

Powering Progress of Last-mile Connectivity: E-rickshaws & Mobility in Tier II & III cities in India



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| Anusha Arif



Discussion Paper

TABLE OF CONTENTS

1.	BACKGROUND	03
2.	METHODOLOGY AND LIMITATIONS	04
3.	ECONOMIC IMPACT ASSESSMENT	05
4.	TRANSPORTATION EFFICIENCY ANALYSIS	06
5.	POLICY IMPACT ASSESSMENT	07
6.	CHALLENGES AND OPPORTUNITIES FOR THE SECTOR	09
7.	CONCLUSION	10
8.	REFERENCES	11

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Discussion Paper

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BACKGROUND

India's mobility patterns represent its young demographic across cities. In recent years, with the government's push for electric vehicles, the proliferation of e-rickshaws has transformed the transportation landscape in Tier II and Tier III cities across India. With growing urban centres emerging, many major Tier II cities are witnessing rapid population surges and, thus, require an upscaling of public transport through metro rail. Many of these cities have operational bus-based public transport systems; however, few comply with the Ministry of Housing & Urban Affairs (MoHUA) guidelines (ITDP, 2022), which directs cities to provide a fleet of 40-60 buses per lakh population.

In cities where conventional public transport is either limited or inadequate, e-rickshaws have filled the gap by providing last-mile connectivity and easing intra-city commutes. The availability of locally manufactured electric vehicles in the form of rickshaws and motor-bikes has also facilitated the advent of hyperlocal delivery. While the ease and comfort that the ecosystem provides have readily led to a change in consumer attitude, the advent also comes riddled with challenges of unregulated operation, traffic congestion at busy intersections, and disruption of vehicular traffic flows caused more frequently by the lack of designated routes (Mishra, 2023).

On the manufacturing and demand side, many smaller towns, especially in Punjab, Haryana, Uttar Pradesh and Bihar, have emerged as key markets for e-rickshaws. The sector is projecting a substantial growth rate of 40% and is driven by factors such as improved access to bank loans and tied to initiatives of rural electrification, which facilitate operation (Agarwal, 2023).

Since 2014, the government has made efforts to regulate the operation and registration of e-rickshaws, especially in cities like Delhi. The Delhi High Court also issued directions to strictly enforce the law for registering e-rickshaws plying on roads in the national capital in 2017 (Sharma, 2017). However, the challenges of implementing such regulations are more complex in Tier II and Tier III cities, where transportation, especially for the last mile, remains fairly informal. The paper looks at the complexity of e-rickshaws and how they affect mobility patterns, especially in Tier II and III cities in the country. While on the one hand, they show great potential in improving connectivity and driving economic gains especially for low-income groups. On the other hand, the nature of e-rickshaws has created an overall issue of traffic congestion, illegal parking, decreased walkability and bottlenecks in regulation. On top of these issues are the challenges faced by the primary stakeholders in the sector, i.e., the drivers.

METHODOLOGY AND LIMITATIONS

Data was collected through a structured questionnaire administered online to understand the accessibility and regulation of e-rickshaws in India. The sample consisted of 45 participants who took part in the questionnaire over the period of seven days. The questionnaire was shared with the participants online to ensure diversity in geographical locations in responses.

The questionnaire survey included sections on age demographics, occupation, usage patterns and frequency, preferences and recognising the need for regulation.

Some of the limitations in the data collection may include a sample bias due to the participation of individuals only with digital access, limiting the generalised findings from the broader population. The respondents may also represent predominantly higher-income groups leading to biased experiences.

ECONOMIC IMPACT ASSESSMENT

The network of local transportation created by e-rickshaws affects the local economy and related employment opportunities in a multifaceted way.

On the one hand, they provide a cost-effective mode of transportation to the commuters, especially for shorter distances. Facilitating transport for congested streets and narrow alleyways, which makes it more suitable for Tier II and III cities in India. Yet, on the other hand, the use of e-rickshaws have also decreased the walkability in cities. They lead to congested traffic in already narrow streets making pedestrian mobility difficult or unpleasant. In many cities, e-rickshaw parking has also encroached on available space for pedestrians as they occupy sidewalks.

