 4.3, a barrier which is particularly prominent for S-LCA was also that respondents perceived it to be overly academic, making its application undesirable. Its usefulness was further questioned by smaller companies because they have close ties with their suppliers and *“have feedback from them. So, this extra instrument [S-LCA] might not be necessary. We have mainly local impact on economy and territory, with all production [...] at km0 [Italian equivalent to the “Farm to fork” concept, which has also been applied to non-food sectors].”* (Interviewee #7).

## 5 Discussion

The thematic analysis of the interview responses revealed that the understanding of the social dimension in relation to CE practices was not yet well developed in companies engaged with CE practices. Yet, its operationalisation appears to fall under companies' general CSR strategies. The nature of the CSR, whether and how it is assessed depends largely on the company size, the sector, position in the supply chain and the environment which the company is part of.

Two main positions regarding the understanding of the social dimension and its connection with CE emerged, which lead to different implications in terms of social assessment. Either companies see the social dimension as an integral part of CE, or they attribute the social dimension solely to broader sustainability. This differentiation was also proposed by Calisto-Friant et al. (2020) who introduced the notion of a “Circular Society”, including social aspects in the CE concept, and the “Circular Economy”, which views social issues as distinct. Depending on how firms differentiate between CE and sustainability, a question which will be analysed in more detail in a future publication, social assessment is expected either to be further developed for CE within the scope of CE performance assessment, or to take the shape of existing sustainability assessment approaches. Notwithstanding that distinction, there were also several interviewees who did not find it relevant to assign the social dimension either to the CE or the sustainability concept.

Another main finding was that, while the interviewed firms are considered frontrunners in the field of CE, only a small number is actively engaged in assessing the social dimension. It is interesting that both firms from the “Circular Society” and “Circular Economy” narrative apply social assessment with the same frequency. After all, it could have been assumed that companies which perceive the social dimension as distinct from CE have a head start in social assessment, due to its earlier conceptual origins. Yet, the lack of assessment is mirrored in IE literature and SCM literature, where, in the past, social aspects were commonly just an afterthought in the assessment process (Doménech and Davies, 2009; Nakamba et al., 2017). It needs to be underlined, however, that several companies stressed they were closely following the methodological developments of assessing the social dimension, as they perceived the social dimension to be important to their business. Nevertheless, in the plethora of approaches available firms are lacking a standardised approach, which they would need to benchmark their performance against others. They are also missing data on upstream supply chains, which would require intense collaboration with supply chain partners and a certain level of trust to facilitate continuous exchange of information and initial investment for setting up necessary communication infrastructure. Additionally, it should be noted that some companies do not think further assessing social aspects is beneficial for them. Especially smaller companies which have close connections to their suppliers do not fear reputational risks, since the supply is local and based on trust.

Reputational risks are usually some of the main reasons why larger companies conduct social assessments (Govindan et al., 2020; Rosenbaum et al., 2018). In contrast, due to their local embeddedness, consumers are often aware of smaller companies' ethical missions, so doing an assessment would not necessarily add credibility to their corporate activities.

The firms which have conducted social assessments have mostly done so in a qualitative way, or turned to existing social sustainability assessment frameworks, such as the GRI, SA8000 or national industry standards. While the GRI includes the societal effects of companies, but is conceptualised as an external reporting framework, rather than an internal assessment tool (Kühnen and Hahn, 2019), the SA8000 is mostly focused on employees and immediate stakeholders, largely ignoring the downstream supply chain (Kühnen and Hahn, 2017). This renders the former tool somewhat limited in supporting internal decision making, while the latter tool struggles to capture socio-economic effects and to consider the life cycle perspective of CE. Concerning single indicators, in academic literature the indicator "job creation" is the one most frequently proposed to assess the social dimension of CE, whereas the indicators mentioned by the companies (depicted in Table 3) are broader. They cover large set of topics but seem somewhat scattered, also because they are not exhaustive. While "job creation" is also frequently reported, it is usually connected with the concept of social return on investment, meaning that firms employ people with distance to the labour market, which is not specified by CE scholars. It needs to be added that the interpretation of social return on investment is based on the Dutch policy for tenders, while the actual concept is much broader and connects several sustainability assessment tools (Scholten et al., 2006). Interestingly, the otherwise prominent health and safety indicators (Kühnen and Hahn, 2017) were not frequently recorded, because interviewees acknowledged these indicators had already been stipulated by national law and thus were considered as given. Instead, "soft issues" such as job quality and employee engagement were more prevalent among the answers.

