


Chapter 2

Mapping the Evolution of Green Energy and Sustainable Mobility: A Bibliometric Study of Green Energy and Mobility

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ABSTRACT

This research study performs a bibliometric analysis of the evolution of green energy and sustainable mobility using the PRISMA technique. The dataset, spanning from 1999 to 2024, was analyzed using VOSviewer and Bibliometrix software to identify key trends, influential authors, and institutional contributions. Finding of the study demonstrate the expanding academic interest in sustainability, reflected in the increasing number of publications over the years. The research is predominantly led by institutions in North America and Europe, with the United States leading publications, followed by the United Kingdom, China, Canada and Australia. Leading journals such as Sustainability Switzerland, Energies, and Sustainable Cities and Society emphasize the interdisciplinary nature of the field. The study brings out research clusters around key authors like B.K. Sovacool and D. Pamucar. Aligning with UN SDG 12, the study emphasizes the AI-driven innovations in responsible consumption, offering insights for policymakers and managers aiming to integrate

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INTRODUCTION

Recent years have seen major advancements in transportation due to the pressing need to combat climate change, lower air pollution, and develop sustainable urban environments (Shah et al., 2021; Sultana et al., 2019). Electric vehicles, or EVs, have become a key component of a cleaner, greener, and more sustainable urban mobility future (Kovačić et al., 2022; Al-Thani et al., 2022). The migration to electric vehicles is more than just a fad; it is a global movement to change how people commute in urban areas while also protecting the environment (Ruggieri et al., 2021; Mavlutova et al., 2023). Vehicles that run on conventional fossil fuels are no longer viable in cities across the globe due to pollution, crowded roads, and fast urbanization (Kashem et al., 2024; Un-Noor et al., 2017). Their substantial contribution to noise pollution, poor air quality, and greenhouse gas emissions all lowers the standard of living in cities. This has led to a search for solutions to lessen the environmental impact of transportation by governments, corporations, and environmental organizations. The fundamental idea behind these solutions is that electric cars are a greener option than traditional cars with internal combustion engines. EVs are regarded as an essential part of the shift to sustainable urban mobility (Ceder, 2021). Electric cars promise a time when transportation won't worsen the environment because they emit no emissions and can be fuelled by renewable energy sources (Miskolczi et al., 2021; Arsenio et al., 2016). But for EVs to be widely adopted, a comprehensive strategy that incorporates infrastructure development, green energy solutions, and legislative changes to make it easier for EVs to integrate into current urban systems is needed (Das et al., 2020; Singh et al., 2024; Barman et al., 2023).

The Rise of Electric Vehicles

Although electric vehicles have existed for more than a century, their mainstreaming has only occurred in recent decades due to technology improvements and increased environmental concerns (Trencher & Wesseling, 2022). Electric vehicles are becoming more and more popular due to several important variables, all of which are changing the transportation industry (Bohnsack & Pinkse, 2017; Tu & Yang, 2019; Coffman et al., 2017). Environmental consciousness is one of the most important motivators (Mishal et al., 2017; Afsar et al., 2016; Birch et al., 2018). There is an urgent need for sustainable transportation solutions due to growing worries about air pollution, climate change, and the depletion of fossil fuels. Since EVs are thought to be a practical means of lowering carbon emissions and reducing

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