

LEARNING MADE EASY



Circular Economy

for
dummies[®]
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Reject the traditional
'take-make-waste' model

Rethink your
material lifecycles

Redesign waste
to be valuable

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by Kyle J. Ritchie & Eric Corey Freed

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Circular Economy For Dummies®

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Introduction

Welcome to *Circular Economy For Dummies!*

This is a book about materials and waste, but it's also a book about design and business and how these elements are connected. At its heart, this book is about rethinking how we humans can create food, buildings, fashion, and other products without destroying Planet Earth and burying the world in waste.

To safely provide for the needs of billions of people in an ever-warming world, we need to change the situation dramatically. Every manufacturer, designer, and producer of goods needs to rethink their industrial approach to how products are made. Instead of the old take-make-waste approach to manufacturing, where natural resources are extracted from the earth to make stuff that ends up rotting in a landfill, we need to explore a new model. That's the definition of the circular economy.

Although you'll find a lot of information about the impact of waste in this book, it isn't a book about trash. Nor does the book focus only on how to reduce plastic, even though that's a part of the story. At its core, the circular economy focuses on how to redesign everything so it can be made and remade over and over again. It turns out that doing good can also be beneficial to a business's bottom line.

The planet is swimming in trash. Though the industrial revolution transformed the quality of life for everyone, it also produced billions of tons of plastic waste, nearly all of which ends up in the oceans or in a landfill. At this rate, the oceans will contain more plastic than fish by 2050. If we want to save the planet from a terrible waste, resource, and climate crisis, we have to transform our way of making things.



REMEMBER

The environmental problems we humans need to solve aren't trivial or easy to fix. Though it's true that we understand far better the impact that humans have had on the environment, we still have a long way to go to be truly circular in terms of the entire economy. Rethinking our approach, reimagining our businesses, and redesigning our products is a huge challenge, but it's also a huge opportunity.

We wrote this book to be the definitive guide to the circular economy. Though the circular economy has been gaining mainstream adoption in Europe and the United Kingdom, it's still largely a new concept in North America. This book is for anyone who runs a business and has an interest in making better products, services, or approaches for their customers. It's also intended for anyone who wants a clear framework for how to create a truly sustainable product or material.

In our daily lives, we both work on improving the sustainability, health, and impact of buildings, and we're driven to help show people how to have a positive impact on the planet. This book — which reflects our hope for a better and brighter future — shares the lessons we've learned from working with thousands of businesses, institutions, and government agencies to help them create vibrant, healthy, and waste-free buildings.

Circular Economy For Dummies is the first comprehensive reference and how-to book that gives you the knowledge and tools you need to transform your business from a linear (wasteful) model to a circular (sustainable) one — and to impact the lives of everyone in the world for the better.

About This Book

This practical, action-oriented book is about manufacturing and design. It doesn't dwell on theory or abstract concepts. Nor do you need a PhD in supply chain management. Throughout, we focus on asking the right questions and figuring out how to radically rethink materials so that you can make a true impact. The book includes a diverse set of case studies, interviews, and examples to inspire and guide you.

Transforming how everything is made is no easy task. Trying to improve the environmental impact of your product might require you to study dozens of books. Who has time for all that? Instead, we've distilled and condensed only the parts that truly matter so that you can delve directly into the heart of what's important. This book is detailed, but we didn't include long-winded passages or unnecessary content. You get everything you need in order to be successful in creating and implementing a complete circular strategy.

Our hope is that this book inspires you to take action to envision a better approach to manufacturing, materials, and waste — full of new possibilities. Unlike some other topics, the circular economy is quite complex, with layers of meaning and understanding to it. Luckily, we've written this book so that anyone can find an aspect that will grab them and motivate them to make a positive change. The circular economy addresses biodiversity, climate change, energy use, natural

resources, and so much more. This book focuses on materials and products, but covers hundreds of interconnected subjects.



REMEMBER

The future success of humanity is tied to figuring out how to achieve the ideas outlined in this book. If we're going to be able to house, clothe, and feed a global population of 9 billion (and counting), we need new ideas and new approaches to making durable, reusable, and recyclable materials of tomorrow. This book can make that future possible.

Whether your job is linked to manufacturing, design, or materials — or if you're just a curious soul looking to make the world a better place — you'll find *Circular Economy For Dummies* to be a fun, inspiring, and helpful guidebook on your journey.

