Size matters in a Circular Economy

An introduction to the Circular Futures Approach to support Small and Medium-sized Enterprises (SMEs) transitioning to Circularity and to a Futures-oriented organisation

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Abstract

The Circular Economy (CE) is conceived by many as paramount to decouple economic growth from environmental impacts and resource depletion. Implementing this economic paradigm in the private sector is challenging, as it requires substantial changes at the strategic level. However, while SMEs represent 99% of all businesses and 67% of employment in Europe, the available support for a CE transition has been mainly focused on large corporations. Therefore, the backbone of the European economy might be left out by the CE if tailored solutions are not implemented for SMEs. Furthermore, most strategic decision-making activities lack Futures Literacy (FL): the capability to understand the role that the future plays in influencing the present and the skills to generate the imaginary futures to catalyse change today.

Through a literature review, complemented by a snowballing technique, we reviewed the available CE and FL approaches and analysed further the most prominent of these frameworks. As the available frameworks lack guidance for their implementation, we developed an integrated and systematic process to make it more practical and applicable, especially for those SMEs to which the FL concepts are novel.

The combination of Futures Studies (FS) methods and a Futures mindset could contribute to a successful transition towards sustainable futures by (i) understanding the different concept and meanings of the term future(s); (ii) exploring possible future pathways for better decision-making in the present, and (iii) building resilience for unexpected events to survive and stay future-relevant in

uncertain times. The developed process provides a customisable approach to SMEs, contributing to both disciplines' literature. This paper attempts to discuss the relation between FS, CE and how SMEs can thrive with the support and input of both disciplines.

We expect this research will influence the interface between top-down policy-making and bottom-up business decision-making as a valuable hands-on guideline. By that, the approach could enhance the policy developments that focus on supporting the vast number of existing and future SMEs in Europe and around the globe.

Keywords: Circular Economy; Future Studies; Small and Medium-sized Enterprises; Futures Literacy, Futures Thinking

1. Introduction

The world has been in pandemic mode for almost two years due to the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), leading to the coronavirus disease (COVID-19), the fastest-growing global pandemic in human history (Our World In Data, 2021). This resulted in higher uncertainty and uncovered a series of global vulnerabilities Going beyond its terrible human toll (this pandemic has caused more than three million deaths at the time of writing), the impact of COVID-19 on the economy has severely affected the business environment. The most acknowledged effects of the virus outburst on enterprises have been supply chain and transportation disruptions, raw material shortage, cancellation of orders, and decreased market demand (Shafi et al., 2020).

If present pressures continue, these could result in an unprecedented and significant group of organisations left behind in the markets of the future (World Economic Forum, 2021). Among all, Small and Medium-sized Enterprises (SMEs) have been impacted the most (Shafi et al., 2020). We addressed a series of primary causes: more economic vulnerability of SMEs than large multinationals because of reduced financial and managerial resources, more dependency on routinary business transactions, and more limited customer volume than large enterprises.

Acting upon this crisis, in addition to more silent but systemic and pressing worldwide issues, such as global rising temperatures, ocean pollution, loss of biodiversity and food, as well as water security (United Nations, 2021; IPCC, 2014) demands immediate and efficient decision-making to navigate current and future challenges (Foer, 2019).

To navigate and address these 21st-century challenges, it has been argued that the CE has the potential to increase resilience in organisations whilst bringing about positive impacts in several other spheres related to society and planet Earth compared to the current linear model of production and consumption (Prieto-Sandoval, 2021; Wuyts et al., 2020). At the organisation level, this change of paradigm could be a catalyst for improving, sustaining or keeping their enterprises alive. However, in the absence of solid evidence on the promises that it holds, the CE requires more in-depth scrutiny (Lazerevic and Valve, 2017). Other studies demand a greater focus to reflect and explore how the

different potential, possible, plausible and preferred futures look like under a CE paradigm (Voros, 2003). However, the current body of literature pays little attention to how SMEs could benefit from combining CE principles and FS methods to explore and seek preferred futures (Weigend Rodríguez et al., 2020).

Given the above, this manuscript introduces a novel concept, which we call "Circular Futures" (CF). To make this concept actionable, we have turned it into a methodological approach for SMEs, which we define as the "Circular Futures approach" (CFA).

The following research questions are stated, and this article will discuss and attempt to answer them:

1. How does the CFA contribute to SMEs for a successful transition to circularity?
2. What steps and activities should SMEs follow for a successful transition to CE and Futures Thinking implementation?

The remainder of the paper is structured as follows. Section 2 explains the methodology applied for the literature review. In Section 3, we summarise and discuss the fundamental concepts of CE, FS, and SMEs. Section 4 analyses the existing approaches on CE and FS and introduces the methodological advancements of our designed Circular Futures Approach. It then outlines its required implementation steps. Section 5 discusses the main contributions of the approach. Section 6 highlights its current limitations and concludes the paper.

2. Methods

A systematic literature review was carried out to understand the level of interdisciplinary research between CE and FS in the SME context. The first approach used to gather information was a bibliometric review. Data was sourced from Dimensions, an inter-linked research information system provided by Digital Science (Dimensions, 2021). We used this software due to its dynamic research data platform to explore connections and develop meaningful data. However, to corroborate our findings, we also searched four additional academic search engines: Google Scholar, Microsoft Academic, Research Gate, and Connected Papers. Data collected for this study was last updated in May 2021. The keywords used were "Circular Economy", "Futures Studies" and "Small and Medium-sized Enterprises (SMEs)". When these keywords were used together to search for titles and abstracts, we found no publication containing these keywords.

