

INNOVATION, ENTREPRENEURSHIP, MANAGEMENT SERIES

**MODERN FINANCE, MANAGEMENT INNOVATION
& ECONOMIC GROWTH SET**



Volume 3

Circular Economy

*From Waste Reduction
to Value Creation*

**Edited by
Karen Delchet-Cochet**

ISTE

WILEY

Circular Economy

**Modern Finance, Management Innovation
and Economic Growth Set**

coordinated by
Faten Ben Bouheni

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First published 2020 in Great Britain and the United States by ISTE Ltd and John Wiley & Sons, Inc.

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27-37 St George's Road
London SW19 4EU
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www.iste.co.uk

John Wiley & Sons, Inc.
111 River Street
Hoboken, NJ 07030
USA

www.wiley.com

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Library of Congress Control Number: 2020935510

British Library Cataloguing-in-Publication Data
A CIP record for this book is available from the British Library
ISBN 978-1-78630-573-2

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Foreword

With the arrival of new words and new concepts, our understanding of what they carry requires a significant period of time to stabilize, first of all in the framework of the first warnings to reach public opinion, through the field of politics in charge of operational implementation.

This is the case with the concept of “sustainable development”. In France, and probably in French-speaking countries, “sustainable development” has come to be commonly summed up as the only ecological requirement, forgetting the other two pillars of sustainable development – social and economic requirements.

So what should we think of the term “circular economy”, which semantically refers to reference points that have no known link with each other? Of course, with these two words, “economy” and “circular”, what do we do with them? The answer lies in Nature, which in essence has not forgotten the limits of the planet: a blue orange has been circling the Sun for billions of years; of these billions of years and the billions that follow, it will not grow a gram heavier. Like this sailboat launched non-stop into the ocean of the Universe with what it carried, such is our Earth. Waste and destroy the resources available on board and that is the end of humanity’s destiny. Fortunately, as human beings, we are extraordinarily fortunate to be able to understand the limits of our own existence, our place in the galaxy and therefore the need to preserve our resources.

However, recycling waste into a new raw material cannot be the only answer. In a few decades, the Earth will be home to 10–12 billion people, including 5–7 billion who will be able to possess as much as we have, as they will have been lucky enough to possess things in our so-called developed countries. In this scenario, two or three Earths would not be enough. And we only have one!

One Earth with abundant but limited resources.

A rapidly growing population multiplied by 10 in 150 years.

A model of development known as linear economy, based on voracious levying, wasteful processing and wasteful consumption.

The only parameter that can be changed in order to close this parenthesis on a century and a half of linear economy, is our development model. This is the very essence of the circular economy, which shares the Earth's resources among all its inhabitants today, tomorrow and in the centuries to come so that everyone can have the means to live without suffering shortages, conflicts and wars over raw materials.

This is the challenge, to rethink our development to achieve this balance between growth for the common good and preservation of resources. Our current model, based solely on the creation of economic wealth, artificial in the sense of the physical reality of the planet, must incorporate a new dimension in order to continue to create values, certainly values that are economic, as well as social and societal, while at the same time reducing the amount of resources we take from it: quite a challenge.

It is the aim of this book, which, in a cross-disciplinary research of transdisciplinarity, provides answers for the implementation via policies of the new foundations of our development model. Based on the experience of pioneering companies, on work in sociology and education, on the shared normative framework and on the indispensable return to territories as spaces for sustainable development, this book enables everyone to grasp this paradigm shift, this revolution, by approaching it by author's contribution, by thematic chapter or as a whole.

I would like to commend this work, a remarkable work of reference today, to be read as a matter of urgency. It will not be out of date for years to come, even if it is clear that new ideas, new concepts and innovative models will emerge, because the foundations are real foundations for those who want to understand the circular economy in relation to the many challenges posed by the limits of our planet and the framework of our unique way of thinking, which is blocked by a development model, the societal rules that structure our common life and the dynamics of human growth.

Supervised by Karen Delchet-Cochet, the experts, many of whom I know and whom I thank for what they have brought to my understanding of the issues, give us the bricks that we now need to put together to build a society for ever more shared common goods without wasting our planet's resources.

In my contributions, I am pleased to recall that the most important thing in a circular economy approach is the coffee machine, a place that brings together those who should not meet and who will share their expertise and co-construct the project together. This book is a paper coffee machine. Annotate this book, alter it, share it, enrich it! Make it a book of circular economy, bringing in more and more knowledge; collective knowledge.

I reiterate my admiration to all the contributors and my special thanks go to Karen Delchet-Cochet, the initiator and editor of this book.

