

REVIEW

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Trending research topics on carbon footprint and supply chains: a bibliometric analysis based on the Scopus data (2019–2023)

Ismail Abdi Changalima^{1*}, Prisca Pascrates Rutatola² and Goodluck Goldian Ntangeki³

Abstract

This study analyzes the publication trend, most active contributors, most influential publications and trending research topics on the current context of carbon footprint and supply chains. The study conducted a bibliometric analysis of 809 documents retrieved from Scopus, published between 2019 and 2023, to identify trends, contributors, top publications, and trending topics. With the help of Harzing's Publish or Perish and VOSviewer, the study employed performance analysis and keyword co-occurrence analysis. The study reveals an upward trajectory in the number of publications in this research domain. Additionally, the study identifies several themes through keyword co-occurrence analysis, including 'the application of regulatory mechanisms and game theory in carbon emission reductions,' 'strategies and mechanisms for enhancing low-carbon initiatives within supply chains,' 'the development and optimization of sustainable supply chain systems to reduce carbon emissions,' 'the use of simulation and optimization models for CO₂ emission reduction in supply chain and logistics operations,' 'financial legislation and mechanisms for improving carbon emission reductions,' 'the impact of logistics and supply chain operations on carbon emissions and climate change,' and 'the carbon footprint in supply chains and cold chain logistics operations.' This review emphasizes the need of adopting low-carbon technologies to enhance sustainable practices within supply chains. The study highlights the role of advanced technologies in efforts linked to carbon reduction. The study also advocates for a multifaceted policy approach, including encouraging innovation, and implementing financial mechanisms to reduce carbon emissions, especially in logistics and supply chain operations.

Keywords Carbon footprint, Carbon emission, Supply chains, Sustainable supply chain, Low-carbon supply chain, Bibliometrics

Introduction

Over the past years, environmentalists, academics, and various stakeholders have increasingly focused on environmental impacts and climate change concerns. This is intriguing as the negative impact on the environment

affect biodiversity and human operations on Earth. It has been reported that carbon emissions account for the largest portion of global emissions [1, 2]. Despite efforts being made to address this issue, academics continue to express concerns. Their concerns show that environmental aspects need to be more focused on with efforts from the government, customers, and businesses [3–10]. This triggers aspect related to carbon footprint, which refers to the overall quantity of greenhouse gases, mainly carbon dioxide, released directly or indirectly through human activities [11]. Measuring and managing carbon emission is crucial for reducing environmental impacts and addressing climate change [12–15].

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Carbon Footprint Trending

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Carbon Footprint Trending:

Ecological Economics Research Trends Carolyn C. Pertsova, 2007 This new book presents important research in the field of ecological economics which is a trans disciplinary field of academic research that addresses the dynamic and spatial interdependence between human economies and natural ecosystems Ecological economics brings together and connects different disciplines within the natural and social sciences but especially between these broad areas Ecological economics presents a more pluralistic approach to the study of environmental problems and policy solutions characterised by systems perspectives adequate physical and biological contexts and a focus on long term environmental sustainability *Future Trends in Modern Plastics* Johannes Karl Fink, 2024-04-02 *Future Trends in MODERN PLASTICS* The prolific author and polymer scientist discusses the current topics in the plastics industry and recommends future research in sustainable polymers and the recycling routes of plastic waste The book opens with a chapter discussing newly developed monomers such as alkylene based monomers epoxide monomers diol based monomers bio based monomers and several other types Modern polymerization methods are then explained such as ionic polymerization plasma polymerization and ring opening polymerization The book moves on to special issues and some future trends in the plastics industry with recommendations for future research Plastics have given society enormous benefits because of their versatility light weight durability and low costs However these properties have come with negative impacts because these persistent materials are leaked into the environment during their entire life cycle Therefore critical chapters report on the future directions for sustainable polymers the valorization of plastic waste and the recovery treatment and recycling routes of plastic waste The book concludes with chapters on the usage of plastics in medical devices as well as the use of plastics in restoration food applications additive classes and manufacturing Audience The book will be used by plastics engineers chemists polymer and materials scientists in both academia and the plastics industry **15 Entrepreneurship Trends for 2025** Jon S. Wilson, Dhruvesh Panchal, Khalid Wani, Sumit Varma, Aman Nayak, Madhuvan Singh Panwar, Shiven Varma, 2025-04-26 The book *Entrepreneurship Trends for 2025* is a comprehensive guide for aspiring business leaders and innovators seeking to thrive in the fast evolving landscape of modern entrepreneurship Drawing from cutting edge trends this book explores the latest advancements in technology business strategy and consumer behavior offering invaluable insights on how to navigate and capitalize on the opportunities of the future Written by an expert in the field it provides actionable advice real world examples and practical frameworks to help entrepreneurs launch and scale successful ventures Whether you are starting your first business or scaling an existing one this book equips you with the knowledge and tools necessary to stay ahead in a rapidly changing world **RECENT TRENDS IN CHEMICAL SCIENCES AND ENVIRONMENTAL SCIENCE** Dr. Azad Kumar, Dr. Rajesh Kumar Singh, Dr. Yashvant Rao, 2021-11-18 Our intention in publishing this book was to discuss and interpret all of the major issues in the chemical and environmental science disciplines because this book covers such a broad range of chemical and environmental