Finally, S-LCA was only piloted by one large company within the sample, because the other respondents familiar with it described the methodology as too complex and multi-layered with limited additional value to the company. This is in contrast to the findings in the Delphi study of Kühnen and Hahn (2019), where S-LCA experts did not rate the lack of consensus on indicators or the lack of expertise as a high barrier. However, the experts also recognised that direct financial benefits of conducting a S-LCA were limited. Similarly to its modest popularity in the academic field (Kühnen and Hahn, 2017), the very same barriers that prevent scholars from more frequently applying this methodology are also present for industry practitioners. Given its origin in academia, S-LCA is, unlike other frameworks developed jointly with stakeholders (Goedkoop et al., 2018), perceived as less applicable in practice, cumbersome and not viable without external support by consultancies or universities.

## 5.1 Theoretical contribution

Within the sample under investigation, a relatively large share of firms engaged with CE are interested in the social dimension of CE. Even though the companies included in the study approach the assessment from two different perspectives, the division of assessing the social dimension as part of CE or sustainability seems obsolete in practice, given that social CE aspects are included by CSR policies. By contextualising these results with the social assessment development in the fields of IE and SCM, which preceded CE, it becomes evident that the issue of delimiting the social dimension is not new. The rise of popularity of the CE concept has once again brought up these unresolved questions. In addition, it also created new elements of uncertainty in terms of whether and how the social dimension should now be included in this novel development paradigm. Yet, that discussion distracts from the actual problems of defining and assessing the social dimension, since the assessment implications are similar in the different fields.

Frontrunner companies are still hesitant to make steps into the direction of social assessment because they lack expertise and there is no clear standard. Though social assessment approaches are available and partially standardised, academically developed methodologies such as S-LCA are, at this stage, not considered to be implementable for a variety of reasons. First, there seems to be some disconnect between the data requirements for accurate analysis and the data availability at company level, even though databases on social aspects such as PSILCA (Green Delta, 2020) are now available. Second, companies do not yet perceive social impacts of CE practices to be overly important to their CSR or risk management strategy, which are

two of the main areas usually informed by social assessment (Kühnen and Hahn, 2019; Rosenbaum et al., 2018). Instead, firms prefer management system standards such as the SA8000 and the industry-developed GRI to manage the social domain, which can potentially also cover social impacts created by CE practices. Therefore, scholars could potentially play a role in advancing knowledge and communication about the benefits of S-LCA, such as increased supply chain interaction, improved risk transparency and more informed decision-making (Kühnen and Hahn, 2017), especially in large companies. These firms would have the means to leverage the valuable information a S-LCA can provide, but are still hesitant, because of the limited comparability of the results. From the interviews, it also seemed like the existing S-LCA guidelines are not yet well disseminated or understood amongst sustainability and CSR managers, an issue also raised in literature (Kühnen and Hahn, 2019). Better knowledge of the guidelines might already reduce the bias against the methodology. At the same time, a simplified S-LCA procedure jointly developed by researchers and industry practitioners could help SMEs by showing the economic viability of social benefits, which have been confirmed in emerging economies by Mani et al. (2020) and Valdez-Juárez et al. (2018). Concerning larger companies, Croom et al. (2018), Sudusinghe and Seuring (2020) and Welford and Frost (2006) have also found that increased social sustainability correlates positively with the economic profitability in global supply chains.

## 5.2 Practical contribution

The findings from the interviews revealed that most companies which had just started to assess their social dimension did so in a qualitative manner. It is an important first step to discuss with stakeholders what actually creates additional social value, and to address it within the specific context of the company. Therefore, conducting a materiality analysis (Goedkoop et al., 2018; Whitehead, 2017) and defining the most pertinent social indicators (Kühnen and Hahn, 2019) could help companies to focus on the domains of strategic relevance and to reduce the scope of the assessment, making it more approachable. At the same time, certain basic social indicators should be stipulated (Dreyer et al., 2006), to avoid bias in the stakeholder consultation towards those who align with the business strategy. While it is understandable that companies prefer to use assessment approaches with a certain degree of comparability, this aspiration cannot completely be fulfilled (Kühnen and Hahn, 2018). Social assessment, to be effective, should consist out of some standard indicators based on a normative consensus, like the SDGs, but also include context specific indicators decided on by the stakeholders involved (Gasparatos and Scolobig, 2012). In this way, the lack of legitimacy due to the non-standardised nature of the assessment can be compensated by stakeholder inclusion. Particularly, large companies should take another look at S-LCA or related methods developed in collaboration with businesses, such as the PSIA (Goedkoop et al., 2018) and the social hotspot analysis (Benoit-Norris et al., 2012; Sousa-Zomer and Cauchick-Miguel, 2017), because they can facilitate the management of supply chain risks and innovation along the supply chain (Kühnen and Hahn, 2019; Rosenbaum et al., 2018). This is supported by the finding that most companies already use certain indicators attributable to the S-LCA stakeholder categories, limited in their scope by various internal and external barriers. Another best practice for large firms, which is indirectly related to indicators, are social procurement requirements for the public and private sector. While they do not need to be mandatory, favourable social performance could provide companies an advantage or extra points in tenders. These requirements would then be taken over by suppliers as internal indicators. Meanwhile, smaller companies which currently replace social assessment with communication and trust in their suppliers could also take matters a step further. Even though most of the suppliers within supply chains were certified, periodical auditing would ensure continued adherence to the certified standards.