A snowballing technique (Jalali and Wohin, 2012) was adopted to build up our bibliometric analysis. To start using the snowballing procedure, we identified a set of papers that focus on CE, FS and/or SMEs that were either high on the number of citations or deemed highly relevant by the authors for the topic explored in this paper. Mainly articles written in English were reviewed with some exceptions of papers written in Italian or Spanish. The snowballing procedure was stopped when no

new publications relevant for this research were found. A total of 126 publications including books, journals and consultancy publications were analysed using this approach. In the next section we discuss the findings from our snowballing technique.

Mainly, in sections 4 and 5, we also combined our literature review with a narrative technique (Caprotti, 2014) as two of the co-authors are professionally engaged with FS and three of the co-authors are professionally engaged with CE and exploring it also on an academic level.

3. Theoretical background

This section is allocated to a concise overview of the literature review. The initial notion is the one of CE, whilst considering the context of SMEs. Subsequently, the focus is on FS, and the relevance of FS in circularity applied to SMEs.

3.1 Circular Economy

Based on the Ellen McArthur Foundation (EMF) definition (EMF, 2021), a CE is regarded as a new economic paradigm applied via-à-vis the linear take-make-waste extractive industrial model. A CE aims to redefine growth, decoupling it from excessive resource extraction and exploitation while focusing on positive society-wide benefits. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: 1) design out waste and pollution, 2) keep products and materials in use, and 3) regenerate natural systems by returning and retaining the biological and technical nutrients into the system (EMF, 2021). One of the fundamental tools outlining the three basic principles of CE and how they could be applied into practice, in this particular case by SMEs, is the Butterfly Diagram (EMF, 2013). The diagram illustrates the many possibilities to avoid resource leakage by slowing, narrowing and closing both biological and technical loops. The former refers to the management of biological resources, renewables and stocks, whilst the latter focuses on solutions to retain components, materials and products in technical loops. Notably, the Butterfly Diagram is intertwined with the ReSOLVE Framework, which has been designed by the EMF to support businesses in identifying six core actions areas that can be taken to apply the CE principles: regenerate, share, optimise, loop, virtualise, and exchange (EMF, 2013).

The CE concept is debated mainly by academics, policy-makers, practitioners and professionals as a branch of sustainability science. Mainly entrenched in principles of industrial ecology (Erkman, 1997), Cradle-to-Cradle products and systems design approach (Braungart et al., 2007) and cleaner production (Fresner, 1998). Recent literature has focused on addressing the need for increased resource efficiency at the core of organisations' action plans, exploring more sustainable ways of conducting business (Garcés-Ayerbe et al., 2019; Salvador et al., 2020). Although CE embeds multiple disciplines, methodologies, approaches, and tools to support the transition towards a more sustainable and resilient society, the available support to the private sector falls short in providing a structured methodology to guide SMEs in the transition towards an alternative course of action to the linear model (Prieto-

Sandoval et al., 2021). Instead, the majority of studies have been mainly focused on large corporations. According to Ahola and Tolonen (2021), SMEs and any other size of organisations should begin their journey to circularity to ensure the long-term viability of their business, either financially, from a resource dependency point of view or from a licence to operate point of view.

3.2 Futures Studies

Futures Studies (FS) apply a holistic approach in organisations. By creating visions, aligning the strategy with them, having the courage to change actively and looking at all processes, communication channels, organisational structures, employee recruitment and promotion, product and portfolio management and finally, the technological components of the organisation as a whole, the challenge to remain future-relevant can succeed. Organisations are not likely to survive by only passively observing competitors or the industrial environment. They must therefore start thinking about the future and align their strategy to these long-term goals. These organisations will have a greater chance of surviving the emerging economic depression and other future challenges by showing the courage to change and tread new paths (Rohrbeck and Kum, 2018).

In addition to the courage to have visions, organisations need resilience, which can be achieved by applying a Futures mindset. Organisations need to learn how to think about alternatives to expand their potential space for manoeuvre and apply their strategies in an agile manner. When the realisation is reached that it is not essential (or possible) to predict the future but to deal with a certain degree of uncertainty and increased complexity, organisations remain actionable at any time and in any situation. This can be achieved through the appropriate application of FS methods. However, this way of thinking must be applied throughout the entire organisation and requires managers to better assess the consequences and implications of their actions and make decisions based on the explored alternative futures and a previously agreed vision. Agile methods and strategies can then compensate for the given uncertainties of the changing future. Instead of falling into a state of shock, entrepreneurship and opportunity optimisation are created. Combining human-centricity, long-term vision, agility, and resilience aligns organisations with the future and enables them to survive even in times of high uncertainty, such as global pandemics like the COVID-19.

