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Carbon Footprint Assessment and Mitigation

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Abstract

Carbon footprint assessment is a key tool for quantifying greenhouse gas emissions associated with human activities, products, and services. Rising carbon emissions from energy use, transportation, industry, and agriculture have intensified climate change concerns. Assessing carbon footprints enables identification of major emission sources and supports the development of effective mitigation strategies. This article examines the concept of carbon footprint assessment, methodologies used for emission quantification, and mitigation approaches to reduce carbon emissions and promote environmental sustainability.

Keywords: Carbon footprint, greenhouse gas emissions, climate change mitigation, sustainability, emission reduction

Introduction

Greenhouse gas emissions are the primary drivers of global climate change, with carbon dioxide accounting for the largest share of anthropogenic emissions. Carbon footprint assessment provides a systematic approach to measuring the total greenhouse gas emissions associated with activities, products, or organizations [1]. Continuous exposure to high noise levels poses serious risks to human health and quality of life. Noise pollution affects human health through both auditory and non-auditory pathways [2]. While prolonged exposure to loud noise can cause hearing loss and tinnitus, non-auditory effects include sleep disturbance, annoyance, cognitive impairment, and increased stress levels. Night-time noise exposure is particularly harmful, as it disrupts sleep patterns and

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contributes to fatigue and reduced productivity [3]. Epidemiological studies have established links between chronic noise exposure and cardiovascular diseases such as hypertension and ischemic heart disease [4]. Noise-induced stress triggers hormonal responses that elevate blood pressure and heart rate. Vulnerable groups, including children, the elderly, and individuals with pre-existing health conditions, are at greater risk of adverse health effects. Urban noise pollution is often exacerbated by poor urban planning, lack of green spaces, and inadequate enforcement of noise regulations [5]. Addressing noise pollution requires integrated strategies involving land-use planning, traffic management, technological interventions, and public awareness. Understanding the health impacts of noise pollution is essential for developing effective urban environmental management policies.

Conclusion

Carbon footprint assessment is a valuable tool for understanding and managing greenhouse gas emissions. Identifying emission sources and implementing targeted mitigation strategies are essential for reducing climate change impacts. Combining technological solutions, policy support, and behavioral change can significantly lower carbon footprints. Sustained commitment to carbon mitigation is crucial for achieving environmental sustainability and climate resilience.

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