

Role of Decentralized Governance In Promoting Urban Clean Mobility: Case Studies From Guwahati and Shillong

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Abstract

Urban centers in Northeast India are increasingly grappling with mobility challenges exacerbated by rapid urbanization, inadequate infrastructure, and environmental degradation. Promoting clean mobility in such regions necessitates not only technological interventions but also robust governance frameworks. This study investigates the role of decentralized governance in facilitating sustainable urban mobility through comparative case studies of Guwahati and Shillong—two major cities in Northeast India with distinct administrative structures and development trajectories. The paper employs a qualitative case study methodology, incorporating primary data through semi-structured interviews with municipal officials, transport planners, and civil society actors, alongside secondary data from policy documents and urban mobility reports. Findings indicate that decentralized governance, when effectively implemented, enhances responsiveness to local mobility needs and fosters community participation in planning and implementation. In Guwahati, the municipal corporation's collaboration with the state transport department has enabled the partial electrification of public buses, though bureaucratic overlaps hinder scaling efforts. Conversely, Shillong exhibits a more fragmented governance structure, where limited autonomy of urban local bodies impedes strategic planning, yet community-led initiatives in non-motorized transport have shown promise. The study highlights the critical role of empowered local institutions, inter-agency coordination, and participatory planning in promoting clean mobility. It recommends capacity-building of urban local bodies, decentralization of financial authority, and integration of community voices in transport policymaking. By spotlighting governance dynamics in under-researched regions, this paper contributes to the broader discourse on sustainable urban transport and offers policy insights for cleaner, more inclusive mobility in India's emerging urban landscapes.

Keywords: Decentralized Governance, Urban Clean Mobility, Guwahati, Shillong, Sustainable Transport, Local Governance, NE India

1. Introduction

India's rapid urbanization over the past few decades has posed significant challenges to its urban transport systems. Congestion, air pollution, deteriorating infrastructure, and dependence on fossil fuels have turned urban mobility into a complex developmental issue. According to the Ministry of Housing and Urban Affairs, Indian cities account for over 70% of transport-related emissions. These emissions have serious consequences not only for the environment but also for public health, productivity, and urban livability.

While metropolitan areas like Delhi, Mumbai, and Bengaluru have received considerable policy attention and infrastructural investment, cities in the Northeast (NE) region of India—such as Guwahati (Assam) and Shillong (Meghalaya)—face unique and often overlooked mobility challenges. These include hilly terrain, fragmented governance structures, lack of robust public transport systems, and limited financial autonomy. Additionally, NE cities often lack effective integration between urban planning and transportation policy, further exacerbating the problem.

Geographical remoteness, political marginalization, and infrastructural deficits compound the region's struggle to modernize urban mobility. Existing transport systems in these cities rely heavily on informal, unregulated, and environmentally unsustainable modes such as shared taxis, auto-rickshaws, and private vehicles. The lack of viable and clean alternatives reinforces congestion and air pollution. While national policies like FAME-II and the National Electric Mobility Mission Plan exist, their impact in the NE region remains minimal due to poor alignment with local contexts.

Hence, addressing clean urban mobility in NE India requires not only technological interventions but a critical examination of governance structures—particularly the role of decentralized governance, which allows local institutions to respond effectively to city-specific challenges.

- **Importance of Decentralized Governance in Sustainable Urban Transport**

Decentralized governance refers to the transfer of authority, responsibilities, and resources from central or state governments to local or urban bodies, empowering them to make decisions tailored to local needs. In the context of sustainable urban mobility, decentralization can play a transformative role by enabling cities to design, implement, and monitor transport policies that are inclusive, context-specific, and environmentally sound.

Globally, decentralized governance has proven successful in urban transport management. Cities like Bogotá (Colombia) and Curitiba (Brazil) have demonstrated how locally managed transport systems can lead to cleaner, more efficient mobility outcomes. In India, the 74th Constitutional Amendment Act (1992) provided a legal framework for empowering Urban Local Bodies (ULBs), but its implementation remains uneven—especially in smaller and geographically isolated cities.

For NE cities like Guwahati and Shillong, the role of decentralized governance becomes even more significant due to the region's unique topography, socio-cultural diversity, and institutional fragmentation. When local governments are empowered through policy, funding, and administrative autonomy, they are better positioned to plan sustainable transport infrastructure, adopt clean vehicle technologies, regulate informal transit systems, and engage communities.