3.3 SMEs

SMEs have been hit the hardest by COVID-19 (World Economic Forum, 2021). The World Economic Forum (2021) estimated that SMEs generate around 80% of employment, while Garcés-Ayerbe et al. (2019) reported that nearly 95% of organisations in OECD countries are SMEs. In contrast, in Europe, the percentage increases up to 99% (Ormazabal et al., 2016). Considering their prevalence in the European and international landscapes, SMEs play a critical role in the diffusion of CE corporate practices. However, barriers such as limited resources hamper their potential to reach high economic

and environmental performance at the root of fully nature-inspired and regenerative solutions (Mura et al., 2020). Ormazabal et al. (2016) conducted a survey study focused on SMEs in northern Spain, which identified several barriers including lack of capital as well as government support, scarce financial resources and customers' uninterest in environmental issues. Another analysis by Rizos et al. (2016) was conducted on a selected sample of SMEs, from solutions providers to distributors, to end-users, and pointed at similar barriers when implementing circular business models. The study revealed that 54% of the sampled SMEs suffered from the lack of support from both the supply and demand networks, followed by a lack of public (funding) support. Alongside limited resources, other SMEs experienced hindering company environmental cultures that would prevent investments in methods and tools to explore possible futures for the company or specific innovations, mostly because the corporate horizon planning is short-sighted (Rinkinen and Mäkimattila, 2015).

Despite studies proving that the CE adoption into business model innovations can help organisations achieve competitive advantages in challenging contexts (Mendoza et al., 2017), practical implementation of CE practices is scarce in the literature (Urbinati et al., 2017). The available support for a CE transition is mainly focused on large corporations. In this regard, the benefits that a guided and structured approach entails for SMEs are numerous, starting from a better understanding of the key elements to implement and the specific CE principles that apply to the organisation and which different aspects of the business can be the focus on the intervention (Järvenpää et al., 2020). Such an approach should also develop the necessary capabilities in their employees involved in this transition, especially to generate the organisation's preferred future collaboratively. Furthermore, for SMEs operating in the CE, their need for futures approaches linked to strategy and their business development is crucial (Järvenpää et al., 2020; Rohrbeck and Kum, 2018).

4. Circular Futures Approach

There are major shared characteristics between CE and FS and a common objective. Both disciplines aim to maintain or improve the welfare and freedom of humans, as well as the welfare of all living beings, plants, and earth's biosphere for their own sake (Bell, 2009). However, whilst both disciplines are working towards the same goals, until now, they show little interaction (Weigend et al., 2020). As the available frameworks from CE and FS lack guidance for their implementation, we developed an integrated and systematic process to make both concepts more practical and applicable, especially for those SMEs in which the Futures' concepts are new. Therefore this paper represents the first methodological effort that integrates both disciplines' contributions into a unifying approach. We named the proposed approach "Circular Futures" as it combines key CE and FS principles, and FS methods. We define this approach as a systematic process that enables organisations to explore alternative futures while acting in the present to create a preferred sustainable future that gravitates

around essential CE and FS principles. As French novelist Antoine de Saint-Exupéry most eloquently wrote in 1948, the future ought not to be foreseen but enabled (de Saint-Exupéry, 1948).

As defined by Webster (2017, p.22), the fundamental CE principles are 1) "to become an economy built on the endless flow of energy from the sun, which transforms materials into valuable goods and services endlessly"; 2) "to build capital and maintain it, where money is seen as information that stimulates and coordinates the exchange of all things and where prices act as messages and reflect the total cost of things just as materials need to flow cleanly and without contamination for new cycles"; 3) "like all living systems, CE is dynamic but adaptative and, if it endures, it will be effective"; 4) "to thrive by celebrating diversity as a fount of creative adaptation, a means of resilience, a source of redundancy or back-up, and lastly"; 5) "CE is led by business for a profit within the rules of the game, decided by active citizenship in a flourishing democracy".

Regarding FS, there are five main principles: 1) the future exists in multiples, as it is not written yet. Instead, it exists in parallel futures; 2) the future is a space and not a time destination; 3) the pathway into the future is spiral, not linear; 4) how we think about the future influences our current decisions in the present; 5) most changes start with a disruption coming from outside the usual business or industry. However, they have the power to transform the field entirely.

We have combined all of these principles from both fields and have created an integrated approach. As inspiration for our new process, we first reviewed existing FS frameworks to build on a structure that has already been used and approved by the FS field. Therefore, we analysed the following frameworks.

1) 'Generic Foresight Framework' by Voros (2007)
2) 'Six Pillar Approach' by Inayatullah (2008)
3) 'Natural Foresight Process' by Salvatico and Spencer (2019)
4) 'APF's Competency Model' by Hines et al., (2017)
5) 'FTI Forecasting Model' by Webb (2020)

We decided to use the Six Pillars approach as our guiding structure as it offered us the most flexibility to adapt the process. Then, we enhanced the approach and built it around the theme of exploring outer space. Metaphorically speaking, exploring space denotes exploring the possible futures for the organisations, and the orbit that the organisation must gravitate around are the CE and FS principles. The Circular Futures Approach (CFA) is made of seven phases: 1) Surveying, 2) Mapping, 3) Exploring, 4) Cruising, 5) Encountering, 6) Landing and Probing, and 7) Transforming, as shown in Figure 1.

