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Urban Mobility and Emissions in Bengaluru: A Literature-Based Assessment of Challenges and Opportunities

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Abstract: *Rapid urbanization and emerging dependence on private motorized transport have significantly increased greenhouse gas (GHG) emissions and air quality decline in Indian metropolitan cities, particularly the tech hub of India Bengaluru. The transport sector has emerged as a presiding contributor to urban emissions due to traffic congestion, rapid vehicle growth, and limited adoption of sustainable mobility alternatives. This paper presents a structured literature-based assessment of urban mobility and transport-related emissions in Bengaluru, with a focused examination of how advanced computing techniques-especially Artificial Intelligence (AI) and data-driven systems-can support emission reduction strategies. By integrating findings from government reports, peer-reviewed studies, and recent urban transport research, the study identifies key emission sources, evaluates current smart-city interventions, and emphasizes the role of AI in traffic management, public transport optimization, and electric vehicle integration. The analysis unveils that targeted, computation-enabled interventions such as intelligent traffic control, predictive mobility analytics, and optimized public transit systems can substantially reduce emissions while improving transport efficiency. The paper also discusses implementation challenges related to data quality, infrastructure, and system interoperability. The findings offer a practical framework for implementing advanced computing technologies to support sustainable urban mobility and climate-aligned transport planning in rapidly developing cities*

Keywords: Urban mobility, Advanced computing, Artificial Intelligence, Transport emissions, Sustainable transportation, Smart cities, Electric vehicles, Data-driven systems

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