However, one of the *prima facie* economic advantages of the boom in the sector is the creation of employment opportunities within the local community, particularly for individuals who come from lower-income backgrounds who lack formal education or specialised skills.

Battery-powered vehicles have now become one of India's fastest growing segments, with a compound growth rate of 20% between 2015 and 2019 (Philip, 2019).

A UNDP study in 2013 revealed that, on average, rickshaw pullers earned between INR 6000 and INR 8000 per month, from economically vulnerable sections in India; the daily income variance contributed further to their vulnerability (UNDP,2013). On average, for e-rickshaws, the economic benefits depend on a number of factors that include increase in daily trips due to less manual energy usage, more carrying capacity (in average four-seater e-rickshaws) and standard per-trip fare. A study based in Patna for two-seater e-rickshaws observed that with the addition of one trip to average rickshaw puller trips, there is an increase of about 9% in the average daily income (CSTEP, 2020). Further, it was observed that a mere increase of INR 5 per trip in the fare from traditional rickshaw pullers, there was a 20 % average increase in the daily income generated (CSTEP, 2020).

E-rickshaw drivers can earn up to INR 500-700 per day depending on the area; in major cities in Delhi, the earnings can range from INR 800- 1000, which increases the monthly income more than three times as compared to earlier figures.

However, despite key economic benefits to drivers, the government's push for e-mobility through purchasing incentives has remained scattered and slow.

The Delhi government announced financial purchasing incentives for e-rickshaws along with other state governments such as Maharashtra, West Bengal, and Gujarat. Yet, the penetration of three-wheeler EVs has remained low majorly due to the high upfront purchase price of EVs, inadequate public charging infrastructure and an overall lack of awareness about EVs, their benefits and government schemes (Government of Maharashtra, 2021). The benefits of the subsidy to promote environmentally friendly transportation have remained restricted to bigger cities like Pune where the Pune Municipal Corporation (PMC) has allocated a budget of INR 2 crore and set plans for charging station installations. The penetration of infrastructure for Tier II and Tier III cities has, till now, not reached its capacity for an overall

shift to e-mobility.

TRANSPORTATION EFFICIENCY ANALYSIS

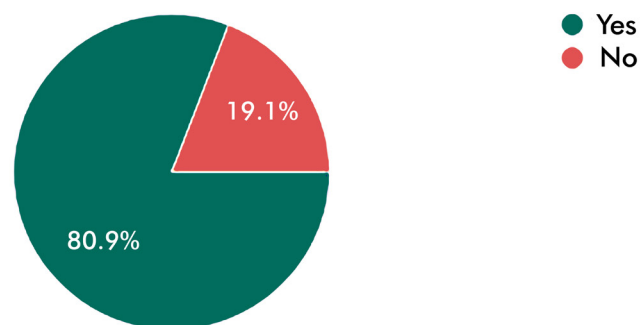
Beyond intra-city connectivity, e-rickshaws have also provided a para-transit solution for connecting remote villages to cities in the case of places like Gaya and Jamshedpur (Ghate, 2018). In the state of Assam, e-rickshaws have shown great promise for remote areas such as Lanka town in Hojai District. It provides mobility to the passengers from railway stations in Lanka to bus stands in Bagaon, Kheroni, Kunding and Umrangshu (Chouhan, 2023).

E-rickshaws have generally been designed to provide easy access to commuters with affordable fares. Many senior citizens also find the chassis of other modes of public transport, such as six seaters, too high to get on (Bari, 2018).

Based on a survey conducted among early and mid-career professionals and students belonging to Tier I, II and III cities in India, it was found that nearly 48.9 per cent of people used e-rickshaws to commute shorter either everyday or more than once weekly. The survey also reflected a general inclination towards e-rickshaws contributing significantly to the overall connectivity in cities and increasing feasibility. It also provides faster commute options than those available previously, which increases preferences among commuters.