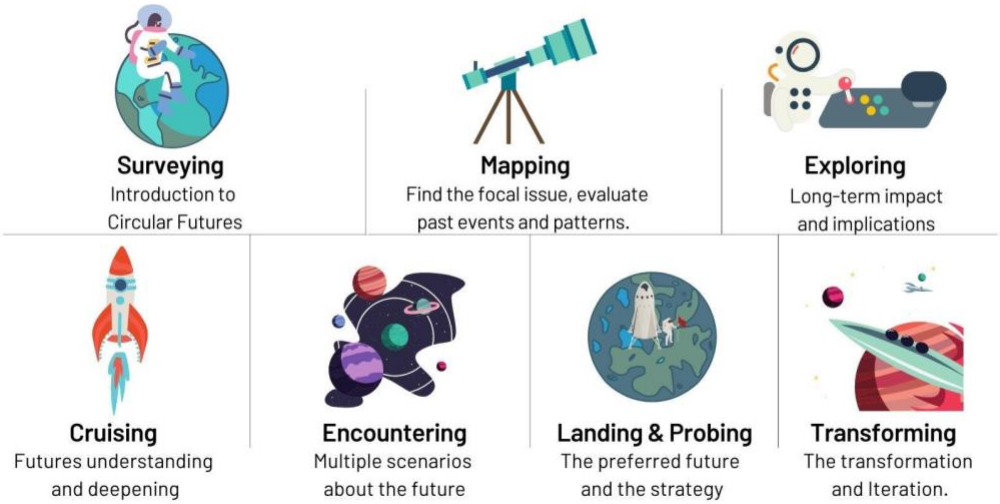

Figure 1*. Circular Futures Approach.*

The seven phases and the activities within each stage are explained below:

4.1 Surveying

This phase of the approach introduces the definitions of both disciplines (FS and CE), key concepts, characteristics, and shared goals. The activities that take place in this stage are:

1) The Masterclass. A visual presentation with the most relevant concepts and examples of organisations implementing FS and CE.

2) The Polak game. It is a popular exercise within the Futures community, named after Frederik Polak, considered one of the fathers of the FS discipline. In this game, the objective is for participants to map themselves in a 2 x 2 matrix. Firstly, participants allocate themselves on the matrix by how they perceive the change in the world: either towards an optimistic or pessimistic future. Secondly, the participants are asked whether they consider having influence or not in the state of the future. This activity helps organisations consider the different viewpoints that each individual has about the future. It also opens up a rich discussion in which the participants share the nature of their answers, their moral basis, and culture (Hayward and Candy, 2017).

3) The Readings. Selected readings and case studies as complementary material for those participants who would like to expand their knowledge to prepare for the subsequent phases.

4) Six basic futures questions. This activity requires answering six basic questions of Futures Thinking related to the concepts of the used future, the disowned future, alternative futures, alignment, models of social change, and uses of the future (Inayatullah 2008). These questions are to be answered by the SME managing director(s). The reason for just involving this role in the activity is to engage with the prominent leader(s) of the organisation to understand better the process of change and the importance of working towards a preferred future so that the leader can be the first catalyst of change within the organisation.

5) The State of Play. Lastly, the participants asked to answer a set of questions called the "State of Play" (Rao, 2020). These are 20 questions that help organisations to uncover the state of play (current situation) in their business. Specifically to turn an unconscious sense of the business into a conscious one.

4.2 Mapping

This phase focuses on finding the focal issue or most crucial challenge that the organisation faces to survive and evaluate past events and patterns to establish narratives about the future. The tools that enable to achieve these outputs are five:

1) The Circular Thing from the Future. 'The Thing from the Future' is originally an existing downloadable open-source card game. Our approach adapted it by adding the principles of CE and making it playable as a virtual online game. The game's object has initially been to use a set of cards, divided into four groups, to generate new artefacts or "things" from the future. The four sets of cards are: a) arc, which outlines the type of future world that the "thing" comes from and how far away it is from today; b) terrain, which is the thematic location where the object is to be found in the future; c) object, a specific cultural element that reveals something about how the state of the future is different from the present; and d) mood, which express how it might feel to experience this object from the future (Hayward and Candy, 2017). The way the players create the artefacts from the future is by producing their brief description and sketch or collaging images of the object they have developed by combining the cards. We modified this game for our approach by aligning it with the CE principles. Therefore, we included two additional groups or cards, circular business models, and circular design strategies. A second modification of the game is to have two rounds with different objectives. The first round is to develop a (circular) artefact about the future (as in the original game). In the second round, the goal is to develop a circular product for the organisation where the participants are working.

2) Futures Triangle. In this method, the future is mapped by understanding three dimensions (future, present and past), the image of the future (a preferred vision of the organisation for the future), the existing and observable pushes of the present (such as trends that lead towards the preferred futures), and the weight of the past (such as systems, structures and barriers that hold the organization back to reach their preferred future). First, the group is asked, "what is your preferred future?". The second dimension, the present, answers the question, "what are the trends and drivers pushing towards the image of the future previously identified?". The last step is to move to the third dimension and answer the question, "what are the weights from the past that keep us from reaching that image of the future?". By answering those three questions in each angle of the triangle, the organisation gained first insights on their relation to the future and indicators how to reach it.

