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Foreword

Efficiently managing the millions of tons of solid waste generated daily is crucial as we strive for a sustainable planet. While proper treatment is a necessity, it is equally imperative to focus on recovering materials and energy from solid waste to foster a circular economy.

For numerous decades, BITS Pilani has been at the forefront of advocating sustainable waste management practices across its campuses. The on-campus sewage treatment plants play a pivotal role in utilizing treated sewage to supplement irrigation and flush tank water. Notably, the organic portion of solid waste, including food waste, is harnessed for biomethane production, bolstering energy resources for cooking purposes. The resulting slurry is thoughtfully composted and repurposed as an organic fertilizer for horticultural needs. This book seamlessly aligns with our mission of creating a greener and more resource-efficient future. It not only benefits our campuses but also imparts vital knowledge to students and readers, empowering them to replicate these initiatives wherever they may be.

Precisely, this book serves as a guiding compass for readers to achieve sustainability through effective waste management. In a world grappling with escalating waste generation and environmental degradation, this book becomes an indispensable resource for industry professionals, researchers, and policymakers in search of innovative circular economy solutions. The collaborative efforts of over 50 authors from 23 institutions across seven countries and five continents have culminated in this comprehensive volume.

The book delves into a diverse array of circular approaches, including food waste composting, bacterial concrete, repurposing construction and demolition waste, recycling packaging materials, insightful techno-commercial analyses of biomedical waste, varied solid waste treatment methodologies, the recovery and reuse of landfill gas, as well as biomethane and biohydrogen production from organic waste and faecal sludge, all while adhering to regulated processes. It also covers critical topics like life cycle assessments of waste treatment facilities, establishing waste recycling parks, and appraising the market value of waste-derived products. Additionally, the book delves into policy interventions aimed at promoting the circular economy.

Its content presents an inspiring vision of a society that values waste as a resource, and the insights shared within undoubtedly pave the way for transformative changes in waste management practices. These efforts drive us toward a more sustainable and circular future.

I extend my heartfelt appreciation to the editors for their exceptional work in curating this invaluable resource. Their dedication to advancing sustainable waste management is truly commendable, and this book stands as a testament to their unwavering passion for environmental stewardship.

With genuine optimism, I anticipate that this book will spark collaboration among stakeholders, nurture innovation, and accelerate the widespread adoption of sustainable waste management practices.

Thanking you,

Ramgopal Rao