Moreover, decentralized governance facilitates participatory planning—encouraging input from citizens, NGOs, and local stakeholders, which in turn strengthens accountability and ownership. This bottom-up approach is crucial for successful deployment of clean transport systems like electric buses, cycle lanes, or smart traffic management in cities where state-led top-down models often fail to address local realities.

Despite the national emphasis on clean transportation and urban sustainability, there is a lack of research focusing on the governance dimension, particularly within the Northeast Indian context. While technological, financial, and infrastructural aspects of clean mobility are extensively studied in metro cities, the role of local governance in promoting environmentally sustainable transport remains under-examined in smaller, peripheral cities like Guwahati and Shillong.

The first problem is the fragmented implementation of urban transport policies in NE cities. Even when funds or guidelines are issued at the national or state level, the lack of institutional coordination at the city level leads to suboptimal outcomes. For instance, uncoordinated efforts between municipal bodies and regional transport authorities often stall the deployment of electric buses or fail to regulate polluting informal transit modes.

Secondly, Urban Local Bodies in NE India often suffer from limited autonomy, both financially and administratively. This restricts their capacity to introduce reforms, invest in clean infrastructure, or enforce regulatory changes independently. Moreover, local officials may lack technical expertise or institutional support to lead such transitions.

- **Objectives**

- a. To examine the existing governance frameworks that influence urban mobility policies in Guwahati and Shillong.
- b. To analyze the extent to which decentralized governance contributes to or hinders the adoption of clean and sustainable mobility practices in both cities.

c. To identify key policy, institutional, and stakeholder factors that enable effective implementation of clean urban transport initiatives at the local level.

- **Significance and Scope of the Study**

This study is significant for several reasons. First, it contributes to the relatively limited body of academic work on urban mobility governance in Northeast India, a region often underrepresented in national development discourse. By focusing on Guwahati and Shillong, the study captures the diverse challenges faced by mid-sized cities with different administrative and infrastructural realities within the NE context. Second, the paper emphasizes the governance dimension, which is frequently overshadowed by technical or economic aspects in sustainable transport studies. While cleaner technologies like electric vehicles and smart infrastructure are critical, their adoption and success are largely dependent on institutional capacity, policy alignment, and local stakeholder engagement—areas governed directly by decentralized administrative structures. Third, the study has practical implications. It offers policymakers, urban planners, and local government officials insights into the enablers and barriers of decentralized governance in clean mobility initiatives.

The scope of the study is limited to two cities—Guwahati and Shillong—but the analytical framework and findings can be extended to other similarly sized cities across India, particularly in geographically complex or politically sensitive regions. Through qualitative analysis grounded in local realities, this study provides a contextual understanding of how local governance can drive or stall progress toward sustainable urban transport in emerging urban centers.

- **Overview of Decentralized Governance Models Globally and in India**

Decentralized governance has emerged as a vital component of urban development and sustainable policy-making across the globe. In broad terms, decentralization refers to the delegation of planning, administrative, and financial powers from central authorities to local or regional governments. In the context of urban transport, this implies empowering municipal or metropolitan authorities to make decisions tailored to local realities.

Globally, several cities offer successful examples of decentralized transport governance. In Curitiba, Brazil, the municipality led the development of one of the world's first Bus Rapid Transit (BRT) systems, prioritizing pedestrian zones and mixed-use planning. Bogotá, Colombia, also adopted a highly localized approach to mobility through its TransMilenio BRT system, implemented under the leadership of a strong local mayor. These models demonstrate that localized decision-making, when combined with political will and stakeholder engagement, can lead to transformative outcomes in urban mobility.

In Europe, cities like Stockholm and Copenhagen have incorporated decentralized planning with active citizen participation to develop extensive cycling infrastructure and sustainable mobility networks. The European Union's Sustainable Urban Mobility Plans (SUMP) framework promotes decentralized, integrated, and participatory planning approaches.

In India, the idea of decentralized urban governance gained formal legal status with the 74th Constitutional Amendment Act (1992). This amendment empowered Urban Local Bodies (ULBs)—such as Municipal Corporations and Municipal Councils—to function as institutions of self-government. It recommended devolution of responsibilities in urban planning, regulation of land use, water supply, public health, and urban transport. However, in practice, the degree of decentralization varies widely across states and cities.