## 5.3 Future research avenues

Since several CE practices are new, future research should have a closer look at the sectors where CE practices are most prevalent. These CE practices would then need to be paired with typical social issues they are related to. For example, Padilla-Rivera et al. (2021), who have applied a Delphi approach to identify social aspects and indicators, have found that CE experts consider consumer health and safety as the most important social issue in CE. The reason for this is that the recirculation of materials and products embodies new risks for consumers which are less pertinent in the linear economy and thus still need to be integrated

into the social assessment. More likely than not, suitable social sustainability assessments for these areas already exist and they can be adapted to novel CE practices. One example of this is the paper by Reinales et al. (2020). However, regarding S-LCA, the methodology should still be further developed to also be able to capture the “use phase” of the product, which is often left outside of the assessment scope (UNEP, 2009). Given the importance of the “use phase” in CE, due to extended product lifetime through value retention options such as e.g. reusing or repairing, it is essential to cover this life cycle phase as well, when assessing social aspects. Furthermore, it still needs to be established how the potential social impact of materials which have multiple life cycles should be assessed in terms of impact attribution throughout the different life cycles. While for the environmental and economic dimension this has already been discussed in more detail by Schaubroeck et al. (2020), to date no study has integrated the issue of multiple life cycles into social assessment in practice.

Furthermore, future research concerning the benefits of social assessment should also be directly related to the SDGs, given their normative basis (Kühnen and Hahn, 2019). However, it is essential that the SDGs are translated into an operable assessment framework for businesses, given that their current form is an evaluation framework laid out for countries (Kühnen and Hahn, 2017). Adapting the framework to an organisational level would allow companies to show their contribution towards these global targets, and hence increase the legitimacy of spending resources on social assessment. A first attempt of combining S-LCA with SDG-based indicators has been made by Herrera Almanza and Corona (2020). While the assessment of positive impact is seen as an essential step into this direction (Kühnen and Hahn, 2019), Croes and Vermeulen (2020) warn of the potential corporate greenwashing of activities, and hence propose to subject positive impacts to higher scrutiny in the assessment process. In line with the SDGs, it would also be the role of academia to question profitability as the only incentive for company behaviour and showing avenues of more holistic performance evaluations (Khmara and Kronenberg, 2018; Visentin et al., 2020).

#### 5.4 Limitations

The authors are aware that the large number of small companies in the sample might have affected the results of this study. However, given that SMEs are the backbone of the economy in Italy and the Netherlands, the results remain valid. Furthermore, the countries of analyses were limited to two, which means the findings need to be generalised with caution, especially outside Europe. Nevertheless, the socioeconomic contexts of the two countries are fairly different, implying a wider applicability within western Europe. Regarding the research method, the fact that the interviews were conducted in three languages might have led to some translation inconsistencies. These were kept to a minimum by relistening to the full interviews and discussing each interview in the research team, thus also compensating for not analysing full transcripts.

## 6 Conclusion

The conceptualisation of the social dimension in the context of IE and SCM allowed the authors to highlight that assessing social sustainability plays an integral role, if CE is considered as a pathway towards sustainable development. More so than in the other two conventional sustainability dimensions, the social assessment approaches are diverse, inherently context-dependent and mandate stakeholder inclusion to assure the legitimacy of the results.