3) The Futures Landscape. This concept from Tibbs (2000) introduces Futures Thinking in the organisational concept by imagining it as a landscape. Using the metaphor of a star, the mountains, a chessboard, and the self, explain the interconnections between vision, goals, strategy, and personal

biases within an organisation. The star in the horizon describes an organisation's vision, providing guidance even in uncertain times when we cannot see what is coming next. In order to fulfil this vision, an organisation needs to climb certain mountains which represent the strategic goals. On the other end of the landscape is the organisation and its employees, representing their values on how to perceive the world. Those biases and assumptions are represented to reach the goals. The chessboard also represents the environment in which the organisation needs to navigate to reach its goals. To make this concept practical, the organisation gets together to map the landscape. They begin with a shared vision, the star; the vision must be shared amongst all stakeholders. The same goes with the mountains, the goals. Following this, they map their individual and organisational values at the bottom of the landscape; this is the lens through which they see the world. For the chessboard they write down their current strategy on how to reach their goals and map their current environment (stakeholders, customers, competitors, regulations). The chessboard is also directly connected to the scanning activities, which are explained later in section 4.3.

4) Past Janus Cone. The Janus Cone looks backwards and forwards in time to see the chronological sequence of historical events and also how the passage of time may affect possible future events (Carleton et al., 2013). It is an adaptation of the Futures Cone from Voros (2007) that looks mainly forward in time. At this state, we only look into past events and, hence, only run through the first part of this method. By looking backwards, we can identify patterns that may implicate some future developments, and are used for the following scanning activities.

5) Butterfly Diagram [present]. This diagram was adapted from the CE model developed by the EMF (2013). When visually dividing it into three horizontal sections for analytical purposes, the upper section illustrates the first principle: preserving, regenerating and restoring natural capital by managing finite resources and renewables. The central part of the diagram has two sides: the left side illustrates the loops and cascades of the biological cycle, in which biological resources, renewables and stocks are managed. The right side displays the technical cycle and the circularity loops to keep materials in use. The centre after that illustrates the second CE principle: enhancing the usefulness of products, components and materials throughout both biological and technical loops. Finally, the lower part of the diagram focuses on the third principle: developing effective systems that design waste and negative externalities. In the exercise we have developed, the group is asked to fill in text boxes and indicate the company's status in each loop and/or cross-section of the Butterfly Diagram by considering all principles mentioned above in their rationale. This exercise entails a single yet comprehensive snapshot of the organisation's current status in the CE biological and technical loops.

4.3 Exploration/Launch

In this phase, the purpose is to anticipate future issues and explore countless possibilities for new products and innovation within the complex connected global arena. During such interaction, participants are confronted with the reason (the 'why') they should actively participate in implementing

the CFA by realising the long-term impacts and implications of moving towards a CE and Futures-oriented organisation.

1) Scanning. As explained in the Futures Landscape in section 4.2, it is vital to be constantly and intensely aware of what is going on around us in the environment, both immediate and external, as this affects our daily actions. Therefore, the members of the organisation need to be looking out for signals and patterns of change. Scanning is then how organisations explore their ever-changing surroundings to identify changes in the future, present, and past. Several frameworks are utilised to conduct scanning activities; the most popular one is around the STEEP categories (Social, Technological, Environmental, Economic, and Political). In this phase, the focal issue or the main research question explored in the Mapping phase is taken forward, followed by the actual collection of weak signals. Looking out for signals in non-mainstream places, wearing different hats and different lenses besides challenging one's own biases is critical for this stage. These collected signals need to be stored, organised and analysed; this stage is called Sensemaking and is further explained in section 4.4.

2) Emerging Issues Analysis. Figure 2. shows the life cycle of a trend and highlights that all trends arise from emerging issues, whereas emerging issues can evolve from weak signals, which are to be found in the very left corner of the graph (Conway, 2015). Weak signals give a glimpse into the future but are hard to find. They are signals that mostly only appear in a geographically limited region and, therefore, are only noticed by a small number of people but may become a driving force in the future (Miles et al., 2016). The case with megatrends is that these do not happen linearly; megatrends develop over a long period, have global effects and tend to stay long-term. After scanning, the collected signals should be clustered using this framework.

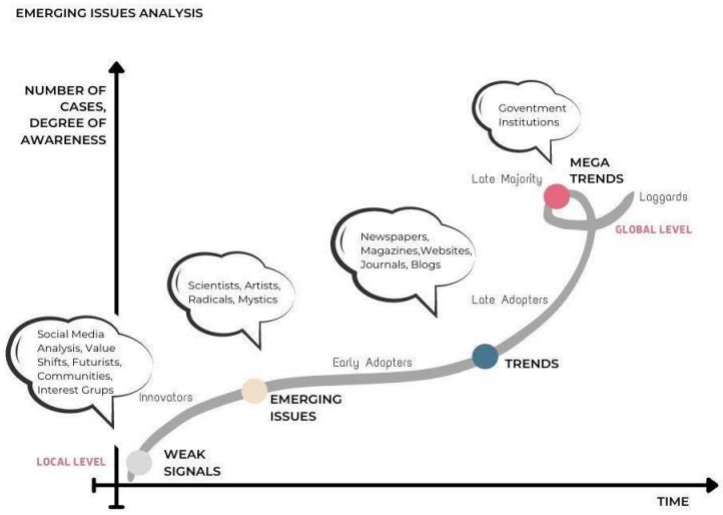

Figure 2. *Emerging Issue Analysis in comparison to other phenomena adapted from Molitor, Rogers and Schultz (Schultz, 2006).*

3) Futures Janus Cone. After looking backwards in time with the Past Janus Cone exercise, we continue looking forward and mapping the collected trends into the future. This identifies patterns and makes sense of future uncertainties by comparing past patterns with patterns emerging in the future. The participants of the organisations are asked to map the identified patterns alongside their relevance for their business, level of impact and approx. appearance in time.
4) Butterfly Diagram [future]. As previously explained in the Mapping phase, the group is asked to fill in the text boxes for each of the loops and cross-sections displayed on the Butterfly Diagram [future]. Compared to the first Butterfly Diagram [present], the group is asked to indicate what they envision for the company in each section, with a timeframe to reach such a vision in the future, they then express the rationale behind their choices. The direct results from the scanning activities can be used as input to enhance the diagram and to identify new opportunities.