- **Urban Clean Mobility Concepts and Policies in India**

Clean urban mobility refers to transport systems that are environmentally sustainable, energy-efficient, inclusive, and safe. It encompasses a variety of interventions such as non-motorized transport (NMT) infrastructure, public transport electrification, modal integration, and mobility-as-a-service (MaaS) platforms.

India's urban transport policy landscape has evolved significantly in the last two decades. **Key initiatives include:**

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- **National Urban Transport Policy (NUTP) 2006:** This policy marked a shift in focus from vehicle-centric to people-centric mobility. It emphasized public transport, non-motorized transport, and integration of land use with transport planning. However, it did not provide enforceable legal backing or institutional mechanisms for local implementation.
 - **Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME I & II):** Introduced to support the uptake of electric mobility in India. FAME-II, launched in 2019, emphasizes electric buses, two- and three-wheelers, and charging infrastructure, especially in urban areas.
 - **Smart Cities Mission:** This mission encourages cities to incorporate ICT-based solutions for mobility, including integrated transport systems, electric mobility, and NMT infrastructure. While promising in vision, implementation has often remained fragmented and limited to pilot zones within cities.
 - **State Electric Vehicle Policies:** Several Indian states, including Assam, have introduced their own EV policies, offering fiscal incentives, infrastructure support, and skill development programs to promote clean mobility.

Despite these initiatives, Indian cities continue to face significant barriers to clean mobility. These include lack of coordination between institutions, poor enforcement, insufficient funding, and weak integration between urban planning and transportation policies. Moreover, the urban transport sector suffers from an acute mismatch between policy design (often national or state-driven) and implementation capacity at the city level, highlighting the importance of decentralized governance.

- **Previous Studies on Governance and Clean Transport**

There is growing recognition in academic and policy literature that governance structures significantly influence the outcomes of urban mobility interventions. Governance is broadly defined as the combination of formal institutions, decision-making processes, and stakeholder relationships that shape public policy outcomes. In the context of clean transport, effective governance can facilitate cross-sector coordination, community participation, and long-term planning.

A study by Pojani and Stead (2015) on sustainable urban transport in developing countries emphasized that institutional fragmentation and unclear jurisdictional mandates often stall clean mobility initiatives. Similarly, Gwilliam (2003) identified governance, rather than funding or technology, as the primary bottleneck in public transport improvements in South Asian cities.

In the Indian context, Mahadevia et al. (2013) highlighted that while the NUTP promotes sustainable transport principles; its actual implementation is severely constrained by weak urban governance. A study by Singh and Sharma (2019) on electric mobility adoption in Indian cities revealed that local governments often lack the institutional capacity to plan or execute EV transitions, relying heavily on state transport departments or private actors.

More recent studies have examined Smart Cities' efforts to adopt clean mobility. While some cities like Pune and Ahmedabad have demonstrated positive momentum in promoting cycling and public transport, others struggle with execution due to bureaucratic bottlenecks and lack of local ownership.

Despite this growing literature, there remains a stark gap in case studies from India's Northeastern region. Governance and transport studies in India are disproportionately concentrated on metro cities and industrial corridors, with minimal attention to peripheral or hilly regions like Guwahati and Shillong. This leaves a critical knowledge gap regarding how regional, socio-cultural, and institutional diversity affect clean mobility outcomes in India.

- **Gaps in existing research, especially for Guwahati and Shillong**

Despite the national emphasis on sustainable transport and increasing literature on governance in Indian urban planning, several key research gaps persist, particularly concerning Northeast Indian cities like Guwahati and Shillong:

a. **Regional Underrepresentation:** Academic literature on urban mobility and governance in India rarely includes cities from the Northeast. Most empirical studies focus on Tier-1 cities or those parts of major corridors like the Delhi-Mumbai Industrial Region. Consequently, the unique socio-political and geographical contexts of NE cities remain understudied.

b. **Lack of Governance-Centric Analysis:** While policy documents from state and central governments mention clean mobility goals for cities like Guwahati or Shillong, little is known about the role of local institutions, such as Municipal Corporations, Urban Development Authorities, and Ward Committees, in shaping these initiatives. The lack of data on institutional structure, decision-making authority, and local autonomy limits the ability to evaluate effectiveness.