Do you find e-rickshaws a feasible option in your city?

47 reponses

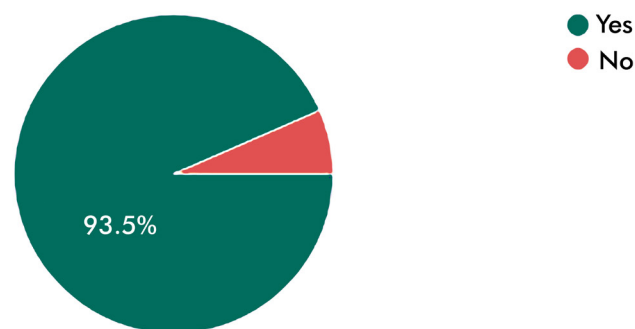


However, one of the challenges that commuters face is the lack of an overall regulation that leads to traffic bottlenecks. The survey shows that a large number of people face increased difficulty in traffic congestion, pedestrian pathways and overall mobility due to the unregulated boom of e-rickshaws in such large numbers.

In cities like Aligarh, young children of 14 to 15 years of age, many of whom do not have valid driving licences and permissions, can be seen driving the e-rickshaws. The unregulated driving through narrow lanes has caused regular traffic congestion in already crowded areas around the regular marketplaces in the city, including Dodhpur and other intersections.

Do you find the need for more regulations to be taken up with regards to e-rickshaws in your city?

46 responses



Tier I cities continue to have a similar experience, including the national capital of Delhi, where the unregulated use of e-rickshaws cause daily traffic disruption in parts of the city, especially around the metro stations. In fact, there has been a major spike in traffic violations caused by e-rickshaws, as reported in Delhi. According to Delhi Police Data, there was a 53 % increase in traffic violations by e-rickshaws between 2023 and 2022. The most notable increase in violations was obstructive or improper parking, with 70,463 offences registered, as compared to 35,828 in 2022 (Jha, 2023).

POLICY IMPACT ASSESSMENT

The government's portal e-AMRIT highlights the various policies and schemes that have been introduced by the government to build momentum for electric vehicles in the country. However, particularly for e-rickshaws, a big drawback is the unregulated and illegal usage. In fact, a policy survey in Ghaziabad revealed that 80 per cent of the total e-rickshaws in the city are illegal (Kumar, 2023).

The Central Government introduced the Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India (FAME) policy to promote the use of hybrid and electric automobiles. Currently, the policy is in Phase II, which has been extended till 31 March 2024. The e-rickshaws have also been brought under the scope of this policy with 5 million e-rickshaws (each) being eligible for incentives worth INR 50,000 (Deshpande, 2023).

The government also amended the Motor Vehicles Act (MVA) in 2015 to define e-rickshaws and e-carts. The amended act now requires a driving licence and a ten-day training period for obtaining a certificate by the association registered for e-rickshaw or e-cart association (MVA, 2014). Following the amendment, authorities in Delhi, Gujarat and Pondicherry devised procedures to regularise the vehicles. The vehicle manufacturers were also mandated to give details about the emission and noise levels of each vehicle from the 1st of April, 2017 (PIB, 2016).

However, the challenges of unregulated use of e-rickshaws remain a policy concern despite some government interventions, especially in Tier II and III cities where informality of the sector poses a challenge. In many parts of these cities, young men are seen operating the e-rickshaws. States such as Madhya Pradesh have also pioneered by giving 100 unemployed women e-rickshaws after training them for over a month; the women include physically challenged beneficiaries. With this, the government has estimated that about 5,000 e-rickshaws would be run by women in Indore (Indian Express, 2019). However, as per estimates, in 2020, only 21 out of these were plying the roads in Indore (ANI, 2020).