4.4 Cruising

This phase aims to obtain deeper insights into the why; look at ingrained behaviours, society's drives and systems. Here we navigate the future and the present by gaining a better understanding of who we are.
1) Sensemaking. This activity is where the collected signals start making sense for the participants. As a very natural process, once a series of signals of change are collected, patterns emerge; some patterns emerge organically when signals are grouped into commonalities. Other patterns need to be further analysed by the team to find potential implications of these changes in the organisation's surroundings. Signals in isolation may seem relatively unimportant, but these, when identified early and linked to a particular issue, can be of great benefit to the design of strategic pathways. A series of frameworks are used; causal loop diagramming, Impact/Uncertainty matrix, among others.
2) Futures Wheel. This method looks like a three-ringed wheel, hence its name. As with emerging issues analysis in the previous phase, this method facilitates anticipating the future by deliberating on how today's emerging issues can develop and, most importantly, which consequences could create in the longer-term future. The trend, innovation, or event is written in the centre of the wheel (depending on which of them is most uncertain for the organisation and needs to be further explored). From there, trim rings are drawn from the centre to a second area, and these rings are filled in with the primary consequences; a ripple effect continues to a second and third set of consequences or until the implications of the event are clear. This method does not stop at first-order consequences; it helps explore and deduce the unthinkable consequences (Inayatullah, 2008).
3) Sarkar Game. This role-playing game was invented by academics and futurists Voros and Hayward (Inayatullah et al., 2006) to obtain a more personal and deeper understanding of alternative futures (Inayatullah, 2008). The game has four types of roles, which represent four powers: the worker, the warrior, the intellectual, and the capitalist, and each of these archetypes has a positive and a negative

aspect. We also adapted this game by adding another role called the activist, to represent the current development of political movements. By playing this game, the individuals can learn their social constructions and how each role limits or not the effectiveness of their professional activities within an organisation (Inayatullah, 2008). The aim of the game is to identify that in order to provoke change we need to step outside of our roles and empower collaboration amongst those systems. A new role created by the participants may be introduced as a consequence.

4) Causal Layered Analysis (CLA) - part 1. The CLA is a method that helps organisations to articulate core metaphors, develop new strategies and measures of success. The contribution of CLA is to be alert to litanies, worldviews, systems and metaphors within the organisation. CLA has these four layers deep and two parts wide: the present (part 1) and the future (part 2). According to Inayatullah (2008), CLA is promoting critical futures discourses of the future where it decisively moved from ontological concerns about the nature of the predictability of the universe to epistemological concerns about the knowledge interests in varied truth claims about the future (Kuusi., et al., 2016). The CLA (part 1) helps to unveil the current status of the company and supports the mapping of present needs. This method helps organisations first by enhancing their ability to be alert to new possibilities before deciding how to address a problem or challenge. The result of this method is also a deep revealing experience of the power of worldview and metaphors that dominate the decision making within the organisation.

4.5 Encountering

The Encountering phase is dedicated to imagining and visualising alternatives to uncover multiple scenarios, to show that there are options and alternatives, possible futures. It also touches on the different layers towards a preferred future.

1) The Space Mission. This is a new method loosely based on CLA, created to imagine visions and build scenarios. It describes an alternative future on four levels: litany, systems, worldview and metaphor. Like pieces of the puzzle, this method is designed to help participants create the building blocks of a story with five possible scenarios by using the following structure:

1. Time frame -- the when (minimum of 10 years into the future)
2. Metaphor - planets and their framing - the where (meta)
3. Litany (individual) - a message from the future - the what
4. Worldview with weak signals - the where (macro)
5. Systems with STEEP+H +V+CE[1] analysis - the how
6. Litany (collective) by describing the planet - the why
7. Characters (customers, competitors) with future personas - the who

[1] STEEP (Social, technological, economic, environmental, political) + H (Habitat) + V (Values) + CE (Circular Economy principles).

8. Storylines with empathy maps - the where (micro)

The method starts with a visioning exercise where the participants are asked to close their eyes and imagine a space mission in time selected where they have to find new planets because planet Earth has become uninhabitable. Each of these planets is ruled by a new theme and has different properties (challenges and opportunities) depending on the organisation's goals defined in the earlier process. Further, each planet has different CE principles and tools available to overcome those challenges and seize the opportunities. In the end, each planet functions as the terrain in which a new scenario will come to life. By moving through the different building blocks described above, participants are asked to imagine the new worlds, their worldview, systems, characters and their storylines resulting in a 'Day in a Life' story of one character on the new planet. By using this metaphorical approach the organisation learns to think about the current world from an angle of new possibilities, removing the barriers of the present. In the end of the process, they have a set of scenarios that offer new challenges and opportunities for their business. The input gained from this exercise can then be used as an inspiration to define the transformed metaphor of the preferred future in the next activity (CLA - part 2). This method has been created by two of the co-authors of this paper (Schindler and Guadarrama). A complete publication of this method will be available by the end of 2021.