By interviewing front-running companies engaged with CE practices in Italy and the Netherlands, this paper showed that most practitioners view the social dimension as important to their business, but do not have a clear picture of it. They either believe the social dimension is part of CE or part of sustainability. Yet, in both cases they describe it in a similar way as CSR. Most interviewed companies in the CE networks, which are supposed to be role models for other firms, do not yet assess the social dimension. While some claim this is due to the limited understanding in a CE context, others, which view the social dimension as part of sustainability, say that social assessment is lacking standardisation. Their fear of lacking legitimacy of the assessment can mainly be tackled by stakeholder inclusion and extensive communication about the assessment process itself, creating transparency. Meanwhile, especially smaller companies see no need in

assessing the social dimension, because their company is already based on a social purpose. The firms that do apply assessment approaches mostly rely on qualitative assessment, such as joint stakeholder evaluations or surveys. Moreover, especially larger companies derive their indicators from established frameworks such as the GRI or the SA8000 to create indicators. S-LCA was met with limited enthusiasm due to its academic nature and limited applicability. Therefore, the authors propose that future research should further promote its benefits and help to improve and disseminate simplified versions such as the PSIA and the social hotspot assessment for SMEs, wanting to assess their CE practices. At the same time, research on the positive effect of social aspects on companies' profitability as well as their contribution to the SDGs could further motivate those companies which are currently not convinced of the usefulness of social assessment to invest in this area. In addition, the perspective of other stakeholder groups, such as the third sector or policy makers, could be analysed in more detail. Though Padilla-Rivera et al. (2021) have already done a step into this direction by including a diverse set of experts, it would be interesting to find out whether the conceptualisations of the social dimension and its assessment differ between the stakeholder groups.

With the results obtained in this study, the authors aspire to broaden the knowledge on the relevance of social assessment in frontrunner companies engaged with CE practices. The juxtaposition of theoretical findings and empirical evidence sets out the scope to develop and adapt existing social assessment approaches that are both applicable by industry practitioners and methodologically sound from a scientific perspective. These assessment approaches should then support informed decision-making on whether a putatively innovative CE practice also entails superior social performance. Yet, given the strong context-dependency of social aspects, the final answer to this question ought to be evaluated on a case-by-case basis.

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## Conflicts of interest

The authors declare no conflict of interest.

## Appendix Interviewees and their companies' characteristics

**Table A.1** List of interviewees with attributed company characteristics

Code	Company size	Country	Sector
Interviewee #1	Micro	Italy	Accommodation & food service activities
Interviewee #2	Micro	Italy	Construction
Interviewee #3	Micro	Italy	Other
Interviewee #4	Micro	Italy	Accommodation & food service activities
Interviewee #5	Micro	Italy	Professional service activities
Interviewee #6	Micro	Italy	Other service activities
Interviewee #7	Micro	Italy	Manufacturing
Interviewee #8	Micro	Italy	Professional service activities
Interviewee #9	Micro	Italy	Manufacturing
Interviewee #10	Micro	Netherlands	Other service activities
Interviewee #11	Micro	Netherlands	Other
Interviewee #12	Micro	Netherlands	Construction

Interviewee #13	Micro	Netherlands	Other
Interviewee #14	Micro	Netherlands	Construction
Interviewee #15	Micro	Netherlands	Professional service activities
Interviewee #16	Micro	Netherlands	Other
Interviewee #17	Micro	Netherlands	Other
Interviewee #18	Micro	Netherlands	Other
Interviewee #19	Micro	Netherlands	Other service activities
Interviewee #20	Micro	Netherlands	Professional service activities
Interviewee #21	Micro	Netherlands	Other
Interviewee #22	Small-Medium	Italy	Other service activities
Interviewee #23	Small-Medium	Italy	Other
Interviewee #24	Small-Medium	Italy	Accommodation & food service activities
Interviewee #25	Small-Medium	Italy	Manufacturing
Interviewee #26	Small-Medium	Italy	Manufacturing
Interviewee #27	Small-Medium	Netherlands	Water & waste management
Interviewee #28	Small-Medium	Netherlands	Other
Interviewee #29	Small-Medium	Netherlands	Construction
Interviewee #30	Small-Medium	Netherlands	Other service activities
Interviewee #31	Small-Medium	Netherlands	Other service activities
Interviewee #32	Small-Medium	Netherlands	Manufacturing
Interviewee #33	Small-Medium	Netherlands	Other
Interviewee #34	Large	Italy	Manufacturing
Interviewee #35	Large	Italy	Accommodation & food service activities
Interviewee #36	Large	Italy	Water & waste management
Interviewee #37	Large	Italy	Water & waste management
Interviewee #38	Large	Italy	Manufacturing
Interviewee #39	Large	Netherlands	Construction
Interviewee #40	Large	Netherlands	Other
Interviewee #41	Large	Netherlands	Manufacturing
Interviewee #42	Large	Netherlands	Other
Interviewee #43	Large	Netherlands	Other service activities

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