

Preface

The carbon footprint is an important environmental impact and a frequently heard term these days. This terminology has received great attention from the public, government, and media. The dreadful consequences of global warming (and the importance of addressing them) have been widely discussed by newspapers, media, government, and various nongovernmental organizations. Development of green products (such as low-carbon products) and the demand for such products are increasing each day. The assessment of carbon footprint and reduction of greenhouse gas emissions are measures that should be followed by any manufacturer or producer. Although the assessment and declaration of the carbon footprint of products are currently voluntary, soon they will become mandatory. Today's market is gradually receiving products that display their carbon emissions; likely, this will eventually become mandatory for every product produced on earth.

The mitigation of carbon emissions is an important topic for any government's agenda, and nations are trying their best to reduce its carbon footprint to the maximum possible extent. Many companies would like to reduce the carbon footprint of their products, and consumers are looking for products that emit lower carbon emissions in their entire life cycle. Assessment of the carbon footprint for different products, processes, and services, as well as the carbon labelling of products, have become familiar topics recently in various industrial sectors. Every industry has unique assessment and modelling techniques, allocation procedures, mitigation methods, and labelling strategies for its carbon emissions. Therefore, this book has been framed with dedicated chapters on carbon footprint assessment in various industrial sectors.

Each chapter provides details pertaining to the assessment methodologies of carbon footprint for a particular industry, challenges in calculating the carbon footprint, case studies of various products in that particular industry, mitigation measures to reduce the carbon footprint, and recommendations for further research. This first volume includes the carbon footprint assessment methodology for the agricultural, telecommunication, food, ceramic, packaging, building and construction, and solid waste sectors.

The concepts of eco-design and lifecycle assessment are the crux of carbon footprint assessment. Hence, the first chapter introduces eco-design methodology and the basic concept of a product's carbon footprint. For the benefit of the

readers, every chapter in the book briefly touches upon the concept of carbon footprint, assessment methods, and standards.

[Chapter 2](#) provides detailed discussions pertaining to carbon footprint estimation and mitigation of greenhouse gas emissions in the agricultural sector. [Chapter 3](#) focuses on the carbon footprint estimation of building and construction products with the aid of a case study of a residential building. [Chapter 4](#) discusses the details pertaining to the carbon footprint estimation of food products using various case studies, challenges in calculating the carbon footprint of food products, methodological limitations, uncertainties, recommendations for further research, and mitigation measures to be followed in the food sector. [Chapter 5](#) deals with the carbon footprint estimation of ceramic products.

Introducing the process flow followed in the ceramic industry with the implications for carbon footprint calculation, this chapter examines case studies on various products of the ceramic industry in terms of their carbon footprint assessment. Assessment of carbon footprint in the telecommunication sector is discussed with a case study of mobile devices in [Chapter 6](#). This chapter addresses the open questions for carbon footprint assessment of emerging mobile ICT technologies, such as how to obtain the reliable inventories for various components and subassemblies, as well as the ultimate effect of consumer behavior on recycling. [Chapter 7](#) focuses on the carbon footprint estimation of pigment in Flanders. [Chapter 8](#) is dedicated to discuss the carbon footprint estimation of different industrial spaces in mainland China, along with discussions pertaining to policy recommendations to achieve a low-carbon society. Packaging is an indispensable part of any industry today, so the carbon footprint of packaging products deserves considerable attention. [Chapter 9](#) is a dedicated chapter dealing with the carbon footprint assessment of packaging used in different sectors. [Chapter 10](#) focuses mainly on the agricultural sector in China. Finally, [Chap. 11](#) discusses the implications of carbon footprint estimation in the solid waste sector. For this, one of the important cities in south India, Bangalore, has been chosen as the case study. This chapter deals with aspects such as the management of solid waste, methods of estimating the carbon footprint of solid waste, and implications on carbon footprint due to the mismanagement of waste.

I take this opportunity to thank all the contributors to this book. I am sure that the readers will certainly benefit from this book, which brings the minute details of carbon footprint assessment for various industrial sectors together in one resource. This first volume about product carbon footprint will certainly become an important reference for researchers and students.

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Sectors, Volume 1

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