2) Causal Layered Analysis (CLA) - part 2. As explained by the CLA in section 4.4, this method is tailored to foster people's imagination and think metaphorically to facilitate the transformation process by better understanding the deeper levels of the change processes. The CLA (future) helps create alternative futures by bringing different worldviews and stakeholders into the futures process. By being inclusive, the resultant strategy is often more resilient and robust. After a shift in the metaphor of the organisation, this method lines out the necessary changes in the organization's culture and processes to enable their preferred vision.

4.6 Landing and Probing

A preferred future has been described in the previous activities; this phase is the next step after knowing where the organisation wants to go. This phase is concerned about the how, the strategies, the steps and milestones one needs to make to achieve that future. Moreover, it looks at making the future image more tangible by introducing storytelling in future artefacts.

1) Strategy Diamond, by Hambrick and Fredrickson (2005), provides a framework to create a solid strategy based on the assumption that by answering the following questions of the following domains to define a profound strategy: Arena - where will the organisation be active?; Vehicles - how does the organisation get there?; Differentiators - how does the organisation win in the marketplace?; Economic logic - how will returns be obtained; and Staging - what will be the speed and sequence of moves. Thereby, all five fields are interrelated and only when the organisation is able to align them to create a mutual reinforcement, it will outperform the competition.

2) Windtunneling. This exercise assesses strategies that are discussed in the previous section. It is the process by which strategic options are evaluated in terms of cultural fit, financial performance, and risk. This is done by drawing out the strategies versus the scenarios created in section 4.5 into a matrix. The purpose here is to define the better strategies to go forward within any of the scenarios. This is a multi-coverage strategy and is meant to be a good fit for any possible outcome. Other strategies are avoiding strategies; these are meant to prevent the future that is not desired. Shape strategies are designed to push for and create a preferred future, and there are also strategies to adapt to the possible futures.
3) Experiential Futures - Artefacts. The goal of this Experiential Futures' immersive experience is to create impact by bringing one or more of the five scenarios from the Encountering phase to life in the form of an artefact and get participants to live it. These artefacts make the possible futures more tangible, and bridge the gap from the future into the present. This activity seeks to create empathy and understanding towards an environment, an industry, and ourselves as humanity. Creating an artefact that lives in that vision of the future helps one grasp what is possible and how one would feel and act if that were to happen.

4.7 Transforming

After all of the previous work from the six phases this is the point where all of the insights gathered are applied to set concrete and actionable steps in the present to reach organisational transformation towards the preferred future.
1) Reflection Exercise. Considered a bridging activity between phase 6 and phase 7, the main goal of the reflection exercise is to draw closing remarks on the activities, emotions, considerations, and changes experienced by the participants in the previous exercises. This is to prepare them to reach and hold onto the final stage of transformation whilst laying the path ahead for continuous iterative improvement. There are several ways to engage the team in such a discussion, and they revolve around asking questions, to oneself, to each other, and the team which are strongly linked to the "State of Play" questions in section 4.1. These reflective questions should be asked and answered amongst all participants in an open discussion format.
2) Backcasting. This is a FS method that focuses on what needs to be done to shape the preferred future. In the end, it provides a clear pathway from the present into the future. To get there, the method puts into place the preferred future that wants to be reached (Dreborg, 1996). Then, it goes backwards in 3-5 year steps from the year of the preferred future towards the present. With every step backwards, the main obstacles, next steps, and milestones to reach this future are clarified. What seemed to be impossible to reach from the present, has now a clear pathway with milestones.
3) Transformed Futures Landscape. This method is based on the concept explained earlier by Tibbs (2000). This time we use it to map the emerging future of the organisation and its updated vision, goals, strategy and personal exploration within the organisation. The insights from the scanning activities are mapped on the chessboard. The complete map helps to visualise and reflect on the preferred future

without neglecting the different pathways explored during the scenario exercise. It is a visual that shows where the organisation comes from, wants to go, the obstacles and future challenges and a possible pathway to reach its goals and vision in the end.

Phases	Purpose	Activity	Name	Approximate time required (min)
1. Surveying	Introduction to Circular Economy and Futures	1	Masterclass	90
		2	Polak game	30
		3	The readings	120
		4	The six basic questions	90
		5	The State of play	120
2. Mapping	To evaluate past events and patterns. To find the focal issue	6	Current Butterfly diagram [present]	60
		7	The Circular thing from the future	60
		8	Futures Triangle	60
		9	Futures Landscape	60
		10	Past Janus cone and scan	60
3. Exploration/Launch	Assess long-term impacts and implications	11	Scanning	60
		12	Emerging issue analysis	60
		13	Futures Janus cone.	60
		14	Futures Butterfly diagram [future]	60
4. Cruise/Journey	To deconstruct and reconstruct futures through a deeper understanding	15	Pattern and sense making	120
		16	Futures Wheel	90
		17	Sarkar game	90
		18	CLA part 1	60
5.Encounter	To create multiple scenarios about the future	19	Space Mission method	90
		20	CLA part 2	60
6. Landing & Probing	To choose the preferred future and the sequence to achive it	21	Strategy diamond	90
		22	Windtunneling	90
		23	Experiential futures artefacts	90
7.Transformation & Re-entry	To reach organisational transformation and continously improve	24	Reflection excercise	90
		25	Backcasting	60
		26	Transformed Futures Landscape	60
				33 Hours

