23

UTOPIAS AS CATALYSTS FOR A SUSTAINABLE CIRCULAR ECONOMY

Marileena Mäkelä and Maili Marjamaa

Introduction

We are living in a world of crises. Climate change and the loss of biodiversity are but two examples of current, urgent, and global problems. One proposed solution to these problems is the circular economy (CE). While there is an abundance of CE literature – Schöggl et al. (2020) analysed almost 4,000 CE articles in their review – circular futures have been recognised as an under-researched area (e.g., Bauwens et al., 2020; Marjamaa & Mäkelä, 2022). In particular, Gümüsay and Reinecke (2022) have called for more studies on this topic and for researchers to take stronger stances on preferable futures. They indicated that "if we don't imagine the future, others like technology companies will" (p. 241). The research gap we address in this chapter relates to preferable futures, which can also be called utopias. We aim to study how CE utopias can catalyse sustainable CE, which we define as "creating environmental quality, economic prosperity and social equity for current and future generations" (Marjamaa & Mäkelä, 2022, p. 5).

We study the topic from a futures research perspective. Futures research aims to make the future more predictable and more transparent (e.g., Rubin, 2013). The goal of futures research is not to predict the one future that will come (Kamppinen et al., 2003; Niiniluoto, 2003; Rubin, 2004), because scientific prediction of the future is not viewed as a realistic possibility. Instead, futures research strives to visualise many alternative futures (Kamppinen et al., 2003; Niiniluoto, 2003; Rubin, 2004) that could lie ahead of us. Alternative futures can be visualised by using, for example, futures images or scenarios; futures images are visualisations of the future held by either individuals or communities (Mäkelä et al., 2022) whereas a scenario features also the path between the present and a futures image. In this chapter, we focus on futures images because the path from the present to the future should generally be decided together with the people affected by the research topic. Futures images can address probable, possible, and preferable futures (Amara, 1981). They are essentially, as Rubin and Linturi (2001) note, mental models.

Mental models are "internal images of how the world works" (Senge, 2006, p. 163). They are created based on individuals' experiences, perceptions, and understanding of the world (Jones et al., 2011). Although they are incomplete representations of reality (Jones et al., 2011; Lynam & Brown, 2011), they still determine how we act (Senge, 2006). Dufva (2022b) nicely explains the action of mental models in futures research, stating, "Many of our current achievements used to

DOI: 10.4324/9781003267492-26

be someone's dream in the past. The problems of the current days are the results of what we did not consider in our dreams in the past". As mental models guide our reasoning, decision-making, and behaviour (Lynam & Brown, 2011), we propose that it is vital to focus on preferable futures images (i.e., utopias). We cannot be overwhelmed and depressed by negative news and wait passively for our seemingly doomed, or at least bleak, future to arrive. The key premise of futures research is that we can influence the future with our own actions. As Rubin (2013) has argued, futures images are powerful tools to make the future more transparent and visible to take actions towards preferable futures today.

In this chapter, our aim is to study how CE utopias can be used to catalyse sustainable CE. We use Finland, a CE frontrunner, as our empirical context and create utopias for a sustainable CE in 2050. A utopia can be defined as a description of an ideal or even perfect society, where all current social, environmental, and economic problems have been solved. The research questions we answer are as follows: What kind of utopian elements do CE professionals identify in relation to 2050, and how do they help us in the sustainable CE transition?

This study contributes to CE research by presenting utopias and detailed descriptions of a sustainable CE. Simultaneously, we contribute to this book's theme of CE catalysts by offering a futures research perspective. Actively influencing the future is a key premise of futures research, as opposed to passively waiting for a future to happen. In this chapter, we aim to promote this idea in the CE field. We can decide that our CE future will be a bright one, and we can take measures to shape it.

This chapter is structured as follows: The next section focuses on its two main concepts: utopias and futures images. We then describe our materials and methods, which consist of 61 interviews with Finnish CE experts and a qualitative content analysis of those interviews. In the results section, we present the four utopias, each focusing on separate sustainability dimensions. We close the chapter by discussing our contribution. The Appendix provides a table summarising our research data.

Literature review

The need for utopias

Utopia is a multifold concept. The word originates from Greek, with *topos* meaning 'place' and *eu* meaning either 'good' or 'ideal' or *ou* meaning 'no' (Levitas, 2010; Manuel & Manuel, 1979). The word was first used in 1516, by Thomas More in *Utopia*, a book describing an ideal society far away (More, 1997). However, the idea of utopia has been around even longer and appears in many cultures and religions (Levitas, 2010). Some dictionary definitions of the concept are presented in Table 23.1, based on which a utopia is a perfect or ideal society in terms of laws, government, and social conditions. These definitions also highlight the imaginary or aspirational nature of the concept.

The definitions of 'utopia' often emphasise its imaginary and impractical nature. For example, Mikko Karhu (2022), who has studied utopias in the context of regional development, describes utopias as often associated with ambitious targets and plans whose success is doubted. Furthermore, Karhu and Ridanpää (2020) summarise the concept as follows: "Utopian literature commonly refers to a literary genre in which the narrative settings are apparently imaginary, places in fictional societies, typically in the future, reaching beyond the scope of our known world and known history" (p. 2). However, the imaginativeness built into the concept can also be viewed as a strength. For example, Lakkala (2020b) calls a utopia a counter-image of the present with

Table 23.1 Dictionary definitions of the word 'utopia'

Source	*Definition*
Merriam-Webster Dictionary (Merriam-Webster, 2022)	• A place of ideal perfection especially in laws, government, and social conditions. • An impractical scheme for social improvement. • An imaginary and indefinitely remote place.
Oxford English Dictionary (Oxford University Press, 2022)	• An imaginary island in Sir Thomas More's *Utopia* (1516), presented by the narrator as having a perfect social, legal, and political system. • Any imaginary or mythical place (without implication of perfection), imagined as existing in some remote location on earth. (*Obsolete*.) • An imagined or hypothetical place, system, or state of existence in which everything is perfect, esp. in respect of social structure, laws, and politics. • A real place which is perceived or imagined as perfect. • A written work (now esp. a fictional narrative) about an ideal society, place, or state of existence. • A plan for or vision of an ideal society, place, or state of existence, esp. one that is impossible to realise; a fantasy, a dream.
Cambridge Dictionary (Cambridge University Press, 2022)	• A perfect society in which people work well with each other and are happy.

the focus of improving today's society. Ruth Levitas (2010), a well-known utopia researcher, had made a similar point when defining utopias as "not just a dream to be enjoyed but a vision to be pursued" (p. 1).

Utopias have been studied in many disciplines; Levitas (2010) identifies history, literature, theology, cultural anthropology, sociology, political theory, and psychology as examples. The late futurist and sociology professor, Wendell Bell (2008), summarised utopian studies in the social sciences as having four aspects. First, utopias are preferable to existing society, based on values. Second, utopias criticise existing society (see Lakkala, 2020b). Third, the utopian societies that are described do not (yet) exist. Fourth, utopias call for human action. It is easy to dismiss the idea of utopia as depicting a perfect society and thus being impractical. However, we follow Dufva's (2022b) logic and wording: "It is by no means trivial what kind of futures we imagine". Positive futures, including utopias, inspire people to take action, while negative futures, including dystopias, can prevent action, as discussed next.

The opposite of utopia is dystopia, which means "a diseased, bad, faulty, or unfavourable place" (Clayes, 2017, p. 4). Literature, television series, and movies commonly feed on dystopias and, as Clayes (2017) points out, the word is often associated with the dystopian literature. Based on both literature and historical events, Clayes (2017) divides dystopias into three categories: political dystopias (different forms of totalitarianism), environmental dystopias (e.g., out-of-control climate change), and technological dystopias (when science and technology dominate humanity). Dystopias can also be used to cause action today to prevent humanity from ending up in a dystopian future. For example, Hjerpe and Linnér (2009) studied the rhetoric of climate science and policy documents. They found that dystopias are used to avoid "economic catastrophe by acting too fast or ecological catastrophe by not acting fast enough" (p. 234).