c. **Neglect of Local Voices and Community Participation:** Very few studies investigate how citizen participation and grassroots engagement affect clean transport adoption in NE cities. Public resistance, informal transport dynamics, and socio-cultural attitudes—critical variables in transport planning—are seldom explored in academic literature focusing on this region.

d. **Comparative Case Studies:** There is a dearth of comparative studies that examine governance and clean mobility across different NE cities. Guwahati and Shillong, for instance, represent two different models of urban governance—one as a state capital and regional hub (Guwahati), and the other with hilly topography and distinct tribal governance elements (Shillong). A comparative analysis can yield valuable insights but has not yet been undertaken.

e. **Weak Interdisciplinary Integration:** Most studies that do exist focus either on environmental science, transport engineering, or public policy in isolation. A comprehensive, interdisciplinary analysis that bridges governance, urban planning, environmental sustainability, and socio-political context is missing—especially for hilly, semi-urban, or politically sensitive zones like the Northeast.

By addressing these gaps, this study seeks to contribute an evidence-based, governance-oriented perspective to the discourse on sustainable urban transport in India—particularly by focusing on decentralized governance and its influence on clean mobility transitions in the underrepresented cities of Guwahati and Shillong.

2. Methodology

This paper adopts a qualitative case study approach to investigate the role of decentralized governance in promoting urban clean mobility. Its design allows for an in-depth, contextual exploration of governance mechanisms, stakeholder dynamics, and policy implementation at the city level.

• Case Selection Rationale

The cities of Guwahati (Assam) and Shillong (Meghalaya) were selected as case studies due to their strategic relevance and contrasting governance structures. Guwahati, as a major metropolitan hub in the Northeast, operates under a more centralized municipal governance system influenced by state-level agencies. Shillong, with its smaller population, tribal governance influences, and hilly geography, represents a different urban planning paradigm. Both cities face similar mobility challenges—congestion, pollution, informal transit systems—but differ in how local governance responds to them, making them ideal for comparative analysis.

• Data Collection Methods

The study utilizes both primary and secondary data sources.

Primary data:

- Local government officials (municipal and transport departments)
- Urban planners and policy implementers
- Civil society organizations (CSOs) and NGOs involved in mobility advocacy
- Daily commuters and residents

Secondary data:

- City development plans and policy documents (e.g., Smart City Plans, State EV Policies)
- Government reports and circulars related to urban transport
- Transport usage statistics and environmental data

Data Analysis Techniques

All qualitative data were analyzed using thematic analysis to identify recurring patterns, governance practices, and barriers to clean mobility. A comparative analysis was conducted to contrast the findings from Guwahati and Shillong, highlighting institutional strengths and weaknesses.

3. Case Studies:

- **Case Study 1: Guwahati**

- **Overview of Urban Governance Structure**

Guwahati, the largest city in Assam and a rapidly growing urban hub in Northeast India, is governed primarily by the Guwahati Municipal Corporation (GMC), with coordination from the Guwahati Metropolitan Development Authority (GMDA) and the Assam State Transport Corporation (ASTC). While the GMC oversees basic urban services, the ASTC, a state-level agency, controls much of the public transportation system. The lack of full administrative and financial autonomy for GMC creates a top-down governance model where state-level bodies dominate key mobility decisions, limiting the municipal body's decision-making capacity (Datta & Gupta, 2018).

- **Current Clean Mobility Initiatives and Policies**

Under the FAME-II scheme and the state's Assam Electric Vehicle Policy (2021), Guwahati has initiated several clean transport interventions. These include the deployment of electric buses, installation of EV charging stations, and limited pedestrianization in high-density zones. Additionally, under the Smart Cities Mission, the city has begun integrating Intelligent Transport Systems (ITS) to improve traffic flow and reduce emissions. However, implementation remains uneven due to inter-agency coordination issues and infrastructure gaps (MoHUA, 2022).

- **Role of Local Bodies and Decentralized Decision-Making**

The role of GMC in clean mobility is limited, as critical decisions—such as fleet procurement, route planning, and fare structures—are often made by ASTC or the state transport department. This weak decentralization results in delayed project execution and insufficient localization of clean transport solutions.

