

Sustainable Development Through Global Circular Economy Practices

This is a very important and timely book in a growing area of interest in business schools and among practitioners globally. The book explores the conceptual roots of circular economy, setting out the theoretical strands and areas of application with clarity and interest. Case studies are most welcome in this field as there is a dearth of applied material. The case studies in the book are wide and varied, integrated seamlessly into the text and offer crucial insights into what and how CE can be embraced and implemented. The addition of content relating to organisational context, resistance to change and leading change in CE is very useful, opening up questions and answers to both researchers and practitioners. The final chapter considers a progressive research agenda in the field which is very welcome for the academic community. There is something in this book for everyone, from teachers, researchers to practitioners and general interest audiences. The writing style is very accessible and the authors pull no punches in setting out the need for immediate action. A great read, a well-researched and presented book and core reading for anyone interested in social and environmental sustainability.

—*Professor Colin Dey, Professor of Social Accounting,
University of Dundee, UK*

The development of the Circular Economy is probably the most important in management research. It transcends all disciplines, sectors and geographies.

This book provides an excellent overview of the managerial challenges in transitioning from the linear to the circular with a perspective that emphasises the role of digital technology. The authors rightly emphasise the radical over the incremental and thus provide a comprehensive account of ‘how to’ for practicing managers.

—*Roger Maull, Professor of Management Systems,
University of Exeter’s Business School, UK*

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Emerald Publishing Limited
Emerald Publishing, Floor 5, Northspring, 21-23 Wellington Street, Leeds LS1 4DL.

First edition 2024

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British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-1-83753-591-0 (Print)

ISBN: 978-1-83753-590-3 (Online)

ISBN: 978-1-83753-592-7 (Epub)



INVESTOR IN PEOPLE

*We would like to dedicate this book to Irene Middlemiss.
Irene was a constant support at stressful times – especially during
the writing of books. She was taken much too early in April 2021.*

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Introduction: Sustainable Development Through Global Circular Economy Practices

Almost every private and public sector organisation will be affected by the elements of this book. They will be aware of national and international debates on global sustainability issues. A significant majority of these firms will know they will have to change their business plans to incorporate sustainable and green changes to their activities. If they do not engage in this agenda for change it may have a detrimental effect on their business or department. This will be especially true if sustainability/green targets are imposed from above. Our book will be relevant to these individuals/firms as they strive to grasp quite rapidly changing business activities. Nearly every undergraduate and almost as many postgraduates will undertake a module that is focussed on environmental and green issues as part of their university's commitment toward adhering to a sustainable agenda. This book will underpin these agenda for sustainable behaviour change.

Sustainability and green issues are being extensively discussed in schools across the world. We have strong evidence within our universities that new starters are much more environmentally aware than previous cohorts. This is affecting their career choices. Graduates are much more likely to join organisations that have sustainability and green agendas. This is also having an influence on how firms are formulating their websites. Understanding how the circular economy (CE) can influence changes in areas such as global warming will be beneficial in the near future. This book, through its focus on current and future projects, will provide metrics on how the CE is helping to meet national and international targets, that is, carbon emissions.

The battle to preserve the environment is only just beginning. It would be a big mistake for any organisation or government to underestimate the public outcry for cleaner environments and an end to increases in global warming. These words were said over 45 years ago (Van Gigch, 1978). We have some catching up to do. There is no doubt that there is a groundswell of opinion to solidify this behaviour change in the next few decades. The authors have reviewed the literature on the CE through the lens of paradigm change. This book will identify the level of purposeful activity in the CE and what policies will be required to cement circularity into mainstream business and management practices in the future.

The CE, like many previous initiatives, has been able to tap into the current zeitgeist and is being coveted by many academic disciplines, that is, logistics management, economics, ethics, logistics, behavioural science and industrial ecology. There is still time to ensure that the academic and business communities work together to make this a real success story. Just having contributions from many disciplines is not enough. Ideally, these groups would bring their own particular visions and competences and work together in an effective way towards positive CE outcomes. At the very least, these different stakeholders would complement each other when researching or working on CE projects. We definitely need more certainty in the CE enterprise; it should not be a leap of faith. This book will reinforce the key areas that need to come together to make CE projects successful. In view of ambitious climate change targets and COVID-19, we may have to design CE frameworks that work not only in 2022 but 2035 or later.

Decoupling production and consumption for certain research and analysis could be a positive outcome of these collaborations. Executives in the era of the CE will need to deal with a raft of ethical dilemmas. Increased and improved supply chain (SC) activity will lead to an increase in the availability of products, that is, food, cars, and white goods. This will increase the potential for waste. A much better balance is required between production and consumption. There is currently a significant amount of purposeful activity trying to link SCs with the CE.