The obvious problems with focusing on dystopias and other negative events are the anxiety and short-sightedness that often result. Therefore, we need utopias to provide an image of a positive future. As Lakkala (2020a) puts it, "we need . . . collective, facilitating, future-oriented

mass-utopia to tackle the global problems we are facing today. . . . This is where the need for utopian social imagination comes into play. In a situation where it is difficult to imagine alternatives for destructive, anthropocidal capitalism, we need to teach ourselves to dream and to imagine again" (p. 34). The same point was emphasised by Polak (1973), nearly half a century ago: societies preserve their vitality as long as they are able to imagine a positive future. Therefore, we need a positive and preferable futures image to motivate us and inspire action.

Futures images and the circular economy

What are futures images? They are visualisations of the future held by either individuals or communities (Mäkelä et al., 2022). In other words, they are still pictures or snapshots of the future (Gordillo Kontio & Tapio, 2017). However, as Beers et al. (2010, p. 725) note, the images are "a simple, metaphorical representation of a complex real-world phenomenon", as the real world is too complex to be described in detail. Although futures images are always simplifications of the real world, they still need to be, as Rubin (2013) notes, systemic in nature. Although Rubin (2013) indicates that imagination plays a part in creating futures images, their main structure comes from the data and knowledge of study participants. The data addresses their views on both past and present, including their values, needs, hopes, fears, and expectations. The key reason for creating futures images is to spark discussions about the preferable future. Jokinen et al. (2022) emphasise that the simplicity of futures images helps to communicate the future actions that are required. Slaughter (1991) and Rubin (2013) share this point of view and state that the role of futures images is to help make decisions today. Furthermore, Vinnari and Tapio (2009) see the role of futures images as guiding us towards the preferable future state.

CE futures have been studied to some extent, but there has been wide variation in approaches and methods (see Table 23.2 for details). We analyse previous studies from four perspectives: an overview of the research area, topics and context, methodological choices, and preferability of the futures images.

Overall, the study of CE futures remains a narrow field of research. We were only able to find eight studies focused on CE futures. In addition, we found three studies in which CE is mentioned in only one futures image (Heinonen & Karjalainen, 2019; Mont et al., 2014; Svenfelt et al., 2019). Furthermore, we can conclude that CE futures is a fairly new field; in our review, the first study was published in 2014, and almost half appeared in the 2020s.

There was great variation in study topics and contexts. Typically, the CE has been studied at the societal level, although there are two exceptions. Luoma et al. (2022) examined CE futures in the textile industry, and Kuzmina et al. (2019) studied the fast-moving consumer goods sector. Both studies adopt a global perspective, whereas societal studies often focus on European countries. Only two societal-level studies chose a global perspective. As to specific topics, previous research can be divided into two groups. The first consists of studies with broad topics, such as exploring, conceptualising, examining, or presenting (CE) futures images. The second focuses on much narrower topics, such as technology development or resource efficiency.

CE futures have generally been studied using qualitative methods, with two exceptions. Bibas et al. (2021) and Wijkman and Skånberg (2017) used quantitative approaches (i.e., modelling). Within qualitative approaches, there has been variation in data collection methods. Previous studies have often used some combination of the following methods: literature reviews, interviews, workshops, and Delphi method.

The preferability of the created futures images has been variously discussed in existing research. Kaskinen and Parkkinen (2018) created one preferable CE futures image. Bauwens et al.

Table 23.2 Summary of previous studies focusing on CE and futures

References	*Topic and context of the study*	*Methodology (specific research method)*	*Futures images created*	*Key content of preferable futures image*
Kaskinen and Parkkinen (2018)	Exploring CE potential in Finland	Qualitative (survey, workshops)	One preferable CE futures image	In their images, both consumers and businesses have a strong role in promoting and acting on the CE. Consumers adopt the sharing economy, and business produces innovative applications to support it. Furthermore, society supports the CE by bringing decision-making close to citizens.
Bauwens et al. (2020)	Conceptualising CE futures (no specific context)	Qualitative (literature review, focus group)	Four futures images: 1 Planned circularity 2 Bottom-up sufficiency 3 Circular modernism 4 Peer-to-peer circularity	None of the futures images is a preferable futures image as such; rather, a preferable image consists of a combination of the four.
Urashima et al. (2020)	Identifying emerging CE technologies in Japan and Finland	Qualitative (Delphi)	Four futures images for Japan (CE is not included): 1 Humanity 2 Inclusive 3 Sustainability 4 Curiosity Four CE futures images for Finland: 1 Transformation 2 Expansion 3 Stagnation 4 Agility	Transformation was viewed as the preferable futures image for Finland. The main driver of this image is strong technological development in business, supported by political decisions.

(*Continued*)

Table 23.2 (Continued)

References	*Topic and context of the study*	*Methodology (specific research method)*	*Futures images created*	*Key content of preferable futures image*
Bibas et al. (2021)	Analysing how CE policies can help decouple economic growth from material use in the world	Quantitative (modelling)	Two quantitative futures images: 1 Material fiscal reform 2 Combined material fiscal reform and energy transition	Two images offer a reduction in emissions and the use of resources.
Wijkman and Skånberg (2017)	Enhancing resource efficiency in five European countries	Quantitative (modelling)	Three quantitative futures images: 1 The renewable scenario 2 The energy efficiency scenario 3 The material efficiency scenario	Each image would result in CO_2 emission reductions and increases in employment and GDP.
Marjamaa and Mäkelä (2022)	Examining CE futures images in Finland	Qualitative (interviews)	Four futures images: 1 A circular success story 2 A circwcircles 3 Structural, regulated circularity	The circular success story is the preferable futures image. Global regulations support the CE, and the economic system is CE-based. Environmental problems have been addressed. Collaboration between multiple partners flourishes. Technological development supports the CE.
Svenfelt et al. (2019)	Presenting qualitative futures images on sustainability strategies in Sweden	Qualitative (literature review, workshops, interviews)	One image addressed CE: • CE in welfare state	None of the created images was considered preferable.
Mont et al. (2014)	Describing sustainable lifestyles in Europe	Qualitative (Delphi, workshops)	One image addressed CE: • Local loops	None of the images is preferable as such, but each is preferable for certain stakeholders.

(*Continued*)

Table 23.2 (Continued)

References	*Topic and context of the study*	*Methodology (specific research method)*	*Futures images created*	*Key content of preferable futures image*
Heinonen and Karjalainen (2019)	Describing four futures images of electrification of a peer-to-peer society from the global perspective	Qualitative (interviews)	One image addressed CE: • Green, do-it-yourself engineers	This image is almost a dystopian future, as the starting point is global ecological catastrophes and the failure of states to address them. The only solutions have been local engineering ones.
Kuzmina et al. (2019)	Envisioning futures of fast-moving consumer goods	Qualitative (workshops, interviews)	1 Five futures images: Rinse and reuse 2 The cycling of pure materials 3 The rise of the circular retailer 4 A world without supermarkets. 5 Connected living	None of the created images was considered preferable as such.
Luoma et al. (2022)	Creating three futures images of CE in the textile industry	Qualitative (literature review, Delphi)	Three futures images 1 Transparency 2 Conflicting interests 3 Sustainable textiles	Sustainable textiles were evaluated as the preferable futures image. In this image, CE practices are applied with the increased use of recycled and wood-based fibres. Businesses and consumers were identified as key drivers in this image.

(2020) stated that none of their images were preferable as such; rather, a preferable image would be comprised of parts of each image. In Urashima et al. (2020), Marjamaa and Mäkelä (2022), and Luoma et al. (2022), one image was explicitly nominated as preferable. In addition, the promoters of preferable futures varied between the studies. Kaskinen and Parkkinen (2018) and Luoma et al. (2022) identified business and customers, while Svenfelt et al. (2019) focused on customers as the main drivers, and Urashima et al. (2020) and Svenfelt et al. (2019) saw the government as the key actor.