François-Michel LAMBERT
Member of French Parliament
President of the *Institut national de l'économie circulaire*

Introduction

The circular economy is an exciting topic, both for the present and the future since it is nothing more than a system overhaul, to paraphrase the Ellen MacArthur Foundation¹. At a time of climate change, the collapse of biodiversity, and increasing inequality, “the Earth is reacting to human actions”, explained Bruno Latour in his inaugural lesson to Sciences Po^{2,3} students in 2019. We are facing a second “Galilean revolution”. For Lacy and Rutqvist, “transitioning to the circular economy may be the biggest revolution and opportunity in our global economy”⁴. However it is also necessary to understand what the circular economy means, which we believe is already too often reduced to a system adaptation.

Beyond the interest and topicality of the subject, the need for a collective work originates from a triple observation. The first observation is the absolute need to engage experts from different disciplines in a dialogue to collectively address the many challenges we face both in terms of resources and equity. Most of the time, we remain confined to our fields of research or expertise. The topic of the circular economy is, by nature, transdisciplinary. In other words, “it goes beyond the silos between disciplines”⁵. It, therefore, requires perspectives and proposals between them, i.e., interdisciplinary. The second observation is the need for academic research to inform operational debate and implementation. The French legislative calendar for 2019 was conducive to discussions in terms of the circular economy.

1 <https://www.ellenmacarthurfoundation.org/fr/economie-circulaire/concept>.

2 <https://www.sciencespo.fr/actualites/actualite/C3%A9s/%E2%80%9Cce-n%E2%80%99est-plus-une-question-d%E2%80%99%C3%A9cologie-mais-de-civilisation%E2%80%9D/4306>.

3 Sciences Po is a prestigious French higher education institution. It has notable alumni, including previous heads of state and government including seven of the eight past French Presidents.

4 Lacy, P. and Rutqvist, J. (2015). *Waste to Wealth*. Palgrave Macmillan, London.

5 <https://www.larousse.fr/dictionnaires/francais/transdisciplinaire/79087>.

Indeed, the “*Anti gaspillage pour une économie circulaire*” (“Anti waste for a circular economy”) bill has launched a debate in which we are participating here. We wish to stress the need to consider the circular economy as a resource economy rather than a waste economy, a path that one now seems to be taking. The final observation, as a corollary to the first two points, is the importance of a collective reflection with multiple perspectives.

This book, therefore, includes reflections by environmentalists, urban planners, and specialists in management sciences, including the perspective of researchers, business consultants, local actors, and institutions.

They base their comments on theories, observations and business examples. They shed light on what the circular economy covers and allow us to *understand its framework and issues in Part 1*. Thus, if the circular economy is not an entirely new concept, it seems, as Franck Aggeri says in Chapter 1 of this book, necessary to “invent a new model”, a “mode 2” circular economy. He emphasizes the creation of local value and the importance of a new industrial policy.

Christian Brodhag stresses the need to return to the notion of resources and the environmental context (Chapter 2). He highlights the importance of a lifecycle approach and of an environmental, social, and economic assessment to innovate without negative impacts.

This paradigm shift towards a circular economy necessarily leads to an evolution of the labor market and human resources management, the main trends of which David Moriez studies (Chapter 3). New jobs and new skills are emerging.

This evolution, therefore, implies that we must reflect on the role of education in the ecological and circular transition, both in terms of initial and continuing training, as Dominique Bonet Fernandez points out in Chapter 4. Student mobilizations and higher education commitments are a strong testimony to this responsibility.

Finally, the work of Karine Fabre and Alexis Pokrovsky concludes Part 1 by focusing on proximity as a lever for a circular economy (Chapter 5). Local and regional authorities are now equipped with new skills to be part of a circular economy. They illustrate their point with examples of public practices and policies between responsible purchasing and waste reduction at the source.

Part 2 presents some examples of tools and approaches. Anne de Bethencourt looks back at the history and philosophy of Cradle to Cradle (Chapter 6). This pioneering approach proposes to eliminate the notion of waste and create positive loops. Several sectors, such as textiles, carpets, and cleaning products, have already deployed it.

Industrial and territorial ecology is closely linked to the circular economy, as Valérie Fernandes points out (Chapter 7). After having reviewed the common points and differences between these two concepts, she wonders about the modes of governance that would ensure the sustainability of industrial and territorial ecology approaches, by giving many examples.

The sharing economy can also be an interesting approach from a circular economy perspective. According to Catherine Lejealle, the sharing economy rightly contributes to the debate around the circular economy (Chapter 8). She highlights the role of consumers in a circular economy and the potential leverage of the sharing economy to play this role.

Finally, Anne Benady, Melodie Merenda and Mérylle Aubrun argue that the circular economy, a subject under construction, required a normative framework, as explained by the Afnor authors' group. They review the genesis of the XP X30-901 standard: "Circular economy – Circular economy project management system – Requirements and guidelines" and present us with its content and challenges, particularly at the international level (Chapter 9).

Lastly, Part 3 of this book focuses on a few sectors of activity with high environmental stakes. Vincent Augiseau provides a comprehensive overview of the issues, definitions, policies, and projects of the circular economy in construction (Chapter 10). He stresses the variability of the scope of the circular economy, insisting in particular on the insufficient consideration of the territory, and the need to articulate circular economy and spatial planning.

