

DISCUSSION PAPER

January 2020



Emerging Role of Bike (Motorcycle) Taxis in Urban Mobility



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Creating Innovative Solutions for a Sustainable Future

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Suggested Format for Citation

Thakur, P., A. Jain, and A. Harikumar. 2020. Emerging Role of Bike (Motorcycle) Taxis in Urban Mobility. New Delhi: TERI

Design

Sushmita Ghosh, TCA Avni, Sudeep Pawar, TERI Press

PUBLISHED BY

The Energy and Resources Institute (TERI)

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ACKNOWLEDGEMENTS

The Energy and Resources Institute (TERI) would like to express its deep gratitude to its stakeholders and participants from diverse sectors comprising of NITI Aayog, Creative Footprints, URJA, Centre for Green Mobility, TERI University, Rapido, Jagori, Uber, Institute for Transportation and Development Policy, MobyCy, Ansal University and Rapido for giving their valuable suggestions and feedback in the roundtables organized by TERI.

We are also thankful to the stakeholders from various sectors such as DIMTS and DMRC from the public transport sector, Prof Sanjay Gupta, Head of Department, Transport Planning, School of Planning and Architecture as an expert academician, OLA Mobility Institute, Rapido and Uber as expert service providers, and CEEW as technical expert for providing valuable inputs towards strengthening of regulatory framework. We would also like to thank Deputy Commissioner, Delhi Transport Department for sharing his views regarding bike taxis.

We would also like to acknowledge efforts of TERI's Events team for helping us organize stakeholder roundtables and TERI Media team for dissemination of the outcomes of the study. Lastly, we would also extend our regards to World Sustainable Development Summit for giving us the platform to launch this report.

INTRODUCTION

With the development in the mobility sector, there has been an advent of various new mobility services such as app-based taxis, shared mobility, and micro-mobility among others. These services provide real-time and demand-responsive trips. As per the Economic Times, the leading ride hailing apps Ola and Uber used to cater 1 million rides per day in 2015, which has increased to 3.5 million in 2018 (Economic Times, 2018). These mobility services have emerged in the view of inadequate public transport and to meet both first and last mile mobility requirements. These services improve the public transport ridership by providing feeder services and ameliorate the mobility in peripheral areas. They are an upgraded tech-based version of the conventional intermediate public transport mode which offers not only cost-effective and time-saving service, but also takes into account other parameters of comfort, reliability, safety, and convenience.

Ride sharing and hailing services have given new dimension to urban mobility. They provide mobility as a service and promote asset utilization. These service are available in all the modes such as cars/taxis, two-wheelers, auto rickshaws, and e-rickshaws, among others. Auto rickshaws and taxis have been present in cities for a significant period of time and have certain regulatory provisions, but the bike taxis have recently entered India. Bike taxis serve as an intermediate public transport mode offering first and last mile services and providing access to underlying areas in various countries. These services were earlier limited to only Goa but now have been widely accepted in various states. Thus, this study intends to achieve the following objectives through the approach mentioned in Figure 1 to understand emerging role of bike taxis in urban mobility.

Defining Bike Taxis

The concept of bike taxis is now no more limited to Goa but is spreading at pan India level. It is widely prevalent in cities of various Asian (e.g., Indonesia, Cambodia, Thailand, Timor Leste and Vietnam), Latin American (e.g., Brazil, Colombia) and African (e.g. Nigeria, Cameroon, Benin, Uganda, Kenya, Rwanda, Sierra Leone and Tanzania)

Objective 1: Understanding the role of bike taxis as a first and last mile mobility option

- Defining the bike taxi
- Global scenario for bike taxis
- Indian policy landscape for bike taxis
- Identification of key issues related with bike taxis
- Based on primary surveys
- Analysing the driver characteristics
- Identifying the benefits for the existing users
- Understanding the willingness to shift for the potential users

Objective 2: Developing a regulatory framework for bike taxis

Based on a consultative approach, various service providers, authorities and sector experts were consulted and policy mechanisms required to strengthen the regulatory framework for bike taxis were derived

Box 1: Objective and approach of the study

countries as a first and last mile mobility mode. In most African cities, the concept originated from traditional 'bicycle-taxis' which have been used to transport goods and people in rural areas since the colonial era (Nandwoli, Ferdin, & Wekesa, 2014). Bike taxis are a popular mode of travel and are well defined in many South East Asian cities. However, in the Indian context, the definition of bike taxis lacks legal clarity. Figure 2 attempts to derive a definition for bike taxis.

Definition of Motorcycle: A motorcycle is any two-wheeled vehicle propelled by any type of power other than pedalling (including but not restricted to internal combustion engines and electric motors) (GIZ, 2018).