Figure 3*. Circular Futures Approach outline*

5. Results and Discussion

As seen in the structure and the methods that we have described in the previous section, the Circular Futures Approach has three main unique characteristics compared to the other existing approaches:

We have developed an interdisciplinary approach with CE principles and FS methods by including a balanced set of activities originating from both disciples (e.g. Butterfly diagram from CE and Futures Triangle from FS). We have also synthesised, where possible, the elements of both disciplines in specific methods or activities. An example is a 'Circular Thing from the Future', where we have adapted the game to revolve around CE principles. Participants design an object by including certain boundaries to their design aligned to CE business models and design strategies. A slightly different example but with the same purpose in mind was to adapt the Butterfly Diagram by splitting the exercise into two different stages, analysing the organisation in the present state on phase 2, and analysing the futures state on phase 3. We have also done this for the other two activities, CLA, Futures Landscape, and the Space Mission (scenario building).

This approach was inspired by our experience using other frameworks (as analysed in Section 4). Usually, these frameworks do not offer a defined structure: where to start, where to finish, or which activities to do next. This has its reasoning in that a FS process is rather fluid. However, having no structure seems to increase the barrier for SMEs to implement CE and FS after all. Hence, we decided

to provide a clear structure that can be adapted by cutting down specific elements without reordering the existing structure. This is particularly important for us since we have noted that especially for practitioners that are new to the field or those where the concepts of FS and CE are new, it is hard to frame a holistic process.

The other main contribution of the approach is that we draw a unifying orbit where the participants are to be exploring the future, the CE principles. Participants are enabled to scan the CE principles for their organisation and frame them around the desired pathway of transformation (the orbit). Additionally, this approach captures the momentum for tackling climate change and other world problems in the present. It is designed to guide SMEs to navigate their end goal(s) and strategies applying CE elements and tools under extreme environmental and social pressure and resource scarcity. We believe this offers a tangible vehicle to start taking action today towards a more sustainable future.

6. Conclusions

Both disciplines, CE and FS, challenge old paradigms. On the one hand, CE defies the unsustainability of the current linear economic model. On the other hand, FS inquiries about social norms, social systems, and the existence of biases and assumptions that influence the data collection and decision-making of organisations. As we cannot fully overcome those biases and assumptions, it is critical to be aware and include diverse perspectives and lenses, multicultural backgrounds, and disciplines. For these reasons, the CFA approach can prove to be very challenging to organisations. In parallel to writing this manuscript, we have started the approach implementation and testing with a Dutch Circular SME. We have also tested our approach by participating as guest speakers in a series of masterclasses. We were thus able to strengthen our approach, learn from practice, and gain valuable feedback from peers and participants regarding the organisations' culture at the implementation phase and the biases that may hinder its application.

Based on our implementation and the existing literature, in the business context of SMEs, we need to consider two factors that will be highly influenced by Circular Futures thinking; speed in decision-making and emotion in information perceiving. Especially in the context of SMEs, the decision-making on all matters should not be centralised to a few or even one individual. SMEs' day-to-day operations bring about stressful circumstances, challenges the workload, (internal and external) priorities and team coordination, and cohesion and relationships. Here, emotions play a significant role in perceiving what team members communicate and influence how we communicate to others.

The rollout strategy is a joint effort requiring high coordination that should not only be on the shoulders of a few business leaders. Instead, it immensely helps to have a mutual alignment on where the team stands and which directions the team is going, with possible scenarios that do not divert from the shared vision and ambition. The CFA can help organisations overcome such uncertainty and ambiguity of the organisation undergoing a CE transformation, allocating each member to its role into the organisation that will maximise their skills and benefits to the organisation overall. The CFA aims

to support organisations in those challenges, as it contributes explicitly to 1) identify drivers that could have an impact in the future of the firm, 2) this set of drivers could then be turned into future visions that, through the approach, the participants would consider coherent and justifiable, 3) select the most preferred and the most probable future visions, 4) provide a structured approach that helps organisations to identify the key actions and crucial steps to change trajectories, from the most probable to the most desired circular futures vision and to create a path to progress in this direction, and 5) enhances the organisational decision-making processes. In sum, the approach seeks to equip SMEs with strategic options rather than being led or dragged by one strategy or one future.

We hope that SMEs find the approach beneficial and that it is comprehensive enough for organisations to assimilate and apply the insights gathered during its implementation. We also hope that our approach is analysed, implemented and tested by other scholars and professionals within CE and FS. Also that the CFA will be improved upon further, and new methods and activities will be included.

A possible exploration on how to improve the approach is by adding quantitative tools that measure the organisations' present state as well as the preferred future; e.g. a scoreboard that numerically shows the financial situation, the social activities and impact that are taking place and the involvement of the organisation towards a more sustainable future. From the perspective of the SMEs, we hope that the CFA will give positive tangible results in the short, medium, and long-horizon.

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