Yvon Pesqueux returns to the notion of waste and what it reflects in terms of society in Chapter 11. He discusses the ambiguity of waste and its lifecycle, and questions the boundaries of this stigma in our societies.

Fashion is a highly topical sector in terms of circular economy which Bénédicte Bourcier-Béquaert, Karen Delchet-Cochet, and Valérie Fernandes are interested in (Chapter 12). Subject to extended producer responsibility (EPR) regulations, this sector has substantial environmental and social impacts. They carry out a critical analysis of the circularity practices of major fast-fashion retailers from a logistical, marketing, and strategic perspective.

Another sector subject to EPR is packaging. It is questioned with regard to the circular economy by François Cabaret in Chapter 13. Returning to the different functions of packaging, he discusses the real need in terms of the service provided and suggests some possible actions.

Finally, Karen Delchet-Cochet and Coralie Damay examine, from both an environmentalist and a market researcher point of view, a sector that is somehow special as it affects children: the toy sector. While environmental and social impacts imply rethinking the lifecycle of toys, the very question of the utility of the toy deserves to be asked (Chapter 14).

These authors' comments are complementary. They define and analyze the circular economy from different angles, but all stress the need to not consider the circular economy from a restrictive angle. The circular economy should not be limited to waste management. They call for a paradigm shift in their academic and/or professional wishes and commitments, including the question of resources. May this book make it possible to establish a dialogue between all stakeholders and to collectively innovate to rethink our relationship with the world.

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PART 1

The Circular Economy, Between Framework and Stakes

The Circular Economy: Historical Perspective and Contemporary Issues

1.1. Introduction

Over the past 10 years, the circular economy has experienced spectacular interest from public authorities, the media, economic and social actors and, more generally, the general public. This enthusiasm is based on a vulgate illustrated by a short promotional film of one and a half minutes that can be viewed online on the European Union's website¹. What does this film tell us? Each individual (here a European) consumes an increasing amount of raw materials (14 tons per inhabitant of Europe) and generates an increasing volume of waste (5 tons per inhabitant of Europe). These products, resources and waste could, on the other hand, be repaired, reused or recycled. This is the principle of circular economy. It is therefore necessary, as is explained, to move away from the linear economic model that has gradually become structured since the industrial revolution and has eventually become dominant. This linear economy is based on the idea of a world of infinite resources, which can be taken without limits and transformed into products, which in turn will be consumed and then disposed of in landfills. Conversely, the circular economy model aims to close the flows of materials and energy circulating in the economy. Several strategies could be used to achieve this: reducing the quantities of materials and energy actually used to produce goods, extending their lifespan through sharing, repair and reuse, or recycling the materials they contain at the end of their life, according to an endless cycle.

Chapter written by Franck AGGERI.

1 www.europarl.europa.eu/news/fr/headlines/priorities/ecirculaire-dechets/20151201STO05603/economie-circulaire-definition-importance-etbenefices.

As this short film highlights, circular economy is nowadays presented in the form of a utopian narrative that draws a new economic model and an ecologically sustainable society. This is where a crucial explanatory factor for the current success of the notion lies: the common view of the circular economy does not threaten blood and tears, or the specter of degrowth as a condition for saving the planet; conversely, it suggests that another mode of growth, more virtuous, and based on the principles of economy and systematic reuse of resources, is possible.

However, the expert and historian are left in doubt: is the circular model really new? As for the linear model, how far back does it really go? And if it is not so old, what did the economic model that preceded it look like?

In short, to better understand the contemporary challenges of the circular economy, a historical perspective is essential. We will first briefly recall the origin of the concept and its placement on the public agenda. We will then return to the history of so-called circular practices. This detour will allow us to highlight that the circular economy historically preceded the linear economy model, which only emerged at the end of the 19th Century and only became definitively established after World War II. However, this historical model of the circular economy, which we will call mode 1, has disappeared for reasons that we will explain and that remain valid. This historical detour will allow us to highlight the conditions of the new circular economy model, which we will call mode 2, to meet contemporary requirements, in terms of pollution traceability, ecological, economic and social sustainability. Finally, we will conclude with an analysis of the main obstacles to a circular transition.

1.2. From the origins of the reflections on the circular economy to its inclusion on the public agenda

The idea of circularity of material and energy flows is not new. It can be found as early as 1966 in Kenneth Boulding's book, which advocates that men must find their place in an ecological cyclical system capable of a continuous reproduction of any material form. The very notion of circular economy first appeared in a book on environmental economics in 1989 (Pearce and Turner 1989).

However, it was not until the early 2010s that the concept became truly popular internationally, with the publication of several reports that would help to popularize the concept among decision-makers and the general public.

The notion was quickly seized by the public authorities. As early as 2016, the European Union adopted a circular economy package that has since been translated into an action plan for the circular economy. In France, the publication of an ADEME report in 2013, followed by the first conference on the circular economy in