5th World Conference on
Climate Change and Global Warming
07 - 09 March 2025 Vienna, Austria

Evaluating the Feasibility of MaaS Adoption in Kolkata: Advancing Sustainable Urban Mobility

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ABSTRACT

This study evaluates the feasibility of implementing Mobility as a Service (MaaS) in Kolkata, India, with a focus on its potential to promote sustainable urban mobility and address environmental challenges such as reducing emissions and improving air quality. In rapidly urbanizing economies like India, transportation challenges—including infrastructure constraints, poor modal integration, and high private vehicle dependency—exacerbate environmental degradation. MaaS, an innovative mobility solution integrating multiple transport modes into a unified platform, has the potential to shift travel behaviour towards sustainable alternatives.

To assess this potential, current trip chains in Kolkata were analysed using a network analysis model in GIS, identifying existing connectivity gaps and opportunities for future linkages. A stated preference survey conducted with 400 participants captured adoption behaviour by evaluating key MaaS attributes such as trip cost, travel time, and user convenience. The survey also incorporated socio-demographic and travel behaviour data, providing insights into preferences and potential modal shifts.

Preliminary findings suggest MaaS could significantly reduce private vehicle use, thereby improving air quality and fostering sustainable travel behaviour. However, addressing regulatory challenges, enhancing intermodal infrastructure, and fostering user awareness will be critical for successful implementation. The study concludes with recommendations for a phased MaaS rollout, emphasizing collaboration between transport authorities, technology providers, and the public. This research contributes to the discourse on sustainable urban mobility, showcasing MaaS as a transformative solution for reducing emissions and promoting environmentally conscious urban development in emerging economies.

Keywords: Adoption behavior; Emissions reduction; Modal shift; Network analysis; Urban sustainability