Against the background of these few previous studies on CE futures, our study's unique contribution lies in its explicit focus on CE utopias. In our first article on CE futures images, we created four futures images of CE: a circular success story, a circle of disaster, local circles, and structural, regulated circularity (Marjamaa & Mäkelä, 2022.). A circular success story was considered to be a preferable futures image. The CE utopias created in this chapter are elaborations and extensions of that image but stand independently, as is explained in the following section, by focusing on our research context, interviews, and the creation of CE utopias.

Materials and methods

Research context

Our research context is Finland, a Nordic country. At the time of the study, Finland aimed to be a CE frontrunner; in 2019, the government established a target to become the world's first fossil-free welfare state (Finnish Government, 2019), and in 2021, it announced the goal of achieving a carbon-neutral CE by 2035 (Finnish Government, 2021). In addition to the official governmental targets, Sitra, a national fund accountable to the Finnish Parliament, had organised an open dialogue process with CE experts and stakeholders to create the world's first road map to a CE in 2016 (Sitra, 2016). Furthermore, due to this national-level support, several Finnish companies have actively pursued CE initiatives in their operations.

Naturally, the data we collected represented CE expertise in the Finnish context. However, most of our interviewees worked for organisations with active international relationships. For example, many of the interviewees' companies operated in multiple countries, generally in the Nordic region or elsewhere in Europe. Furthermore, the research, innovation, and support organisations whose representatives we interviewed sought to support the internationalisation of Finnish companies. Last, the other organisations whose representatives were interviewed cooperated with international partners.

CE expert interviews

We selected CE experts with different positions from a wide range of organisations, as we were interested in creating richly detailed and well-informed CE utopias. We first identified organisations that played a central role in promoting the CE concept in Finland. These organisations encouraged, for example, CE-based business, urban and regional development, legislation, technologies, and research. Therefore, they played an important part in influencing CE futures in Finland. At each organisation, we identified people with CE expertise, using one of three techniques. First, our research project, CICAT2025, had a list of key CE stakeholders. Second, we browsed the personnel sections of organisation webpages and searched for 'circular economy' in job titles or descriptions. Third, we contacted the heads of the organisations to suggest names for us. We used emails and telephone calls to set dates for the interviews.

Our empirical material consisted of 61 interviews with Finnish CE experts. Knowledge of the practical, organisational-level CE implementation was determined from those working at companies in both manufacturing and the service sector. Regional-level CE implementation was sought from the municipalities and other regional actors. The representatives of research, innovation, and support organisations and industry organisations provided valuable information on CE implementation either at a general level across Finland or within a specific sector. Last, the representatives of ministries and other political bodies enlightened us with aspects of political decisions and legal issues regarding CE implementation, which was supplemented with general national and international CE implementation. In addition to their expert role, the interviewees elaborated on their positions as consumers and private citizens. We interviewed both women and men with moderately high positions in their organisations, such as CEOs, directors, managers, and experts. The interview data are summarised in Table 23.4 in Appendix 1 of this chapter.

We adopted the semi-structured expert interview approach (Eriksson & Kovalainen, 2008). For our purposes, semi-structured meant that we had four themes that were covered in each interview. However, the precise questions asked in each case varied with participant expertise and the time available for the interview. The four themes were as follows: the relationships between CE and sustainability; current and future issues of CE implementation; CE collaboration; and CE futures in 2050. The interviews were conducted between May 2019 and June 2020, with 22 interviews held in person and 39 as online interviews. The length of the interviews varied from 31 to 110 minutes and totalled 71 hours of material. All interview data was tape-recorded and transcribed verbatim, with the transcribed data amounting to 723 pages.

Our approach had certain limitations. Although our interviews covered CE experts from multiple sectors, we limited data gathering to Finland. Therefore, for future studies, we welcome interviews in other geographical locations to widen perspectives on the futures of sustainable CE. We noted in our review of the CE futures literature that previous research has generally examined European contexts. Therefore, we encourage more studies outside Europe and from a global perspective. However, as we looked at this phenomenon in Finland, which is a Nordic country, we believe that our results are applicable at least in Nordic contexts and to a certain degree in European contexts.

Analysing interview transcripts and generating utopias

We used qualitative content analysis to examine the research data; because the data was both rich and large, we needed to reduce them to a manageable size. First, we focused on sections where the interviewees described future CE and global problems that had been solved. Second, we used the PESTEC framework to code these sections and obtain a systemic view of CE futures. The PESTEC framework was first described in Francis Aguilar's *Scanning the Business Environment*, which was published in 1967 (Dufva, 2022a). The framework is typically used in business for scanning the operating environment and understanding upcoming changes to that environment (Dufva, 2022a). PESTEC is also often used in futures studies to systematically analyse societal factors affecting the futures of a given topic (e.g., Mäkelä et al., 2020). The PESTEC framework consists of six dimensions: political, economic, social, technological, environmental, and cultural (e.g., Brennan & Sisk, 2014; Yüksel, 2012). The categorisation was carried out with the help of the ATLAS.ti software package, version 8, and an Excel spreadsheet. This coding gave us an understanding of what the interviewees said regarding the political, economic, social, technological, environmental, and cultural dimensions of the CE and its futures.

Our next step was to create the utopias. As we focus on a sustainable CE in this chapter, we selected sustainability as the framework for those utopias. The connection between CE and

sustainability or sustainable development has been discussed, for example, by Geissdoerfer et al. (2017) and Korhonen et al. (2018). In these two articles, sustainability is divided into economic, environmental, and social sustainability. However, an examination of the concept of sustainable development reveals a fourth dimension of cultural sustainability (e.g., Meireis & Rippl, 2019). In this chapter, we sought to emphasise the role of culture in creating change because any CE implementation requires alterations in people's daily habits, which can be easier to adopt if their cultural backgrounds are respected. Furthermore, our four sustainable CE utopias followed along the lines of Kuhmonen (2017), who provided the original inspiration for this work. Kuhmonen created futures images on the Finnish food system, with each focusing on different sustainability dimensions: a short food chain for economic sustainability, a green food chain for environmental sustainability, a fair food chain for social sustainability, and a genuine food chain for cultural sustainability. Our PESTEC coding served as the basis for the utopias; codes in the economic dimension created the basis for economically sustainable CE, environmental codes for environmentally sustainable CE, social codes for socially sustainable CE, and cultural for culturally sustainable CE. The two remaining dimensions from the PESTEC framework (political and technological) provided inputs for all our utopias. Based on these codes, we wrote the narratives of the utopias presented in the next section.

Our utopias target the year 2050. It is typical in futures studies to set a time horizon that is rather far in the future. We also used this year during the interviews when we asked about informants' perceptions of CE futures. Using a specific year in the relatively distant future can help interviewees to imagine future possibilities without current constraints and probabilities while opening avenues for human creativity and imagination.

Sustainable circular economy utopias in Finland in 2050

Summary of the utopias

Our analysis of the interview data generated four utopias based on four dimensions of sustainability: economic, environmental, social, and cultural. These utopias are presented in the form of narratives of an economically sustainable CE, an environmentally sustainable CE, a socially sustainable CE, and a culturally sustainable CE, all set in 2050. The utopias focus on explaining what Finland looks like when the utopias become a reality. While each utopia depicts a particular sustainability dimension, they also partly overlap and intersect. To summarise, in an economically sustainable CE, the whole economy (consumers, companies, municipalities, and Finnish society in general) operates on CE principles. In the environmentally sustainable CE utopia, all current environmental problems have been solved, and the loss of biodiversity has been reversed. The core of socially sustainable CE is agile and multifaceted cooperation between different people, partners, and sectors. Finally, the culturally sustainable CE respects Finnish cultural heritage, and CE is applied in a country-specific style based on changes in values and behaviours. The images are summarised in Table 23.3. In the sections that follow, the narrative of each created utopia is detailed and supported with an artistic illustration.