Definition of Bike taxi: The bike taxi is usually a motorcycle taxi which usually carries one passenger as a pillion behind the driver. They are available for general public and usually lack regular routes, fixed timings and fixed stations (Tuan & Mateo- Babiano, 2013).

On the basis of various provisions of Motor Vehicle Act 1988 (MV Act) is derived

Definition of Motorcycle: A two-wheeled motor vehicle, inclusive of any detachable side-car having an extra wheel, attached to the motor vehicle.

Definition of Taxi: 'Motorcab or taxi' means any motor vehicle constructed or adapted to carry not more than six passengers excluding the driver for hire or reward.

Usually, the taxis are categorized as either stage or contract carriage vehicles. In the case of motor cycle taxis, they come in the category of contract carriage.

Contract Carriage: It means a motor vehicle which carries a passenger or passengers for hire or reward and is engaged under a contract, whether expressed or implied, for the use of such vehicle as a whole for the carriage of passengers mentioned therein and entered into by a person with a holder of a permit in relation to such vehicle or any person authorized by him on his behalf on a fixed or an agreed rate or sum— (a) on a time basis, whether or not with reference to any route or distance; or (b) from one point to another, and in either case, without stopping to pick up or set down passengers not included in the contract anywhere during the journey.

Derived Definition: Thus motorcycles taxis or bike taxis are motor vehicle used to carry passengers for hire or reward. These vehicles require a legal contract/ permit for usage as contract carriage.

Box 2: Defining the motorcycle taxis in India

Conventional Bike taxis

The usage of bike taxis to meet the travel demand in various Asian, African, and Latin American cities has been

prevalent for a very long time. They emerged either due to absence or lack of adequate public transport. For example, in Vietnam, the usage of motorbike taxis is extremely high even today due to lack of public transport. In some cities, these vehicles act as access vehicles connecting core areas with the main street. They also act as feeder to the main public transport in these cities. In the case of Bangkok, motorcycle taxis are used as feeder mode catering to demands along the narrow and deep Sois/areas. They facilitate connections between local communities and the main street, where other major public modes (e.g. ordinary buses, sky trains, and subways) are operating (Fakuda, 2007). Their presence also originated in areas where the difficult terrain makes the operation of other types of vehicles challenging, such as in Tanzania among other African cities. It is popular mode in places where high tourist footfall is present like Goa, India

Traditional bike taxi services can be categorized into three segments based on the booking method:

- **Hail on the street:** The trip is initiated by passengers when hailing passing bike taxis on the street. This is common in most African cities.
- **Pick up from a taxi stop:** In this segment, passengers locate bike taxis at designated stops where taxis line up. This requires infrastructure such as stands or stops. This kind of arrangement can be seen in Jakarta where OJEK stands are present.
- **Pre-booked services.** Taxi trips can be pre-booked by various ways such as radio dispatch centres or long-term contracts.

New Age-App-based Bike Service Providers

With advancements in information and communication technology (ICT), traditional services have been upgraded to provide a wide variety of real-time and demand-responsive trips. Service providers such as Uber, Ola, Grab, and Rapido, amongst others, have provided smart phone-based platform to link riders with community drivers. The riders book a ride through the mobile application by adding their destination and, thereafter, a commercial passenger vehicle driven by a licensed driver accepts the booking request and reaches the rider's location

via GPS. The aggregators charge a distance variable fare, approximately 80% of which goes to the driver, with the remaining going to the service provider. These service providers also maintain rating systems that allow drivers and passengers to rate each other after the trip is completed. The global penetration rate¹ of the above-mentioned services was 8.3% in 2017. It is estimated that the penetration rate will reach 13% by ride-sourcing and ride-sharing companies will almost double in 5 years' time (OECD, 2018).

Aggregator's services can be categorized based on functionality of a multi-sided platform business model that competes to attract both drivers and passengers:

- **Ride hailing/sourcing:** In this model, a mobile-based platform is provided to facilitate communication, payment, and feedback between the passengers and drivers (OECD 2018). Examples of ride sourcing are Ola Bike, Uber Moto, GoJek, etc.
- **Ride sharing/pooling:** In this case the platform acts as a connector between users who plan to travel on the same route, enabling them to share the bike and the costs. Examples of service providers for this services are Rapido, Quickride amongst others

Note: There are bike sharing services also available in which the bike is given for rent for some time or a particular trip. We are not accounting those services in the taxi category.

Global Context

There are about 20 million motorcycle taxis globally: 2 million in Brazil, 1 million in Nigeria, and 0.2 million in Bangkok, including both conventional and app-based service providers (Valoriser Consultant, 2016). Recently, Indian cities have been the focal points for the deployment of bike taxis as a mobility solution, though they are still in the nascent stages of adaption to local/state regulatory

conditions and integration with other public transport modes. Bike taxis can take different forms in every city based on the different mobility needs and the local conditions present. Global experiences can raise many important questions with respect to regulatory actions needed. Thus, this section will highlight international regions where bike taxis are present, reasons for their adoption, integration with other modes, and key regulatory provisions to overcome the barriers.