Foolish Assumptions

Throughout the writing of this book, we had only you (our gentle reader) in mind. Don't panic, but here's the information we assumed about you so that you can get the maximum benefit from this book:

- » You're seeking a comprehensive but condensed and easy-to-follow guide to implementing a circular economy strategy.
- » You've already heard about sustainability and you're interested enough to buy this book.
- » You're not a treehugger, but you're concerned about climate change and waste.
- » You lack the time or patience for tracking down the meaning of unnecessary buzzwords or jargon — you want to get only the essential knowledge you need in order to get stuff done.
- » You recognize that the old "take-make-waste" approach to industrial manufacturing is less than perfect and that you might be able to find opportunities to save money and do the right thing at the same time.
- » You recognize that the field of circular economy is still a nascent and emerging topic and that, as more companies embrace these ideas, it will continue to evolve and change.
- » You realize that transforming and innovating a business requires careful planning and research.
- » You understand that this book is ultimately about people and the future of the planet.

Icons Used in This Book

Throughout this book, you see these little graphical icons to identify useful paragraphs:



TIP

The Tip icon highlights expert advice and real-world experience to provide ways to save you time and money — and preserve your sanity!



REMEMBER

The Remember icon marks information that's so important you'll want to remember it for later use. To grab the most important points in each chapter, just skim these paragraphs.



TECHNICAL
STUFF

The Technical Stuff icon marks information that's technically oriented but not critical to your understanding, so you can safely skip over them without harm.



WARNING

The Warning icon highlights some sage advice to follow so that you can avoid costly mistakes or missteps. *Warning:* Don't skip over these warnings!

How This Book Is Organized

This book is divided into six main parts — feel free to jump to any part you want. Each part is written in a way to tell you everything you need to know about a single topic inside each chapter. The following sections explain what you'll find, and where:

Part 1: Linear Is Out, Circular Is In: An Economic Revolution

The early chapters in Part 1 help you understand the problem behind the traditional approach to making products. It starts with an overview of the damage that industrial manufacturing has created and explains that it cannot continue in its current state. Then you'll see how the circular economy has emerged as a new model that corrects these issues. Finally, you'll read how the traditional approach compares to a circular approach in order to identify new ways to discuss and understand both approaches.

Part 2: Rethinking Business for a Circular Economy

In Part 2, you'll look at business in a new way that will help you identify and uncover the issues in your current business approach. You'll quickly understand how actions that you previously assumed were “just a part of doing business” (like creating waste and using toxic chemical processes) are actually costing you money. From there, you'll find out how to structure a new business model based on simple pillars that will improve your relationship with your customers and your suppliers — and improve your profits. Think of this book as a crash course in strategic business planning for a new, circular world.

This part concludes with an extended look into waste products for what they really are — valuable resources to be reused.

Part 3: Rethinking Material Lifecycles — The Circular Perspective

In the chapters in Part 3, you discover the bold, new concept, called lifecycle, that will help you map and understand all aspects of your products. This becomes a foundational strategy that you can use to bend and convert those old, manufacturing pathways into circular loops of sustainable goodness.

You'll see materials in an entirely new light and make better-informed decisions about sourcing, supplying, and processing materials. Part 3 gives you a comprehensive list of case studies showing how dozens of companies are innovating their way to more profits.

The final chapter in Part 3 explores how this all comes together to encompass the packaging and reuse of these materials.

Part 4: Redesigning the Future to Be Circular

The circular economy is looking toward the future. In Part 4, you get to see the vision of what a true circular design strategy looks like for food production, product design, architecture and construction, and fashion and clothing. You'll be inspired and excited about the innovations to come with this circular future.

Each chapter in this part covers practical examples and steps you can apply immediately to your own work in these fields. You'll discover what's possible in the circular designs of tomorrow, such as shoes made from plastic waste that's harvested from the ocean or alternative wall panels made from plants.

Part 5: Creating a Circular Economy for All

A true circular economy should be equitable, accessible, and available to everyone. In this part, you'll read about the role that each individual person plays in making this future a reality, and you'll discover the various career opportunities that await you. We close out Part 5 with a big vision of a worldwide circular economy and what that might mean for everyone.

Part 6: The Part of Tens

This wouldn't be a *For Dummies* book without these handy lists of the top ten key discussion topics. The Part of Tens is a collection of important advice and suggestions about implementing a circular approach to materials, waste, and supply chains. We wrap up the book with the best questions to ask to help get you and your team thinking in innovative ways so that you can start putting these ideas into practice.

Beyond the Book

Although this book covers the essentials of the circular economy, there's only so much that can be covered! You might reach the end of this book and find yourself thinking, "Gosh, that was incredible. Where can I learn more about the circular economy?" If that's the case, head over to www.dummies.com for more resources.

If you're looking for that helpful *For Dummies* Cheat Sheet, visit www.dummies.com and type **circular economy for dummies cheat sheet** in the Search box.