Economically sustainable circular economy: Focus on firms and market orientation

In 2050, the linear economy is regarded as a stage in the history of humanity, as Finland's economy and society are now organised around circularity. CE thinking and CE activities are part

Table 23.3 Summary of the content and key features of each utopia

	Economically sustainable CE	*Environmentally sustainable CE*	*Socially sustainable CE*	*Culturally sustainable CE*
Key features	• Economic system within planetary boundaries. • Decreased production and consumption. • Statutory bookkeeping for a firm's economic, environmental, and social impacts. • CE-aligned business models and mutual value creation. • Strong support of corporate finance towards CE. • Finland is the leading CE country, which increases CE innovation tourism.	• Current environmental problems addressed. • Care for nature: rewilding and recovering natural ecosystems and biodiversity. • Careful renovation and brownfield construction. • Green cities and rural areas, carbon sequestration. • Technology-assisted food production and nutrition cycles. • Self-sufficiency and security of supply in food systems. • Self-sufficiency in renewable energy.	• Well-being with less use of natural resources. • Increase in employment. • Cooperation and partnerships. • Social innovations. • Strong emphasis on education. • Vitality and high quality of life. • Safety.	• CE integrated into Finnish culture and values. • Changed relationship with ownership. • Mending, lending, and sharing products. • Respect for old goods, services, and immateriality. • Food choices: plant-based and vegan. • Use of physical places (e.g., cellars) as 'libraries' for exchanging goods and materials. • Sustainable modes of mobility.

of everyday life and are conducted at the private, corporate, municipal, regional, and societal levels, as well as internationally. CE is market-based, cross-sectoral, and constantly evolving. The previous economic system has been successfully challenged in recent decades, and today's economy, overall, remains within planetary boundaries. The economy creates wealth, viability, and well-being differently due to changes in consumption and production, with the strong support of technology. Production does not lead to negative impacts on climate, biodiversity, and natural ecosystems. Under legislative directives, companies must measure the risks and impacts of their activities and commodities with environmental and social impact metrics in addition to the traditional economic metrics and report them all in their statements to the tax authorities, investors, financiers, other companies, and society. As a practical example, a harmonised and holistic calculation indicates which material in road construction in a particular place is truly sustainable when viewed from different sustainability perspectives. Figure 23.1 illustrates these aspects and summarises the economically sustainable CE.

All companies and their businesses are aligned with a CE and implement CE principles either fully or at least to some extent. Scarcity, material prices, and generally high material taxation are significant drivers of CE business models: much needs to be produced from little. 'As-a-service' business models are common, and sharing (whether through leasing, borrowing, or exchanging) and the platform and data economy are central, as are proactive service and maintenance, life cycle extension, reuse, repair, and modular design. For example, a firm may be able to profit from a product for the duration that it remains in circulation, perhaps through a usage fee when the product circulates from one customer to another. Partnership models and the value network's

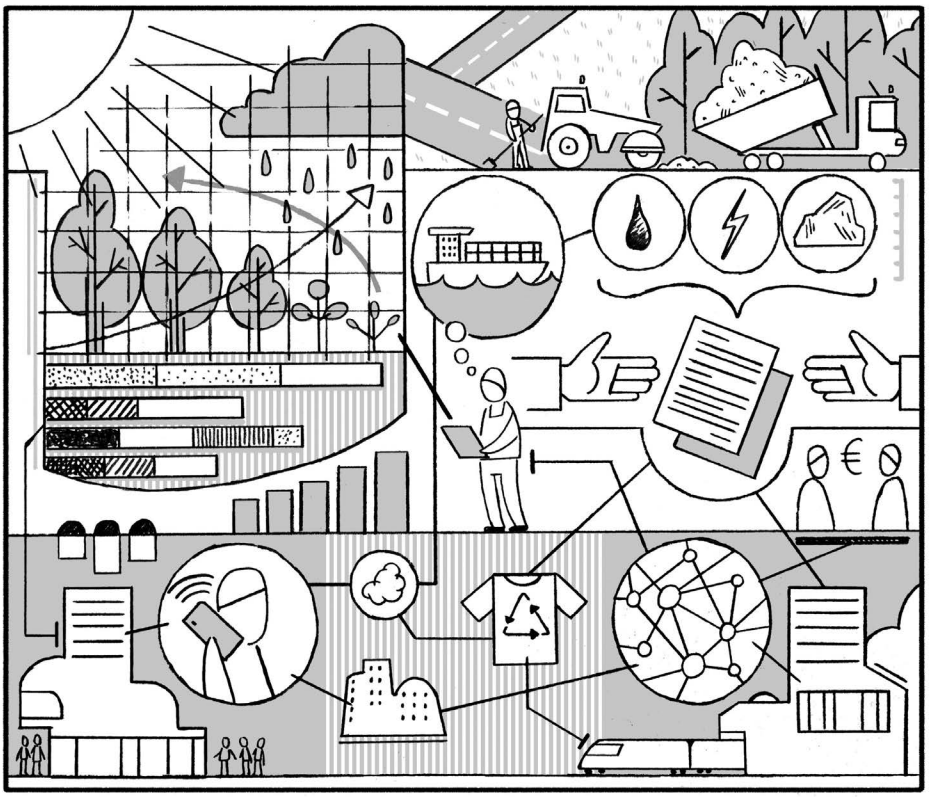

Figure 23.1 Economically sustainable circular economy.

Source: The authors.

well-being are important. For example, a mutual business model could combine a textile firm with the involvement of laundry and logistics companies, guaranteeing mutual value creation and business opportunities for all and benefits for other stakeholders. For a long time, and still in 2050, the CE has meant opportunities for efficiency and energy savings, improved productivity, and significant customer satisfaction. New innovations and business are constantly emerging, and ecosystems form the foundation for CE-based business. The CE has led to the emergence of numerous small companies that sell urban food and repair services. Factory-as-a-service concepts are popular. All in all, the CE has increased self-sufficiency in Finland, and Finns use products made by Finnish companies more than ever before.

Finland is now waste-free and is a global leader in that regard. EU taxonomy influences the background of the corporate finance market, which works efficiently; financiers and investors support sustainable funding. Finland is part of global value chains, and industrial operations are organised according to CE principles that benefit Finnish exports. Finnish CE expertise is in demand around the world. Municipalities and cities play a significant role in enabling several CE activities, such as CE parks where companies use one another's by-products. Public procurement and land use in municipalities and corporate governance in public companies are organised in accordance with sustainable CE. Finland a global leader in countries in successfully implementing CE and attracting CE innovation tourism.

Environmentally sustainable circular economy: Focus on land use, construction, and rewilding

Major global environmental problems have been addressed, including climate change, loss of biodiversity, and the challenges posed by chemicals and the circulation of plastics. Biodiversity, natural ecosystems, and natural richness have begun to recover due to stricter and smarter environmental regulation and protection, combined with forestation and restorative and regenerative actions both in cities and in the countryside. The Finns' already strong relationship with nature has deepened. Finland is self-sufficient in renewable energy, energy storage is quite highly developed, and across the board, decentralised energy production is emphasised. CO_2 emission targets are met – or more than met – in 2050, and the CO_2 generated as a by-product in industrial processes is gathered and recycled for use with next-generation technologies. Climate and biodiversity considerations, the sustainable and reduced use of natural resources, circularity, and the purity of nature are all taken into careful consideration in decision-making at all levels of society. Finland is no longer among the 'winners' in material consumption in Europe, as consumption has decreased dramatically.

