Preface

Implications of Industry 5.0 on Environmental Sustainability examines the little-known environmental sustainability implications of the Fifth Industrial Revolution and contributes to the limited body of knowledge on this subject by analyzing the various challenges and opportunities. This book is intended for both academics and professionals. Academically, it is suitable for graduate and postgraduate students from various fields, including management, engineering, and computer science. The book is also useful for researchers conducting environment-related research in various disciplines. Moreover, finally, it can aid industrial management and engineers in sustainably adopting Industry 5.0.

This book consists of three sections. There are two chapters with the following titles in Section 1:

Chapter 1: From Industry 4.0 to Industry 5.0: The Role of Responsible Research and Innovation

Chapter 2: Socio-Ecological Sustainability Within the Scope of Industry 5.0

This section introduces Industrial 5.0 within the context of ecology. In particular, this section describes the Research and Innovation's intermediary role between Industry 4.0 and Industry 5.0 strategies. Furthermore, the section elaborates on the Socio-Ecological Sustainability systems under Industry 5.0.

In Section 2, there are four chapters with the following titles:

Chapter 3: Are European Union Member and Candidate Countries Ready for Industry 5.0? Spatial Clustering Analysis in the Context of Industry 4.0 Performance

Chapter 4: Entrepreneurial Activities on Green Economy Through Industry 5.0 on Environmental Sustainability With Special Reference to Bangladesh: A Macroeconomic Stability

Chapter 5: Robotics Resource Management (RRM): A New Environmental Frontier in Industry 5.0 and Beyond

Chapter 6: Improving Organizational Environmental Performance Through Green Training

This section mainly deals with the managerial environmental implications of Industry 5.0. Chapter 3 checks for the readiness of the European Union member and

candidate countries for Industry 5.0. Chapter 4 looks at green economic entrepreneurial activities in the context of Industry 5.0. Chapter 5 discusses the concept and the significance of efficient robotics resource management (RRM) for Industry 5.0 and later industrial revolutions. Finally, Chapter 6 emphasizes the role of green training in improving an organization's environmental performance.

In Section 3, there are six chapters with the following titles:

Chapter 7: The Implication of Industry 5.0 to the Marine Environment: Protection Against Marine Pollution

Chapter 8: Greater Influence of 3D-Printable Sustainable Concrete and Industrial Waste on Industry 5.0

Chapter 9: Implications of Social Media in Sustaining Renewable Energy Usage

Chapter 10: Artificial Intelligence-Based Optimizing Blasting Practices in Mining

Chapter 11: The Negative Impacts of Mining Interpreted From the Problems of Abandoned Mines in South Africa

Chapter 12: Heart Rate Variability Based Drowsiness Detection System: An Edge Computing Approach

The final section mainly deals with the engineering side of the environmental implications of different innovative technologies and practices. Specifically, Chapter 7 looks at the internet-based integration to prevent the marine environment for Industry 5.0. Chapter 8 describes the innovative technology of 3D-printable sustainable concrete under Industry 5.0. Chapter 9 shows the implications of social media technology in renewable energy consumption. While Chapter 10 discusses the prospects of innovative Artificial Intelligence-based methods in optimizing mine blasting practices. Chapter 11 discusses the reasons for closing mines prematurely and subsequently getting abandoned and innovative ways to reduce their environmental implications. Finally, Chapter 12 presents an innovative technology for improving the driving and traffic safety environment.

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