The circular economy field is evolving quickly. The day after this book is printed, some company will come along and introduce a cool, innovative product with a circular design. We'll keep up with this product and include it in future revisions of this book. We've also created a site at www.circulareconomyfordummies.com with extended interviews and bonus content that just didn't fit into the book.

Luckily, other books in the *For Dummies* series cover some of the more technical topics in this book. For example, you might want to learn more about climate change, supply chain management, or sustainability. Experts who specialize in these areas comprehensively cover all the subject details.

We both speak regularly on the topic of sustainability and the circular economy at dozens of events a year, both online and in-person at conferences around the world. If you're looking for a fun, entertaining, and inspirational talk, we invite you to attend our sessions and to come up and say hello. We love meeting anyone working to make the world a better place and hearing about your adventures.

You can keep up with our work and ideas by following us on Twitter (@EricCorey-Freed and @RitchieRevo), on LinkedIn (by name), or at our personal websites: www.organicarchitect.com and www.circulareconomy.studio.

We encourage you to share the topics and examples used in this book, and we ask you to include the hashtag #circulareconomyfordummies. We'll follow and share your interesting posts!

Where to Go from Here

You don't need to read this book from cover to cover. Each chapter is organized as a stand-alone topic so that you can go directly to the info you want. If you're interested in food, jump ahead to Chapter 15. If business strategy is your thing, flip over to Chapter 7. Just want some quick tips? Chapter 24 is a great landing spot for you.

If *all* these topics sound interesting (and of course they do), first enjoy Part 1 and then see where it leads. Not sure where to start? Look at the table of contents or the index and follow whatever topic grabs your attention.

Give yourself a pat on the back for doing your part to make the world a better place. Even small steps to reduce waste and improve materials can quickly translate into big rewards for you, your company, your family, and everyone else.

1 Linear Is Out, Circular Is In: An Economic Revolution

IN THIS PART . . .

Recognize the need to switch from a linear economy to a circular one

Evaluate how the linear economy is actually working against you

Identify the key challenges in implementing a circular economy

- » Rejecting waste as a necessary output of a global economy
- » Rethinking material lifecycles as tool to eliminate waste
- » Redesigning everything to be circular

Chapter **1**

Rejecting Waste, Rethinking Materials, and Redesigning the World

We humans are all now finding ourselves in a troubling-yet-exciting time of human existence. We're more capable and smarter than ever, yet we still maintain and perpetuate an issue unique to the human race: waste. Waste doesn't exist within the natural world; there, every output of a system acts as an input for another. Leaf litter isn't litter at all, but a source of food for insects and eventually a food source for the tree to grow leaves again next year. The carbon dioxide emitted through animal respiration is harvested by vegetation and replaced with the oxygen required to future support animal respiration. Material lifecycles within nature are circular, not linear. Every output of one systems serves as an input for another.

Though waste doesn't exist within the natural world, it most certainly — at an extremely accelerated rate — exists within the human world. Though populations and demand for resources continue to surge and the rate at which materials and

products are purchased and disposed of increases, so will the creation of waste. To avoid this situation, the modern management of material lifecycles must transition from a linear model (one based on the take-make-waste philosophy) to a circular model (one based on designing out waste, keeping materials in use for as long as possible, and regenerating natural ecosystems). To make this transition, those in charge of the global economy will need to reject waste as a necessary component of that economy, rethink how material lifecycles can be managed to maximize product resiliency and recyclability, and redesign how the human race manages its resources in the future.

In this chapter, we outline the main areas of focus that this book covers and provide some resources for you to immediately get acquainted with the thoughts and concepts behind the circular economy.

Rejecting the Idea of Waste

The current, global economy is based on a take-make-waste platform. Within this management of materials, resources are extracted from the earth (take), processed to form a product (make), and immediately discarded when the product no longer serves a purpose (waste). This management of materials — one where waste plays a critical role — is referred to as *linear*.

Waste became an accepted component of human life as scarcity of resources diminished. Once abundance was introduced into a large portion of the global economy, there was no need to bother with keeping materials in use. Instead, for some reason, it made sense to the people of that day to simply throw these materials away and start a new lifecycle from scratch. Waste was considered a necessary component of a fruitful and active economy and was often incorporated into the design of products — via planned obsolescence and cheap materials — to ensure a never-ending demand for new products. In addition, by excluding the eventual cost associated with environmental pollution and the impact on human health from material lifecycles, the use of cheap materials has inaccurately been deemed an economically beneficial strategy to make goods and resources affordable.



REMEMBER

To create a sustainable management of natural resources, we need to reject immediately the idea that waste is a necessary component of the global economy. In addition, we need to fully design out waste from our material and product lifecycles, by increasing their durability and resilience and by fully recycling materials.