Ecologically sustainable cities are built according to CE principles, with actively considered soil construction, occupancy rates, multi-use spaces, life cycle, energy use, and the space efficiency of estates and buildings. CE thinking is also at the core of infrastructure construction. The focus of construction is on renovation and brownfield construction, whereas new construction and greenfield construction are minimised. In 2050, there are no more empty spaces in buildings. New construction largely uses materials and structures that have been removed intact from existing building stock and retained their value, and the health and safety-related problems associated their use have been solved. In general, buildings and real estate are designed for reassembly. Real estate is far more efficiently used through digital services, for example, buildings that are in official public use during the daytime can be rented for evening use by individuals. In 2050, for water saving and nutrition cycle reasons, indoor composting toilets have replaced water toilets, even in multi-storey buildings.

City parks, woods, and green areas enjoy the finest of care, with trees, bushes, and plants planted to sequester CO_2 and enrich biodiversity. Bee hotels are common, and endangered flora and fauna are carefully moved to safety from places threatened by construction. Green roofs and walls flourish, along with a wide variety of trees and urban greenery. The role of driving has decreased in urban planning, while cities have good air quality and are cleaner and quieter due to sustainable modes of mobility. The key aspects of the green care in cities described previously are shown in Figure 23.2.

In rural areas, regenerative agriculture is practiced, as fields sequester and store carbon and do not release nutrients. Forests are valuable assets and are carefully tended. Land use is thoughtfully designed, and wetlands, pollination fields, and food production have their own specific areas. As the CE aims at a better use of resources like farmland, animal production has decreased, and the cultivation of plant-based protein has increased. Self-sufficiency and security of supply are highlighted in food production. Technology enables new ways of making food, even in containers, with the help of microbes or through vertical farming. Nutrient cycles work efficiently, and food waste and traceability are managed using novel technology. Several new kinds of jobs and other innovations exist in the countryside.

Socially sustainable circular economy: Focus on well-being, collaboration, and education

In 2050, compared to decades earlier, a fraction of the use of natural resources achieves the same level of well-being and results in Finland. Politically, there is a joint commitment to developing

Figure 23.2 Environmentally sustainable circular economy.
Source: The authors.

the CE over a longer time horizon than four-year government programmes. The CE, as such, has increased general employment in the private and public sectors as new needs and demands generate new solutions and supply. As part of CE implementation in organisations, social sustainability issues like wages, working conditions, and the value chain are carefully monitored nationally and globally, especially in the international manufacturing industry.

On an international level, engagement and interaction with the EU and major international bodies and companies are reciprocal and continuous. National promotion of CE is multidisciplinary and multisectoral, and there is a diverse selection of cooperation and partnerships. For example, public–private–people partnerships and alliance models are robust. CE issues are actively discussed, co-created, and co-developed between ministries, cities, communities, regional actors, research and development actors, lobbyists, the third sector, and businesses. Collaboration in particular is further illustrated in Figure 23.3. The fourth sector also promotes the CE. Powerful cooperation increases community spirit and encourages commitment. A variety of digital platforms support polyphony and inclusion. Debates vary from innovating and co-creating new commodities to sharing best practices for preventing occupational accidents. Beyond economic and technological innovations, social innovations also emerge. Specifically, old factories are now used as lively CE parks or city villages where rehabilitative work activities can be organised, and the employment of young people, immigrants, and the disabled are supported.

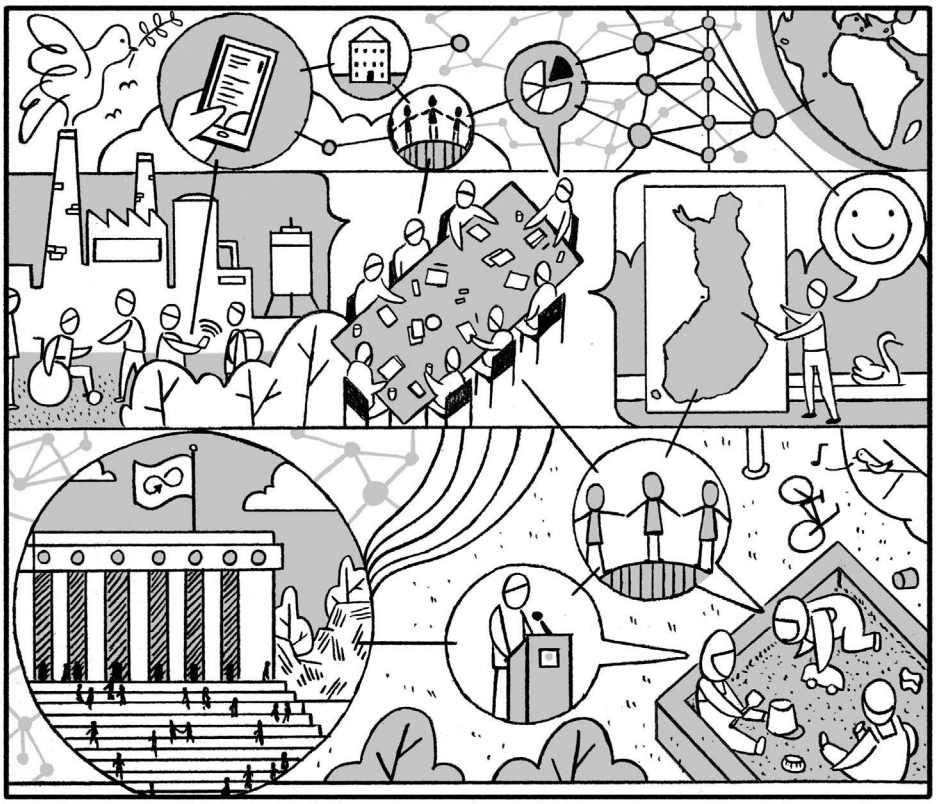

Figure 23.3 Socially sustainable circular economy.

Source: The authors.

CE thinking is also part of basic education starting in day care, and there are numerous study units and modules around the CE at various school levels. Educational paths are also flexible in working life. Finland's age structure is steady, and the new generation of decision-makers was born and educated to view the world through sustainable CE lenses. In 2050, Finland has properly fulfilled its international role in the CE and is a good and safe country in which to live. The CE has brought vitality even to the smallest of villages, while common CE solutions make people's everyday lives easier. Thanks to real-time communication and a networked society, information about the latest best examples of CE from around the world quickly reach Finland.

Culturally sustainable circular economy: Focus on change in culture

In 2050, a CE is well integrated into both the Finnish state and Finnish national values. Due to a strong and unified culture, Finland and the other Nordic countries had served as a kind of CE test laboratory. Due to early experimental successes, the CE has gained a strong position and is highly valued and widely implemented, with a local Finnish flair of equality, trust, honesty, perseverance, and respect for one's own space and nature. Recycling culture is high among both individuals and enterprises. The tradition and culture of ownership have evolved into usership, and people's relationship with goods has altered. The general atmosphere supports mending, exchanging, renting,

and sharing all products from clothes to cars, as depicted in Figure 23.4. People are heavily oriented to using a wide range of services, especially digital services. In general, sustainable, old, and nonmaterial things are valued. From the perspective of a young adult, the consumption patterns of previous generations appear sadly old-fashioned. Today, everybody takes seriously the responsibility to consume sustainably. Timeless clothes and clothes-as-a-service concepts replace fast fashion, and the origin of clothing in general interests people. Fashionistas combine new findings in interesting ways. Quality and intangibility are appreciated over quantity. Fewer new goods are bought, and more are repaired and maintained. People choose to live in smaller flats and houses for sustainability reasons and because they do not need as much space to store material goods. Digital platforms and social media support current consumption trends. In addition to libraries, many other physical spaces are used to circulate everything from small commodities (e.g., toys, clothes, and sport equipment) to bigger ones (e.g., grills, lawn mowers, and 3D printers). In particular, many multi-storey houses have a room in the basement meant to house shareable items ranging from drills and bicycle pumps. Sustainable and healthy food choices are a crucial part of consumption behaviour; therefore, vegetarian, and vegan diets flourish.

Mobility is based on sustainable solutions, including cycling and walking, mobility-as-a-service, public transportation, and fossil-fuel-free vehicles. Mobility services are so affordable

Figure 23.4 Culturally sustainable circular economy.