A really positive aspect of the current sustainability debate is that it identifies key strategic issues from behavioural change through the potential symbiotic business activity within the CE. It is also able to visualise the really positive aspects of research in both sustainable production and consumption. This exciting research area was always going to become more complex as the number of intricate and crucial relationships increased. In this situation, where the number of key stakeholders increases dramatically it is often a good idea to take a holistic perspective on the whole enterprise. Closed systems don't work.

Chapter 1: The Origins of the Circular Economy

There is an implicit understanding that the CE will help firms, SCs, and countries meet global warming, carbon emissions, and sustainability targets well into the future. We are not the first generation to identify a pressing need for change as a precursor to 'saving the planet'. It is imperative that we realign our priorities; carefully plan all human endeavours to anticipate their short- and long-term consequences for the planet; bring a genuine end to waste; bring about a significant retrenchment in our levels of consumption; increase recycling, environmental restoration, and repair; ensure conservation through changes in social and economic patterns of development and life control of natural surroundings, primary agricultural land, open spaces, etc.; and protection and enhancement of environmental quality. This previous list seems to resemble a set of demands that might have emanated from COP-26.

Fligstein and McAdam (2014) undertook some important research into business structures and fields that seems to give an insight into how the CE may develop. It was underpinned by social management theory and the political

theory of markets. They stated that social order is constructed through a process of interactions among stakeholders who are competing for advantageous business positions. They identify the dynamic of how new systems and institutions emerge, remain stable, and are transformed. They also investigated how individuals and groups come to compete with each other in social arenas where something important is at stake. One of the most exciting aspects of planning the CE is to address the potential methodological impasse that exists in CE design. The authors believe that the future design of the CE may need to be radically changed as the moral compass for choosing such systems is reset. This should be a positive, not negative, outcome from the future design of the CE. The move to a CE is undoubtedly a major sociological change.

The dynamic of SCs within the CE will be sufficiently different to make them problematic for a significant number of organisations. The CE is likely to open up new business markets for many of these companies. Markets are generally socially constructed arenas where repeated exchanges occur between buyers and sellers under a set of formal and informal rules (conventions) governing relations among competitors, suppliers, and customers. These arenas operate according to local understandings and rules that guide interaction, facilitate trade, define what products are produced, indeed constitute the products themselves, and provide stability for buyers, sellers, and producers. However, with governments signing up to ambitious targets in areas such as carbon reduction across the globe it is more than likely that this stability will disappear. Marketplaces are also dependent on governments, laws, and cultural understandings supporting marketing activity. If we add ethical and ecological aims and goals to this list the future is certain to be more complex and uncertain in SC and CE transactions.

Chapter 2: Sustainability and the Circular Economy as Part of a Global Environmental Strategy

A significant amount of recent debate has suggested that the CE can be given certainty through a mix of laws, policies, risk reduction (tax levies), and strict governance. As citizens, organisations, and governments across the globe increase their interest in environmentally and socially sustainable means of production and consumption, the idea of a CE has been at the forefront of recent discussions held at organisational, national, and global levels (Hazen et al., 2020; Hussain & Malik, 2020). A significant amount of debate has focussed on the need to ensure improved sustainability in SC management endeavours with operational excellence in the CE (Sehnm et al., 2019). They stress that the CE is not only concerned with a reduction in the global environment being used as a receptacle for waste but also with the creation of self-sustaining production systems with reusable materials as the norm. A useful addition to this debate is that several of these articles highlight the need to focus on the long-term requirements of environmental sustainability (Genovese et al., 2017). It is interesting to note that there still tends to be a real focus on production rather than consumption (Georgantzis Garcia et al., 2021). The authors will return to this discourse later in the book. A very positive stream of work focusses on the need to view CE as a way of reducing pressure on the environment.

Chapter 3: Sustainable Production and Consumption Within the Circular Economy

The CE has received global attention because it has the potential to optimise and promote sustainable production and consumption through new models based on continuous growth and limitless production (Govindan & Hasanagic, 2018; Ludeki-Freund, 2019; Tseng et al., 2020). The recent outcome from COP-27 shows that change in global sustainability cannot always occur by just issuing edicts and laws. In certain areas of the globe, it would certainly be more beneficial to rely on conventions rather than laws. A more realistic suggestion may be to develop and implement a set of desirable and feasible international rules and regulations that can facilitate the promotion of an effective CE. The chapter considers the more holistic model of strategic action fields (Fligstein & McAdam, 2014) in surfacing potential key drivers for sustainability from both a policy/structure and an agency/behaviour perspective.