Thailand–Bangkok

Summary

- Accessibility mode for narrow streets and core areas
- Serves low income communities
- Challenges: formalizing the service, providing safety, and controlling driver behaviour
- Solution: regulating drivers' registration and fare rate

There are primarily three types of paratransit services present in Bangkok: Songtaew, Silor Lek, and motorcycle taxi. Songtaew (a ride-sharing pick-up truck) supplements the lack of bus services along local streets. Silor Lek (four-wheeled compact car) and motorcycle taxis operate primarily as feeder in the narrow dead-end side street branching off a major street, connecting to local communities.

Since 1979, motorcycle taxis have been serving residents in several high-density communities which are far away from the main streets of Bangkok (Fakuda, 2007). These are low income communities which cannot afford to pay for taxi or tuk tuk services. The bike taxi started as a community activity in which motorcycle owners helped their community members to pick and drop their family members along that Soi/area, thereby splitting the fuel cost. Later, it became widely popular known as motorcycle taxi. The commuters prefer motorcycles over other modes as it provides a cheaper, faster and more convenient mode of service.

The major regulatory concerns related to motorcycle service was the formalizing of the service, providing

¹ Penetration rate is the ratio of active paying customers (or accounts) to the total population in 49 countries for each year.

safety, and controlling driver behaviour. The government regulated the motorcycle taxi service in 2005, thereby regulating drivers' registration and fare rate (Fakuda, 2007). The following measures were adopted by the government:

- The government restricted the number of service vehicles and imposed regulations upon motorcycle taxi registration system and arrangement of service routes.
- The Department of Land Transport (DLT) revised the 'Motor Vehicle Act B.E. 2522 (1979)' to classify the type of motorcycles into private-use motorcycle and public-use motorcycle. This mandated motorcycle taxi drivers to legally hold public motorcycle driving licenses and other required regulations.
- As with regulations for formalizing motorcycle taxi service, it includes regulations for setting fare rate
- Regulating specific license plate for motorcycle taxi (yellow plate with black font)
- Regulating driver's uniform: the drivers have to wear specified jackets.
- As regulations for providing safety service, it includes regulations for applying safety equipment (e.g. installing handle for passenger, providing helmet for passenger).
- As regulations for controlling motorcycle taxi driver, it includes regulations for registration (paying annual tax: 100 Baht per year and fare for driving license: 150 Baht per 3 years), banning/cancelling driving license, and penalty for traffic rule violation and inappropriate services.
- Legalize the fare rate by controlling the upper level rate or maximum rate.

Vietnam–Ho Chi Minh City

Summary

- High motorcycle ownership
- Challenges: air pollution, declining walking share, accidents
- Solution: awareness programs

Motorbike taxis emerged in Vietnam due to the high ownership of two-wheelers. In 2008, more than 80% of trips in the city were carried out by motorbikes and scooters (The Guardian, 2016). Ho Chi Minh is located

in the southern region of Vietnam and is one of the most motorcycle-dependant cities, with 680 motorcycles per 1000 habitants (Thi Cam Van, Boltze, & Anh Tuan, 2013). The motorcycle taxi service is called 'xe om' in Vietnamese and the service plays a significant role in providing accessibility and connectivity in many high-density communities. Most motorbikes used for bike taxis are 50–150 cc, with small-wheel diameters (less than 40 cm). In Vietnam acquiring a licence for such motorbike is convenient, whereas getting a licence for a motorbike over 175 cc includes specific restrictions (Turner & Thuy Hanh, 2018).

Motorcycle taxi services were traditionally operated by individuals and not by any association/organization or company. There was at least one motorcycle driver on almost every street corner waiting for regular customers to find him or her. However, this service is unorganized as it is individually operated, leading to lower efficiency of driver, and low income. Thus, there was a need to organize the service to achieve safety, coordinate with drivers to raise their efficiency, and fare regulation.

In 2014, the introduction of Grab brought exponential increase of 50,000 drivers from 100 drivers (Matthew, 2018). The main users of motorcycle taxis belong to the middle- and low-income level population. Such services are mainly used for medium distances (5–10 km), especially by students and workers (Tuan & Mateo- Babiano, 2013). Motorcycle taxis are easily accessible, and provide door-to-door and fast, high speed and flexible transport services.

The major concerns with motorbike taxis are that due to the high share of two-wheelers, the air quality has degraded. Issues related to congestion and road safety are also prevalent. For the same, various awareness campaigns were conducted by the government. The Global Helmet Vaccine Initiative is one among them.