science research area Rather we have selected the themes and challenges briefly defined them and demonstrated how they connect clarified the terminology and indicated where further research may be accessed We hope that the result is an excellent introduction to chemical and environmental science It is primarily aimed towards researchers in chemical science and related fields but it should be accessible to new researchers as well We have explored into more depth on issues that have received little attention elsewhere There are several useful sources for topics such as chemical science environmental science nanotechnology ionic liquids solid waste management photodegradation Nanomaterial adsorption of hazardous metals and conducting polymers However we attempted to provide up to current knowledge we are well aware that books may soon go out of date if they seek to provide too much detail so we concentrated on basic concepts that should not go out of fashion too quickly Our book differs somewhat from other texts in the chemical and environmental sciences in its concentration We have focused on ideas and theories because we feel that a solid grasp of them will be more useful in the long run than specifics of present systems services and approaches We ve also highlighted the dimension since we feel it s critical to understand where the discipline and its components originated from and why some things are the way they are This approach is based on the research with several references provided at the end of each chapter for convenience Our intention is that the content of this book will be sufficient to provide a fundamental knowledge of the entire field and that readers will refer to the references for more information and examples of the parts of which they are most interested The conclusion words and captions as well as the important references at the conclusion of each chapter are intended to present the main points in a factual way

AI Future Fortunes: AI-Powered Trends for Long-Term Investors Jeffery Long,2024-08-15
AI Future Fortunes AI Powered Trends for Long Term Investors In the world of investing staying ahead of the curve is crucial for long term success This is where AI powered trend analysis comes into play By harnessing the power of artificial intelligence investors can gain valuable insights into market trends and make informed decisions that can lead to future fortunes This subchapter will serve as an introduction to AI investing exploring the benefits and potential pitfalls of utilizing AI technology in the world of finance

Recent Trends in Civil Engineering K. K. Pathak,J. M. S. J. Bandara,Ramakant Agrawal,2020-09-27 This book presents the selected peer reviewed proceedings of the International Conference on Recent Trends and Innovations in Civil Engineering ICRTICE 2019 The volume focuses on latest research and advances in the field of civil engineering and materials science such as design and development of new environmental materials performance testing and verification of smart materials performance analysis and simulation of steel structures design and performance optimization of concrete structures and building materials analysis The book also covers studies in geotechnical engineering hydraulic engineering road and bridge engineering building services design engineering management water resource engineering and renewable energy The contents of this book will be useful for students researchers and professionals working in civil engineering

Innovations and Trends in Environmental and Agricultural Informatics Papajorgji,

Petra, Pinet, Francois, 2018-05-09 In recent years the role of information and communications technologies in the development of agriculture and environmental issues has received significant attention in different types of international forums. With new technologies constantly developing, there is a need for research dedicated to technological progress. *Innovations and Trends in Environmental and Agricultural Informatics* provides emerging research on the design, development, and implementation of complex agricultural and environmental information systems addressing the integration of several scientific domains including agronomy, mathematics, economics, and computer science. While highlighting topics such as image quality assessment, environmental policy, and supervised classification, this publication explores the applications and progress of various technologies within agricultural and environmental professions. This book is an important resource for researchers, professionals, academics, students, and scientists seeking current research on the rapidly evolving field of technology integration in agricultural production and environmental issues. *Current Trends in Environmental Psychology, volume I, 2nd edition* Giuseppe Carrus, Eugenio De Gregorio, Frederica Caffaro, Sabine Pirchio, Lorenza Tiberio, 2023-07-18 This Research Topic is linked to the 3rd International Conference of Environmental Psychology ICEP 2021 to be held in Siracusa, Italy, 4-9 October 2021. The ICEP is one of the most important scientific events in the global community for experienced scholars, junior researchers, and professionals working in the field of Environmental Psychology across the world. Submissions to this Research Topic welcome but are not limited to works that have been presented on site and virtually at the ICEP 2021. Research Topic articles will be published immediately once accepted in the journal. This Research Topic aims to promote the scientific debate over the most recent empirical findings and theoretical advances in Environmental Psychological science and to build evidence-based knowledge and innovative approaches to understand the relationship between humans and their socio-physical environments. It aims at hosting empirical and theoretical works that contribute to advancing our scientific knowledge on some of the most urgent challenges of contemporary human society. *Emerging Trends in Computer Science and Its Application* Anurag Tiwari, Manuj Darbari, 2025-04-08 The conference brought together a diverse group of scholars, researchers, and industry professionals to engage in meaningful discussions and share insights on cutting-edge trends in artificial intelligence, machine learning, data science, and their multifaceted applications. This collaboration and knowledge exchange fostered an environment of innovation, making the conference a successful and impactful event for all participants. It aimed to highlight these significant advancements and serve as a valuable resource for researchers, academicians, and practitioners who wish to stay informed about the recent innovations and methodologies shaping the landscape of computational intelligence. By showcasing a wide range of research topics and practical implementations, it not only addressed the current challenges but also inspired new ideas and approaches for future research. *The New Trend of Global Industrial Division of Labor and China's Responses* Bei Jin, Qizi Zhang, 2022-11-02 This book explores the dynamic process of International Division of Labor with constant

development and changes The process reflects not only the development level of productivity but also relations between countries What would be the evolution path for the International Division of Labor How to improve China's and emerging economies competitiveness to meet the new industrial revolution The book aims to answer the questions under the global context China would explore the innovation in new economic forms to strengthen international cooperation and avoid the intensified trade frictions brought about by its industrial upgrading

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