A pressing need for all firms given these global changes in SCs is a requirement to further understand the sociology of consumption. Given the international potential and scope of the CE, it would be a positive step for organisations if they took a systems perspective when developing new alliances and markets. Historically, we have understood economic values for thousands of years (use of coins/currency); however, we have much less or no understanding of social, aesthetic, or ecological currencies. Despite the wealth of literature in the area over the last 70 years, it is not clear how analysts in the private sector introduce the important element of social responsibility into their design-making equation. It has been understood that the executive should try to maximise profits for the firm and shareholders, though they should always take into account the responsibility of the organisation towards the public, the community, the preservation of the environment, and aligned goals. This usually depended on the perceptions of the manager towards different situations. It is often believed that the executive will always seek the short- and long-term profit of the company and that he/she will automatically take into account their responsibility towards wider society. This shows the uncertainty of this position. Is it always in the self-interest of the firm to carry out social obligations, and by doing so, it is maximising its profits in the long run. This position leaves the executive open to criticism uncertain how far to pursue either profits or the welfare of others.

The ability to decouple production and consumption will be a positive aspect of CE and should lead to improved resource efficiency. With the CE gaining impetus as a concept and practice, the ability to promote closed material processes with strategies for material recycling and product reuse will become more important (Hussain et al., 2020; Moreau et al., 2017). SCs acting as district energy systems should be viewed as a viable method of moving towards a circular industrial economy (Mignacci & Locatelli, 2021; Pan et al., 2015). This framework can be practically transferred to several business and industrial areas, for example, construction (Leising, 2018).

The current linear 'take-make-waste-extractive' model leads to the depletion of natural resources and environmental degradation. CE aims to address these

impacts by constructing SCs that are restorative, regenerative, and environmentally benign. This may require the need to deploy a multi-objective optimisation strategy for trade-off analysis within the CE (Baratsas et al., 2021). Waste management and the requirement for sustainable packaging need a radical overhaul and drastic improvement to move towards a zero-waste CE (Meherishi et al., 2019; Zhang et al., 2019). This is just as important when assessing people-driven issues for small and medium-sized enterprises (SMEs) or short SCs in the CE (Kiss et al., 2019; Sawe et al., 2021). The chapter draws on a powerful case study in H & M, the Scandinavian fashion manufacturer and retailer to illustrate SC complexity and begin to draw out the organisational response to the CE challenge.

Chapter 4: Supply Chain Management and the Circular Economy

It is claimed that digital SCs facilitated by big data analytics (BDA) capabilities have become of business significance to developing a competitive and sustainable SC. CE practices and flexibility in the sustainable SC are significant mediating variables between BDA capabilities and SC performance (Cheng et al., 2021). A significant number of practitioners and academics have investigated the possibilities of using decision support systems and blockchain to improve CE practices in post-COVID-19 SCs. In these debates, a breadth of theoretical practices and perspectives are considered by industry and academia in addressing future research directions to develop knowledge and understanding about CE operations, principles, and theory in areas such as energy analysis and marketing (Alkhuzaim et al., 2021; Batista et al., 2018; Li et al., 2021). The authors argue for moving away from a prescriptive set of practices and definitions for the CE towards a set of key goals to allow for the inclusion of future practices, technologies, and techniques. It is possible that we do need research to go beyond meso-level to consider a wider social and institutional environment needed to solve current challenges (Masi et al., 2017).

Other research investigates the function of *remanufacturing* principles and the adoption of green and sustainable manufacturing practices. There is a strong possibility of improving the capability to influence and reinforce SC resilience in the CE. A dynamic remanufacturing capability can have a positive effect on SC resilience (Bag et al., 2019). Complex SCs need to determine the optimum amounts of specific elements, such as pricing strategy, remanufacturing (rework) policy, delivery time, and sales effort to reduce the conflicts between different stakeholders. This should enhance the economic and CE objectives of the SC (Alizadeh-Basban & Taleizadeh, 2020). There is a pressing requirement to acquire a more detailed understanding of how innovative and flexible solutions can be incorporated into food SCs in order to feed the world (Mahroof et al., 2021; Mehmood et al., 2021). Other recent research in food SCs shows that important learning can be gained from problematical projects when severe challenges impede the smooth development of CE-driven sustainability practices (Sharma et al., 2019). Methodological frameworks for CE enhancement will be introduced later in the book. The identification of circular food waste flows can maximise the sustainability of food SCs (Batista et al., 2021).

Chapter 5: Business Innovation and Change for Circular Economy

It is very important that practitioners in the CE are able to implement robust business models. They will need to take a much wider perspective in planning and implementing their business activities. Scoping endeavours in the CE will be a difficult but necessary ambition. Putting a partial plan in place for single aspects of a CE project could have serious negative repercussions. Executives in these areas will need a concise vision of the whole system. This issue, in itself, may need a radical change in staff competences and capabilities as firms struggle to envision the bigger, more complex business relationships that will emanate from their new working environments. SC management will move from largely binary contracts towards multi-stakeholder negotiations. The control that many organisations had over the SC process may seem to disappear as decision-making becomes much more complex. Plans that were being made for the immediate future must now be made for the longer term. SC management's financial negotiations will dramatically change in the CE. Presently, companies and suppliers have quite a clear idea of what their contract is. Many supplier contracts are for several years, a significant number are rolling contracts. There is a certainty within the transaction and process, potentially a complacent attitude. A fee is agreed upon by both parties to provide services at a certain price that can be renegotiated at a pre-defined date.