- **Stakeholder Participation and Challenges faced**

Stakeholder engagement in mobility planning in Guwahati has been relatively limited. Public consultations during the Smart City planning phase were formal but often tokenistic. Civil society organizations working on sustainable transport face difficulty in accessing platforms for collaboration. Moreover, informal transport operators, such as shared taxis and e-rickshaws, remain largely unregulated and excluded from clean mobility dialogues. Challenges include overlapping authority, low municipal capacity, lack of trained personnel, and absence of robust data systems, all of which hamper inclusive governance and long-term planning.

- **Case Study 2: Shillong**

- **Governance Framework in Shillong**

Shillong, the capital of Meghalaya, presents a distinct urban governance model shaped by both state governance and traditional tribal institutions. While the Shillong Municipal Board (SMB) is the statutory authority for urban administration, large parts of the city fall under the jurisdiction of the Khasi Hills Autonomous District Council (KHADC). This dual authority structure often leads to institutional fragmentation and governance overlaps. The SMB has limited control over land use and mobility planning in tribal areas, which complicates the implementation of unified urban transport policies (Syiemlieh, 2017).

➤ **Clean Transport Projects and Policies Implemented**

Clean mobility initiatives in Shillong have been modest but emerging. The Meghalaya Electric Vehicle Policy (2021) outlines goals for EV infrastructure, public transport electrification, and incentives for electric two-wheelers. Pilot projects include the introduction of a small fleet of electric buses and the promotion of non-motorized transport (NMT) through pedestrianization efforts in core city areas. However, these efforts are still in early stages and face logistical and financial barriers (Meghalaya Transport Department, 2022).

➤ **Influence of Decentralized Governance on Outcomes**

Decentralized governance in Shillong has had both enabling and constraining effects. On one hand, community-based decision-making within traditional institutions has fostered grassroots awareness about environmental issues and supported small-scale, low-carbon mobility practices, such as walking and cycling. On the other hand, fragmented jurisdiction between SMB, KHADC, and state agencies leads to policy incoherence and lack of coordination in transport planning. This reduces the scalability of clean mobility projects (Syiemlieh, 2017; Transport Dept., 2022).

➤ **Community Engagement and Barriers**

Shillong has seen some degree of community engagement in mobility issues, especially through NGOs and youth organizations advocating for pedestrian rights and sustainable transport. The city's compact layout and cultural inclination toward walking offer opportunities for NMT-based solutions. However, barriers include resistance from informal transport unions, lack of capacity in SMB, and infrastructural challenges like narrow roads and unplanned settlements. Public awareness about EVs and sustainable mobility remains low, limiting citizen-led demand for clean alternatives (Meghalaya Transport Department, 2022).

4. Findings and Discussion

The comparative analysis of Guwahati and Shillong reveals that governance structure plays a pivotal role in determining the success or failure of clean mobility initiatives. While both cities face common challenges like traffic congestion, limited infrastructure, and environmental degradation, their governance models yield different results in implementing sustainable transport solutions.

In Guwahati, a relatively centralized model dominates, with state-level agencies such as the Assam State Transport Corporation (ASTC) and Guwahati Metropolitan Development Authority (GMDA) exercising significant control over transport planning. The Guwahati Municipal Corporation (GMC) has limited decision-making power in key areas such as fleet procurement, route design, and infrastructure funding. This top-down approach often results in sluggish implementation, bureaucratic delays, and a lack of contextual responsiveness.

In contrast, Shillong presents a more complex but inherently decentralized governance framework, influenced by both the Shillong Municipal Board and traditional tribal councils. This unique system encourages greater local engagement and grassroots awareness, especially around issues such as pedestrian safety and environmental conservation. However, this model also suffers from institutional fragmentation and overlapping jurisdiction, which hinder coordinated planning and execution.

The effectiveness of decentralized governance in promoting clean mobility is mixed. Where local institutions are empowered with financial autonomy, technical capacity, and legal authority—as partially seen in Shillong—community-centric solutions like walking zones and reduced vehicular access become feasible. Conversely, limited decentralization, as seen in Guwahati, often leads to inefficient policy delivery and weak stakeholder engagement. Key enablers identified include political will at the city level, coordination among agencies, community participation, and strong local leadership. Bottlenecks include inter-agency rivalry, lack of skilled personnel, insufficient data systems, and inconsistent funding flows. Political factors such as leadership continuity, institutional factors like mandate clarity, and social factors such as citizen awareness and informal transport dynamics significantly shape clean mobility outcomes. In both cities, the lack of integration between urban planning and transport policy further impedes progress.