Source: The authors.

that there is no need to own a car. The raw materials for electric car batteries circulate successfully. The use of cars outside urban areas and public transportation coverage are based on car-sharing systems. Logistics are also based on sustainable transport methods. The corporate culture has changed profoundly; even the smallest things, such as choosing different snack options for a meeting, are evaluated against a sustainability scale. Value-based companies attract like-minded employees. The culture of learning and developing oneself is strong; instead of staying in one profession, people develop themselves throughout their careers.

Discussion and conclusions

The aim of this chapter was to study how CE utopias can be used to catalyse sustainable CE. Theoretically, we have built on futures research and especially the concept of utopias as imaginary descriptions of a better society. We created sustainable CE utopias for Finland in 2050 by interviewing 61 CE experts in Finland. The utopias are based on the four dimensions of sustainability: economically sustainable CE, environmentally sustainable CE, socially sustainable CE, and culturally sustainable CE. Although in the previous section these were presented as separate images, their practices overlap and influence one another. Economic issues influence the background of almost all operations. Environmental issues, especially global environmental problems, affect all people. Social aspects are important, as it is people who are responsible for making CE happen. The cultural dimension enables the application of CE with a unique twist that can be modified, tailored, and approved while respecting the traditions of different locations.

We make two contributions. To this book's theme of CE catalysts, we contribute by offering a futures research perspective. To the broader CE literature, we contribute by focusing on the emerging field of CE futures (e.g., Bauwens et al., 2020; Marjamaa & Mäkelä, 2022; Weigend Rodríguez et al., 2020). Our contribution focuses on preferable futures images; that is, utopias and detailed descriptions of sustainable CE. Actively influencing the future is a key premise of futures research, as opposed to passively waiting for a future to happen. In this chapter, we aim to promote this idea in the CE field. We can decide that our CE future will be a bright one, but that means we need to immediately roll up our sleeves and be proactive about achieving our goals.

How do our results act as catalysts for CE transition? The answer is simple: very practically. Sustainable CE utopias describe action targets. We can all compare our actions with the utopias and evaluate what we would need to change in terms of everyday actions. In most cases, we are not talking about mere tweaks, such as recycling waste more diligently or reducing the amount of food waste generated. Rather, we are referring to significant changes in how we consume (and especially not consume), choose diets, commute from one place to another, and influence employers regarding the CE transition. We now highlight the core of the CE transition to ensure that CE utopias become reality, which is massive change at all operational levels. That change affects us in the different roles that we have and the decisions we make at home and in the workplace, as consumers and citizens. The changes that are needed rather nicely follow the dimensions of sustainability.

First, our economic system should become CE-based. This means altering the underlying dominant economic theory. For example, Velenturf and Purnell (2021) argue that a sustainable CE requires a new economic theory, since it is incompatible with all the current approaches. However, they find common ground for a sustainable CE from doughnut economics (Raworth, 2017), which is based on respecting planetary boundaries. From a business perspective, the change means that companies will need to focus on prolonging the life span of their products at every step. Currently, companies focus largely on selling as many products as possible and

hoping that customers will buy new products as soon as possible. In the future, products should be used as long as possible by multiple consumers through repair and upgrade practices; in the end, the materials and components can serve as raw materials for new products.

From an environmental perspective, the future requires massive transformation. We need to make the environment central to everything we do. For example, production and consumption must respect planetary boundaries. The long life spans of various products are also key in this regard. This is especially true in the construction industry. Currently, many structures are built for one purpose only, and many remain used only during office or school hours. We would also need to have nature closer to us through practices like green roofs and walls and urban farming instead of restricting it to reserves.

Socially, we need stronger collaboration than we currently enjoy. Collaboration needs to happen at all levels: international, national, regional, and local collaboration are all equally important. Politics, business, technology, nongovernmental organisations (NGOs), academia, and ordinary people need to join forces. Cultural changes relate to social change. We need to move from an individualistic culture to a more collective one. There should be greater emphasis on doing things together. One example is sharing things like tools, appliances, and cars among neighbours in both apartment buildings and detached homes. This is also our key message to international audiences. Although we have used Finland as an example, the key point of our chapter is the urgent need for change everywhere. The CE is not yet a reality anywhere in the world. According to the Circle Economy Reporting Initiative (2022), an NGO focused on CE issues, the world now is only 8.6% circular, with the leading country, the Netherlands, currently at 24.5%.

The distinctive approach of our study is its focus on CE utopias. Previous research has often failed to connect CE futures images with preferability or only connected CE with local circles. We wanted to show that CE can exist in a preferable society and aimed at verbalising how a preferable future could look. The definitions of utopia make clear that it is an imaginary, perfect, and even impractical and hypothetical place where all people are happy. In comparison to our current situation, the utopias we have sketched out more than meet this definition. While no country is currently a fully CE society, many societies have already applied various elements of CE utopias.

The utopias have the potential to change one's insights into and understanding of the future and to illuminate and make visible what is possible and preferable. Utopias can change people's mental models of which directions the world could take. Utopias are normative and dynamic; they change over time. In general, utopias stretch the limits of our conventional thinking and worldviews. Utopias can also change mental models in relation to agency; it is possible to genuinely influence the future in an inspirational way, and everyone can have a role in shaping the future. To build a preferable future with concrete steps, there first has to be an insight, a vision, or a utopia of what is desired. To conclude, we hope that our futures images created from the ideas of current CE experts can serve as new mental models to inspire all of us to discuss, make decisions, and act to help create a future of sustainable CE.

Educational content

- Utopias can be viewed as powerful mental models to empower people with positive ideas about the future.
- CE enables a sustainable transition by considering the economic, environmental, social, and cultural aspects of CE.
- The actions and decisions we make today shape the future. If we act now, we can achieve a sustainable CE future.

Acknowledgements

This work is part of the research project Circular Economy Catalysts: From Innovation to Business Ecosystems (CICAT2025), funded by the Strategic Research Council at the Academy of Finland [320205; 320194; 320206]. In addition, we are thankful for the help of our CICAT2025 colleagues (A. Blomberg, A. Heikkinen, A. Jokinen, K. Koistinen, J. Kujala, H. Leinonen, T. Onkila, A. Paavilainen, M. Sarja, R. Tapaninaho, S. Teerikangas, and M. Valkjärvi) in collecting the research data. Furthermore, Maili Marjamaa gratefully acknowledges financial support from the Foundation for Economic Education and Tampereen Liikesivistyssäätiö. We also want to thank Jani Ikonen, a very skilful artist, for providing illustrations of the utopias. Finally, we are grateful to the editors and reviewers of this volume for providing excellent comments that were helpful in further developing this chapter.

References

Amara, R. (1981). The futures field: Searching for definitions and boundaries. *The Futurist*, 25–29 February 1981.

Bauwens, T., Hekkert, M., & Kirchherr, J. (2020). Circular futures: What will they look like? *Ecological Economics*, *175*, 106703. https://doi.org/10.1016/J.ECOLECON.2020.106703

Beers, P. J., Veldkamp, A., Hermans, F., van Apeldoorn, D., Vervoort, J. M., & Kok, K. (2010). Future sustainability and images. *Futures*, *42*(7), 723–732. https://doi.org/10.1016/j.futures.2010.04.017

Bell, W. (2008). *Foundations of futures studies: Values, objectivity, and the good society* (3rd ed., Vol. 2). Transaction Publishers.

Bibas, R., Chateau, J., & Lanzi, E. (2021). *Policy scenarios for a transition to a more resource efficient and circular economy*. OECD Environment Working Papers No. 169. OECD.

Brennan, L. L., & Sisk, F. (2014). *Strategic management: A practical guide*. Business Expert Press.

Cambridge University Press. (2022). *Utopia*. In Cambridge Dictionary. Cambridge University Press.

Circle Economy Reporting Initiative. (2022). *The power of countries to close the circularity gap.* https://www.circularity-gap.world

Clayes, G. (2017). *Dystopia: A natural history. a study of modern despotism, its antecendents, and its literary diffractions*. Oxford University Press.

