The Circular Economy

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Dedication

This book is dedicated to memory of Chief Fada Omo Rim- Rukeh (JP).

Preface

The global economy uses more than 100 billion tons of raw material every year for production of goods and services. The global trends show that current practices of raw material extraction are unsustainable. The traditional buy-use-throw away (linear economy) dumps a massive 2.12 billion tons of waste. Today, there is the growing usage of scarce resources (raw materials for production of goods), heightened consumerism, and ballooning emissions etc. Attaining the goals of sustainable development compels firms to adopt a circular economy (CE) strategy, focusing emphasis on sustainable manufacturing processes. Embracing circular economy approaches could bring opportunities and benefits environmentally, socially and economically. This book is purposefully styled as an introductory textbook on circular economy (CE) for the benefit of researchers, professionals, educators and students and lecturers of universities. The book covers sectors such as food and food waste, packaging materials, construction environment, textile, electronics, and mobility. The book elaborates critical driving forces of CE including digital technologies; restorative innovations; business opportunities and sustainable business model; enablers and accelerators. It connects a CE transformation for

reaching the SDGs, waste management, sustainable consumption and production, promotion of eco-labels and bioeconomy and cleaner production. This book will help the readers to be acquainted with the new terminology, to understand the relationships between various associated concepts and models, and to generate ideas about their own research in the field of circular economy. The book “Introduction to Circular Economy” consists of 19 chapters:

Chapter 1: gives a general introduction on the meaning of Circular Economy stating its benefits. Distinguishing factors between linear economy and circular economy were also presented.

Chapter 2: discusses the drivers, enablers, accelerators and barriers of Circular Economy.

Chapter 3: discusses the fundamentals of Circular Economy models and the Types of Circular Economy Models (Circular inputs, Sharing economy concept, Product as-a-service, Product use extension, and Resource recovery).

Chapter 4: focuses on materials suitable for circular economy, processes and technologies.

Chapter 5: focuses on circularity in electronics and ICT sectors.

Chapter 6: is devoted to circular economy in battery and vehicle industries

Chapter 7: focuses on circularity in packaging industry.

Chapter 8: discusses circular economy in the plastics industry.

Chapter 9: describes circular economy in the textiles and clothing industry.

Chapter 10: is dedicated to understanding circular economy in the construction sector.

Chapter 11: is devoted to understanding circular economy in the food and food waste sector.
Chapter 12: is dedicated to understanding the life cycle assessment as a circularity tool.

Chapter 13: Introduces the reader to concept of circular economy and sustainable consumption and production

Chapter 14: is devoted to understanding the Nexus between Circular Economy and Bioeconomy.

Chapter 15: introduces the reader to Relationship Between Circular Economy and Sustainable Development Goals.

Chapter 16: discusses the contribution of Eco- Labelling to Circular Economy.

Chapter 17: discusses the concept- Cleaner Production (CP)

Chapter 18: discusses Circular Economy Practices In Nigeria

Chapter 19: discusses Global Examples Of Circular Economy Practices

I hope that this textbook helps manage resources as we practice cradle to cradle initiative and contributes to a much safer and sustainable future.

Akpofure Rim– Rukeh (Ph.D)

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