The findings highlight the need for capacity building of urban local bodies, legal clarity in governance roles, and fostering inter-agency collaboration. For NE India and similar underrepresented regions, adopting a context-specific, decentralized, and participatory governance model could be crucial in achieving long-term sustainable urban transport goals. Encouraging community ownership and aligning local values with clean mobility objectives will be essential for meaningful policy impact.

5. Conclusion

• Key Findings

The paper reveals that the structure and strength of decentralized governance significantly influence the success of clean urban mobility initiatives. In Guwahati, centralized control by state-level bodies leads to weak municipal involvement, slower implementation, and limited stakeholder engagement. Conversely, Shillong's hybrid governance system—featuring traditional councils and municipal authorities—fosters grassroots participation but suffers from institutional fragmentation. The analysis highlights that decentralized governance is more effective when local bodies are empowered with financial autonomy, administrative authority, and technical capacity. Key enablers such as inter-agency coordination, local leadership, and community engagement support clean mobility efforts, while bottlenecks include overlapping mandates, insufficient funding, and lack of skilled personnel. Political, institutional, and social factors all interplay to shape outcomes. These findings underline the critical need to strengthen governance at the local level to promote sustainable, inclusive, and efficient urban transportation systems in Northeast India and other similarly situated urban contexts.

• Contributions to Theory and Practice

The study contributes to the existing literature by bridging the gap between governance theory and sustainable mobility practice in underrepresented regions such as Northeast India. Theoretically, it expands understanding of how different models of decentralization—centralized, hybrid, and traditional—impact clean transport outcomes. Practically, the study offers a comparative analysis of two distinct urban governance models, showcasing the importance of context-specific approaches to policy implementation. It also highlights the limitations of national and state-level interventions when not aligned with local institutional realities. This research underscores that technical solutions such as electric buses or smart systems alone are insufficient without supportive governance frameworks. By focusing on mid-sized and geographically unique cities like Guwahati and Shillong, the paper provides actionable insights for planners, policymakers, and practitioners working in secondary urban centers. It encourages a shift from one-size-fits-all models to localized, participatory, and institutionally integrated governance practices for sustainable transport development.

• Recommendations for Enhancing Decentralized Governance for Clean Mobility

To improve decentralized governance in promoting clean mobility, several strategic steps are recommended. First, empower Urban Local Bodies (ULBs) with legal authority, fiscal autonomy, and technical expertise to plan and implement transport policies. Clear delineation of roles between municipal bodies and state-level agencies is essential to avoid duplication and delay. Second, promote inter-agency coordination platforms, enabling city-level actors to collaborate effectively with transport, environment, and planning departments. Third, institutionalize citizen participation through regular consultations, mobility planning workshops, and public feedback mechanisms. Fourth, invest in capacity building for municipal staff, especially in areas like sustainable mobility planning, data analytics, and stakeholder engagement. Additionally, localized implementation of national schemes such as FAME and Smart Cities should be tailored to regional needs. Finally, support pilot projects in NMT, public transport electrification, and inclusive infrastructure to demonstrate success and build political momentum for scaling up clean transport solutions.

• Suggestions for Future study

The future study should explore a broader set of cities across Northeast India to deepen understanding of governance-mobility dynamics in diverse contexts. Comparative studies involving other Indian regions could also help isolate variables specific to terrain, political culture, or urban scale. Longitudinal research assessing

the impact of governance reforms on transport outcomes over time would provide valuable insights into institutional resilience and adaptability. Additionally, quantitative methods could complement this study's qualitative approach, using mobility data, pollution metrics, and citizen satisfaction indices to measure policy effectiveness. There is also scope for investigating the role of digital governance tools—such as GIS, real-time monitoring, and e-governance portals—in enhancing local transport planning. Another valuable direction would be studying informal transport ecosystems and their interaction with formal governance structures. Finally, participatory action research involving communities in co-designing transport policies could shed light on grassroots strategies for sustainable mobility in under-resourced or ecologically sensitive urban areas.

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