Dufva, M. (2022b). *Tulevaisuusvallan laajentaminen tekee tulevaisuuksista parempia.* (W*idening futures power creates better futures*) Sitra's blog. Sitra. https://www.sitra.fi/blogit/tulevaisuusvallan-laajentaminen-tekee-tulevaisuuksista-parempia/

Dufva, M. (2022a). Toimintaympäristön analyysi: PESTE ja sen variaatiot. (Horizon scanning: PESTE and its variations.) In H.-K. Aalto, K. Heikkilä, P. Keski-Pukkila, M. Mäki, & M. Pöllänen (Eds.), *Tulevaisuudentutkimus tutuksi – perusteita ja menetelmiä* (*to get acquainted with futures research – Basics and tools* (pp. 105–112). Finland Futures Research Centre, University of Turku.

Eriksson, P., & Kovalainen, A. (2008). *Qualitative methods in business research*. Sage.

Finnish Government. (2019). *Inclusive and competent Finland. A socially, economically and ecologically sustainable society.* https://julkaisut.valtioneuvosto.fi/handle/10024/161664

Finnish Government. (2021). *New directions: The strategic programme to promote a circular economy.* https://valtioneuvosto.fi

Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, J. E. (2017). The circular economy – A new sustainability paradigm? *Journal of Cleaner Production*, *143*, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048

Gordillo Kontio, U., & Tapio, P. (2017). Four Mexican dreams: What will drive the Mexican millennial to invest? *Futures*, *93*, 89–101. https://doi.org/10.1016/J.FUTURES.2017.06.003

Gümüsay, A. A., & Reinecke, J. (2022). Researching for desirable futures: From real utopias to imagining alternatives. *Journal of Management Studies*, *59*(1), 236–242. https://doi.org/10.1111/joms.12709

Heinonen, S., & Karjalainen, J. (2019). *Electrification in peer-to-peer society. A new narrative for sustainable futures*. FFRC Publications 1/2019. Kaarina: Finland Futures Research Centre.

Hjerpe, M., & Linnér, B. O. (2009). Utopian and dystopian thought in climate change science and policy. *Futures*, *41*(4), 234–245. https://doi.org/10.1016/j.futures.2008.09.007

Jokinen, L., Mäkelä, M., Heikkilä, K., Apostol, O., Kalliomäki, H., & Saarni, J. (2022). Creating futures images for sustainable cruise ships: Insights on collaborative foresight for sustainability enhancement, *Futures*, *135*, 102873. https://doi.org/10.1016/J.FUTURES.2021.102873

Jones, N. A., Ross, H., Lynam, T., Perez, P., & Leitch, A. (2011). Mental models: an interdisciplinary synthesis of theory and methods. *Ecology and Society*, *16*(1). https://www.jstor.org/stable/26268859

Kamppinen, M., Malaska, P., & Kuusi, O. (2003). The basic concepts of futures research (tulevaisuudentutkimuksen peruskäsitteet). In M. Kamppinen, O. Kuusi, & S. Söderlund (Eds.), *Futures research: Basics and applications* (*tulevaisuudentutkimus: Perusteet ja sovellukset*) (pp. 19–53). Suomalaisen Kirjallisuuden Seura.

Karhu, M. (2022). *Utopiat ja utopiankaltaisuus aluekehittämisessä* (*Utopias and utopia-likeness in regional development*) *acta wasaensia 483*. University of Vaasa.

Karhu, M., & Ridanpää, J. (2020). Space, power and happiness in the utopian and anti-utopian imaginations. *Literary Geographies*, *6*(1), 119–137.

Kaskinen, J., & Parkkinen, M. (2018). Kohteena kiertotalous. *TRY OUT! – hankkeen tulevaisuusprosessin tulokset* (*Towards a circular economy: The results of the futures process of the TRY OUT! Project*). TUTU eJulk. Turun yliopisto, Tulevaisuuden tutkimuskeskus.

Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations, *Ecological Economics*, *143*, 37–46. https://doi.org/10.1016/j.ecolecon.2017.06.041

Kuhmonen, T. (2017). Exposing the attractors of evolving complex adaptive systems by utilising futures images: Milestones of the food sustainability journey, *Technological Forecasting and Social Change*, *114*, 214–225. https://doi.org/10.1016/J.TECHFORE.2016.08.015

Kuzmina, K., Prendeville, S., Walker, D., & Charnley, F. (2019). Future scenarios for fast-moving consumer goods in a circular economy, *Futures*, *107*, 74–88. https://doi.org/10.1016/J.FUTURES.2018.12.001

Lakkala, K. (2020a). 2 disruptive utopianism: Opening the present. In *The revival of political imagination: Utopian as methodology* (pp. 20–36). Zed Books.

Lakkala, K. (2020b). *Utopianism in the age of capitalocene*. *Nordia Geographical Publications*, *49*(5), 75–92. https://doi.org/10.30671/nordia.98001

Levitas, R. (2010). *The concept of utopia*. Ralahine Utopian Studies (Vol. 3.) Peter Lang AG.

Luoma, P., Penttinen, E., Tapio, P., & Toppinen, A. (2022). Future images of data in circular economy for textiles, *Technological Forecasting and Social Change*, *183*, 121859. https://doi.org/10.1016/j.techfore.2022.121859

Lynam, T., & Brown, K. (2012). Mental models in human–environment interactions: theory, policy implications, and methodological explorations. *Ecology and Society*, *17*(3). http://dx.doi.org/10.5751/ES-04257-170324

Mäkelä, M., Karjalainen, J., & Parkkinen, M. (2022). Tulevaisuuskuvat: Merkitykset, roolit ja käyttötavat tulevaisuudentutkimuksessa. (Futures images: Meanings, roles and methods of applications). In H.-K. Aalto, K. Heikkilä, P. Keski-Pukkila, M. Mäki, & M. Pöllänen (Eds.), *Tulevaisuudentutkimus tutuksi – perusteita ja menetelmiä* (*to get acquainted with futures research – Basics and tools*) (pp. 297–312). University of Turku, Finland Futures Research Centre.

Mäkelä, M., Parkkinen, M., Lyytimäki, J., & Nygrén, N. A. (2020). Futures images of woodchips as an energy source in Finland, *Futures*, *121*, 102571. https://doi.org/10.1016/j.futures.2020.102571

Manuel, F. E., & Manuel, F. P. (1979). *Utopian thought in the Western world*. Belknap Press, Harvard University Press.

Marjamaa, M., & Mäkelä, M. (2022). Images of the future for a circular economy: The case of Finland, *Futures*, *141*, 102985. https://doi.org/10.1016/j.futures.2022.102985

Meireis, T., & Rippl, G. (2019). Introduction. In T. Meireis, & G. Rippl (Eds.), *Cultural sustainability: Perspectives from the humanities and social sciences* (pp. 3–11). Routledge Environmental Humanities.

Merriam-Webster. (2022). Utopia. In *Merriam-Webster dictionary*. Merriam-Webster.

Mont, O., Neuvonen, A., & Lähteenoja, S. (2014). Sustainable lifestyles 2050: Stakeholder visions, emerging practices and future research, *Journal of Cleaner Production*, *63*, 24–32. https://doi.org/10.1016/J.JCLEPRO.2013.09.007

More, T. (1997). *Utopia*. Dover Publications, Inc.

Niiniluoto, I. (2003). Preface (alkusanat). In M. Kamppinen, O. Kuusi, & S. Söderlund (Eds.), *Futures research: Basics and applications* (*tulevaisuudentutkimus: Perusteet ja sovellukset*) (pp. 7–10). Suomalaisen Kirjallisuuden Seura.

Oxford University Press. (2022). Utopia. In *Oxford English Dictionary*. Oxford University Press.