The government's policies have remained, to a larger extent, focused on aiding the transportation in cities; however, there are some obvious gaps in infrastructure, regulation as well as manufacturing of e-rickshaws that would further allow the boom of the sector in a sustainable manner.

One major restraint for the e-rickshaw sector is the horizontal manufacturing structure. At present, a majority of the manufacturers in India are assemblers who either import low price units or completely knocked down units from China. Further, the motors used are usually between 800 W and 1.2 kW which by the government guidelines is stipulated to not exceed beyond 2kW. These factors affect the usage of these e-rickshaws in real-life scenarios where overloading is a common phenomenon (Roy, 2021).

CHALLENGES AND OPPORTUNITIES FOR THE SECTOR

The push for e-rickshaws, especially in the transport landscape of Tier II and III cities, presents a myriad of challenges and opportunities that demand careful consideration and strategic policy planning. While these electrically powered vehicles offer a promising solution to address the growing demand for affordable and sustainable urban mobility, they also encounter obstacles ranging from regulatory hurdles to infrastructure limitations. But in a lot of ways, the challenges in the sector give way to more growth opportunities. Some of the key challenges that emerge are discussed below.

High Upfront Costs and Interest Rates

One of the primary challenges of the sector is the affordability of e-rickshaws. Drivers echo that interest on the loans is anywhere between 17% and 20 %, which is a substantial amount. The government is providing a purchase incentive ranging from INR 30,000 in Delhi and 5 % interest subsidy on loans to INR 20,000 in Meghalaya and INR 25,000 in Maharashtra; yet, most of these subsidies are on certain brands. Brands such as Mahindra and Piaggio are usually priced around INR 1.7 lakh or higher; other lower-priced three-wheeler brands start at INR 1.3 lakh, which would, on average, require a driver to pay around four months' earnings towards the cost of the vehicle.

Illegal and Unregistered Vehicles

Tier II and III cities often have limited resources and capacity to monitor and regulate the e-rickshaw sector, which has led to proliferation of unregistered vehicles. The high costs of bigger brands have also led many drivers to buy cheaper, locally manufactured e-rickshaws that are below legal standards. The unregistered vehicles are then confiscated by the police, scrapped, and the battery is handed over to the owner. However, this leads to a vicious cycle of subjugation for the drivers who already come from low financial and educational backgrounds. The absence of any trade unions also disallows for the paratransit drivers to share their concerns in an organised manner.

Technological Uncertainty

A major number of drivers with registered vehicles find the green premium for e-rickshaws with the latest battery technology to be expensive. While on the one hand, the technology is advancing, on the ground most people directly affected by the sector remain uncertain about the technology, compounded by the lack of trust. The financial support by the government also remains geared towards newer technologies, which further widens the divide between affordable, legal and environmentally friendly technology (Patel, 2022).

On the other hand, the development of e-rickshaws has been slow. The design, features and functionalities of the e-rickshaws have remained the same since its introduction in the Indian market. The price differentiation has become the only distinction amongst manufacturers.

CONCLUSION

Over the last decade, the e-mobility sector has shown great promise in India; however, along with some common challenges of Lithium battery costs and viability of e-vehicles, there are more specific challenges for e-rickshaws. The proliferation of e-rickshaws in Tier II and Tier III cities of India represents a double-edged sword with both promising opportunities and formidable challenges.