In today's business environment, there is not even certainty about the 'currency' that will be used in negotiations. There is every probability that these contracts will move from being purely financial, to where the 'deal' is a combination of finance and corporate social responsibility (CSR) benefits from these alliances. This will be the most basic element of the negotiations in these new, turbulent business environments. Organisations might want to sign contracts with you because you are greener than your competitors. You may not even become part of a particular CE because you do not have the requisite CSR credentials. Your firm may not be able to attract graduates with the appropriate skills and competences because your record on carbon emissions has been poor for several years. No company wants to be viewed as a weak link in what is otherwise seen as a relatively virtuous circle. If firms do not currently have the appropriate capabilities in-house, they will have to set up a training regime to ensure they reach a level of competence sufficient for the new environment. This environment will probably require a different blend of staff to achieve agreed business objectives.

The organisational reality of the CE challenge requires innovation and change on a large scale to drive and implement new systems and processes and to create a new mindset of circularity across SCs, in integrated regulation and government systems and the end users themselves. The vision to change and the drivers to do so have many origins, and organisational leaders are required to interpret and map these phenomena into a coherent strategy. This strategy requires stakeholder engagement at all levels of the company, externally in terms of customer groups and across the SC. This chapter begins to illustrate the full nature of the organisational challenge, the nature of change, the models of planned change, and the

leadership role in this setting. Technology and adaptation are at the heart of CE business model innovation, and some of the issues of implementing tech-driven change are explored in the chapter. Excellent case studies of Ricoh and Adidas are included to illustrate some of these points.

It is important that we put in place a coherent set of systems and frameworks to facilitate the integration of circular business models and circular SC management in a way that promotes the growth of sustainable, flexible, and collaborative practices (Bai et al., 2019; Geisdoerfer et al., 2018; Ripanti & Tjahjono, 2019; Tassinari, 2020). However, a comprehensive, integrated view of circular supply chain management (CSCM) is still absent in the extant literature. This prevents a clear distinction when compared to other sustainable SC concepts and may be a hindrance to the further development of this field of study (Farooque et al., 2019). However, several authors have seen the importance of undertaking comparative studies in this area, especially with linear and circular SCs in the construction and electronics industries. It is posited that an integration of CE principles within green and sustainable SC management can provide real advantages from an environmental perspective (Bressanelli et al., 2021; Nasir et al., 2017).

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With regard to the CE, it is important that firms have a much better grasp of pricing policy in complex CE contracts. Looking further ahead, organisations will need a much broader and deeper insight into the vagaries of national and international trading regulations which will be further complicated by climate change targets. Global treaties to govern the flow of capital, trade, and more recently and into the future global warming and carbon emissions have historically been difficult to validate.

Chapter 6: A Review and Research Agenda for the Circular Economy

Moving to a CE at a time of increased global ecological awareness may require a change in the ethical and moral standards of existing and future staff. This may manifest itself in different ways in different organisations and circumstances. This may include a different sense of personal responsibility, possibly deriving from

one's own beliefs; a sense of official responsibility, including CSR, acting in the interest of one's employees, customers, and shareholders; standards stemming from personal loyalties, including organisational loyalties; technical morality dictated by standards set by one's professional enterprise; and legal responsibility to abide by the law, court decisions, and administrative orders (adapted from Steiner, 1975). This list of standards does not go anywhere near far enough to meet the ethical and moral standards required by employees and companies to meet the requirements of business and ecological change in the CE into the 2030s.

It must be stated that this is not an academic discipline as such. This is a major industrial, business, and management initiative with global consequences. However, there is no doubt that the academic community can play an important role in its effective development. New intelligence will need to be rapidly acquired as firms need to gain an advantage over their rivals. In such business environments, effective routines are those that are highly adaptive to changing circumstances, giving the firm the opportunity to move quickly to a more optimum competitive position. It has become clear during our preparation for this book that radical change is required regarding the research agenda for the CE. One of the main positive reasons for this particular book was to clarify the scope and relationships within the future CE. How and why are the goals of the CE being set? Are these goals underpinned by ethical and ecological standards? Who are the main drivers of the CE? Is this a push or pull business scenario? There has been a significant amount of purposeful activity in these research areas in the last few years. There is potential for positive collaboration across many academic disciplines as well as with practitioners in these fields.