Polak, F. (1973). *The image of the future*. Elsevier.
Raworth, K. (2017). *Doughnut economics. Seven ways to think like a 21st-century economist*. Random House Business Books.
Rodríguez, R. W., Pomponi, F., Webster, K., & D'Amico, B. (2020). The future of the circular economy and the circular economy of the future. *Built Environment Project and Asset Management*, *10*(4), 529–546. https://doi.org/10.1108/BEPAM-07-2019-0063
Rubin, A. (2004). *TOPI – Learning material of futures research* (*TOPI – Tulevaisuuden tutkimuksen oppimateriaalit*). tulevaisuus.fi
Rubin, A. (2013). Hidden, inconsistent, and influential: Images of the future in changing times, *Futures*, *45*, S38–S44. https://doi.org/10.1016/J.FUTURES.2012.11.011
Rubin, A., & Linturi, H. (2001). Transition in the making. The images of the future in education and decision-making. *Futures*, *33*(3–4), 267–305. https://doi.org/10.1016/S0016-3287(00)00071-9
Schöggl, J. P., Stumpf, L., & Baumgartner, R. J. (2020). The narrative of sustainability and circular economy – a longitudinal review of two decades of research, *Resources, Conservation and Recycling*, *163*, 105073. https://doi.org/10.1016/j.resconrec.2020.105073
Senge, P. M. (2006). *The fifth discipline: The art & practice of the learning organization*. Random House Business Books.
Sitra. (2016). *Leading the cycle: Finnish road map to a circular economy 2016–2025*. https://www.sitra.fi/en/publications/leading-cycle/
Slaughter, R. A. (1991). Changing images of futures in the 20th century. *Futures*, *23*(5), 499–515. https://doi.org/10.1016/0016-3287(91)90098-M
Svenfelt, Å, Alfredsson, E. C., Bradley, K., Fauré, E., Finnveden, G., Fuehrer, P., Gunnarsson-Östling, U., Isaksson, K., Malmaeus, M., Malmqvist, T., Skånberg, K., Stigson, P., Aretun, Å, Buhr, K., Hagbert, P., & Öhlund, E. (2019). Scenarios for sustainable futures beyond GDP growth 2050, *Futures*, *111*, 1–14. https://doi.org/10.1016/J.FUTURES.2019.05.001
Urashima, K., Kurogi, Y., Ahola, A., Suominen, A., Hajikhani, A., Komonen, P., Lehtinen, S., Absetz, I., Eskola, P., Kauppi, J., & Ollila, S. (2020). *Foresight for our circular economy society: Collaboration project between business Finland and NISTEP*. VTT, Business Finland.
Velenturf, A., & Purnell, P. M. (2021). Principles for a sustainable circular economy. *Sustainable Production and Consumption*, *27*, 1437–1457.
Vinnari, M., & Tapio, P. (2009). Future images of meat consumption in 2030. *Futures*, *41*(5), 269–278. https://doi.org/10.1016/j.futures.2008.11.014
Wijkman, A., & Skånberg, K. (2017). *The circular economy and benefits for society: Jobs and climate clear winners in an economy based on renewable energy and resource efficiency. A study pertaining to Finland, France, the Netherlands, Spain and Sweden*. Club of Rome. MAVA Foundation.
Yüksel, I. (2012). Developing a multi-criteria decision-making model for PESTEL analysis. *International Journal of Business and Managemen*t, *7*(24), 52–66. https://doi.org/10.5539/ijbm.v7n24p52

Appendix 1
INTERVIEW DATA

Table 23.4 Interview data

No	*Organisation category*	*Interviewee(s)*	*Duration (min)*	*Length (pages)*
1	Company 1 (Waste management)	CEO	62	11
2	Company 2 (Information and communication technologies)	Enterprise growth programme leader	49	7
3	Company 3 (Construction, engineering, design, and consultancy)	Senior specialist	39	7
4	Company 4 (Silviculture and forestry)	Business unit manager	55	17
5	Company 5 (Waste management)	CEO	62	9
6	Company 6 (Architecture and engineering)	Director	31	5
7	Company 6 (Architecture and engineering)	Country director	62	8
8	Company 7 (Investment)	Investment director	54	7
9	Company 8 (Urban farming)	CEO	92	27
10	Company 9 (Clothing)	Project manager	55	7
11	Company 10 (Management consultancy)	Deputy CEO, partner	80	10
12	Company 11 (Waste management)	CE specialist	79	9
13	Company 12 (Real estate)	Adviser and adviser	96	12
14	Company 13 (Clothing)	Communications specialist	93	9
15	Company 14 (Construction)	Quality and sustainability manager	68	8
16	Municipality 1	Environmental specialist	72	13
17	Municipality 1	Environmental specialist	52	7
18	Municipality 2	Research and development manager	74	12
19	Municipality 2	Liaison manager	88	11
20	Municipality 3	Environmental director	65	10
21	Municipality 3	Environmental director	83	10
22	Municipality 4	Director of sustainable development	54	8

(*Continued*)

Table 23.4 (Continued)

No	*Organisation category*	*Interviewee(s)*	*Duration (min)*	*Length (pages)*
23	Municipality 4	Director of sustainable development	56	8
24	Regional actor 1	Project manager	49	16
25	Regional actor 1	Director of development	72	15
26	Regional actor 1	CEO	69	8
27	Regional actor 1	Head of sustainability and innovation	87	10
28	Regional actor 2	Director, innovation and foresight	58	16
29	Regional actor 2	Director, innovation and foresight	68	10
30	Regional actor 3	Project manager and Development manager	78	14
31	Regional actor 3	Development manager	84	10
32	Regional actor 4	Executive director	110	13
33	Regional actor 5	CEO	85	11
34	Research, innovation, and support organisation 1	Programme director	65	16
35	Research, innovation, and support organisation 1	Programme director	57	10
36	Research, innovation, and support organisation 2	Senior expert	81	22
37	Research, innovation, and support organisation 2	Senior expert	73	9
38	Research, innovation, and support organisation 3	Senior lead	74	20
39	Research, innovation, and support organisation 3	Leading specialist	64	9
40	Research, innovation, and support organisation 4	Specialist researcher	79	10
41	Research, innovation, and support organisation 5	Professor (entrepreneurship)	80	9
42	Research, innovation, and support organisation 6	Head of bio and circular program	84	10
43	Industry organisation 1 (Construction)	Environmental manager	61	21
44	Industry organisation 1 (Construction)	Director, environment and energy	90	12
45	Industry organisation 1 (Construction)	Director, business policy	83	10
46	Industry organisation 2 (Chemicals)	Chief advisor, bioeconomy and CE	81	26
47	Industry organisation 2 (Chemicals)	Chief advisor, bioeconomy and CE	48	8
48	Industry organisation 3 (Technology)	Executive director	57	15
49	Industry organisation 3 (Technology)	Executive director, sustainable development	69	9
50	Industry organisation 4 (Textile)	Chief advisor, sustainability and CE	59	7
51	Industry organisation 5 (Municipalities)	Manager for environmental affairs	70	10
52	Ministry 1 (Environment)	Senior specialist (CE)	77	23
53	Ministry 1 (Environment)	Head of unit	52	15
54	Ministry 1 (Environment)	Senior specialist (CE)	101	13

(*Continued*)

Table 23.4 (Continued)

No	*Organisation category*	*Interviewee(s)*	*Duration (min)*	*Length (pages)*
55	Ministry 1 (Environment)	Senior specialist (CE)	110	14
56	Ministry 2 (Agriculture and forestry)	Senior adviser and ministerial adviser	54	20
57	Ministry 2 (Agriculture and forestry)	Ministerial adviser	45	8
58	Ministry 2 (Agriculture and forestry)	Ministerial adviser	46	6
59	Ministry 3 (Economic affairs and employment)	Program director	73	16
60	Ministry 3 (Economic affairs and employment)	Senior adviser	81	10
61	Other 1 (European Parliament)	Member of the European Parliament	79	10
	TOTAL		71 hours 14 minutes	723

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com