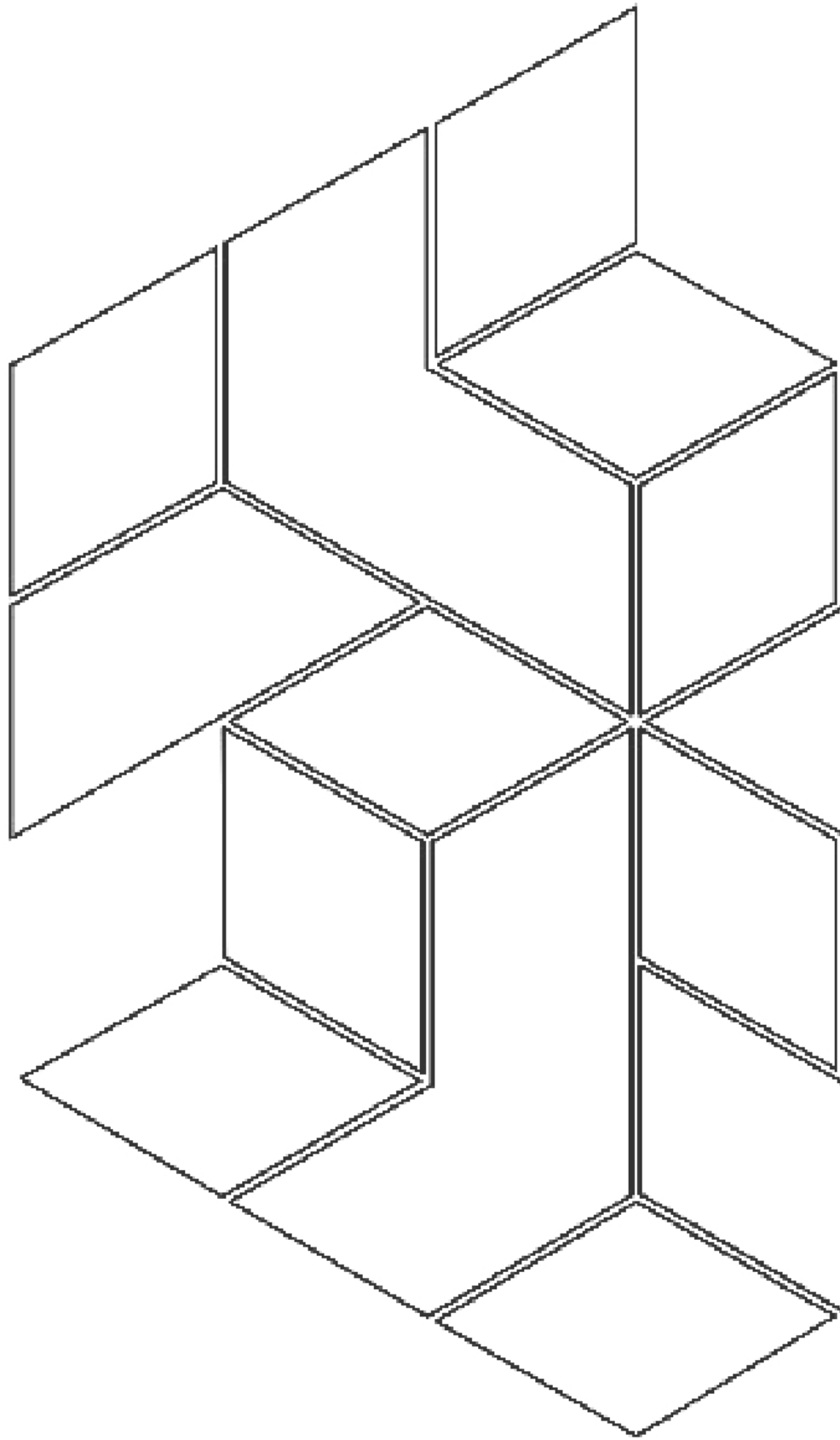
While these vehicles clearly aid the feasibility and overall connectivity in cities, there are obvious gaps in the implementation of on-ground policy. Another major gap is the limited involvement of the on-ground stakeholders. Drivers play a pivotal role in the success and sustainability of the e-rickshaw ecosystem, yet they face the maximum number of challenges due to inadequate training and limited access to information about government schemes and technology. The lack of authorised e-rickshaw charging facilities has also resulted in increased cases of power theft.

By recognising the concerns and issues faced by the drivers, the government can put them at the forefront of efforts to advance the sector and foster an inclusive and sustainable urban transportation system that benefits both the drivers and commuters alike.

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