Nigeria–Lagos

Summary

- Emerged due to lack of public transport mode
- Challenges: Accidents
- Solution: Restricting operational timings and routes. Ban on plying pregnant women and children

In the case of African cities, the decline in organized public transport systems has led to a rapid growth of non-conventional means of public transport, primarily commercial motorcycles (Kumar, 2011). The use of commercial motorcycles in Lagos began in 1980 by a group of individuals in the Agege local government area. With the decline in formal public transport systems, the operation spread to other areas and became a popular mode. In the present day, 'Gokada' is a popular bike taxi app being used in Lagos.

These commercial motorcycles offer certain transport advantages: easy manoeuvrability, ability to travel on poor roads, and demand responsiveness. On the other hand, commercial motorcycle service growth has also led to an increase in road accidents, traffic management problems, pervasive noise, and increase in local air pollution. Commercial motorcycles are also more expensive than the lowest bus fares, but are increasingly being patronized by the poor due to the inadequacy of bus services. In Lagos, most commuters use motorcycles as the access and egress modes to connect peripheral areas to/from bus stops (Kumar, 2011).

In 2007, the Lagos state government banned the circulation of commercial motorcycles between 7 pm and 6 am to reduce criminal activities which were being committed using motorcycles. The punishment for violating the ban included seizure of the motorcycle and a fine of N 50,000 (\$400). The ban affected the travel demand as there was no other alternative means of mobility. Transport fares tripled with the contraction in supply. As a result, the ban was later lifted, though bike taxi was restricted to arterial and link roads. In order to ensure safety, the new rules prohibit motorcycle taxis from carrying pregnant women or children.

Colombia–Bucaramanga

Summary

- Emerged as a peripheral mode
- Challenges: Competition to existing public transport
- Solution: Banning the app based application and improving the feeder service of the public transport by providing an alternative mode which is gender inclusive, well integrated, and safe

In Colombia, bike taxi services cater to huge mobility demand, primarily in Bogota, Medellin, Bucaramanga, Neiva, Villavicencio, and Cartagena. Motorbike taxis have become an integral part of the transportation system in Colombian cities as they provide affordable and efficient travel. The motorcycle taxis serve about 15% of the total travel demand, amounting to 40,000 captive users and almost 125,000 trips a day in Bucaramanga (Márquez, Pico, & Cantillo, 2018).

Bike taxis initially emerged as a peripheral mode in Bucaramanga, and later became popular. Despite the presence of public transport, bike taxis remain the mode of choice for travellers, primarily due to the low frequency of feeder buses. Thus, bike taxis do not compliment public transport services but instead act as competition to their operation. The fares of bike taxis are also negotiable, and the travel time is less in comparison to the Bus Rapid Transit (BRT) feeder service, which promotes more passengers to use the bike taxi services in Bucaramanga.

Due to the wide popularity of bike taxis, they are also available on an app-based platform called Picap (a Moto-taxi start-up). However, in Colombian cities, motorcycle taxis have become subject to strict state regulations, with the Colombian government proclaiming Picap to be illegal on the grounds that motorcycles are not legitimate vehicles for ride-hailing (Cortes, 2019).

Apart from banning the service, the government has also made efforts to increase the ridership of public transport, by launching Yipi rickshaws, which are three-wheeled motorbikes and part of a feeding scheme with fare integration, predetermined zones for operation, GPS tracking, women drivers, and road safety features (as vehicles drive within speed limits) (Rubiano, 2015).

Key Takeaways

To summarize, in the international case studies, the reasons for emergence of bike taxis and the challenges associated with them are mentioned in Table 1. The key reasons associated with the emergence of bike taxis are urban morphology and strong market availability. Most of the global and Indian cities have core areas which cannot be easily accessed by all modes available due to narrow lanes and lack of adequate manoeuvring space. Motor cycles taxis act as best mobility option in accessing these areas. The terrain of certain cities is also limiting the use of

Table 1: Key challenges and reasons for emergence of bike taxis globally

Reasons for emergence of bike taxis	Key challenges
Limitation of access to core areas and narrow lanes	Safety issues
Lack of public transport	Competition with public transport and other para transit modes
Low income levels	Illicit driver behaviour
High two-wheelers ownership	Congestion
Bad roads and difficult terrain	Air pollution

most of the modes, there also these services act as only means of connectivity. Other crucial factor for emergence of these services is lack of adequate public transport services and high two wheeler ownership. Affordability is another criteria for making these services popular among the users.

Based on the international case studies, the identified key strength, weakness, opportunities, and threats associated with the bike taxis are given in Table 2.

Mobility Options in India

The role of intermediate public transport or the paratransit services is critical in Indian cities. It serves as feeder to

public transport in metro cities and as a main haul public transport in tier 2 and tier 3 cities². The varied categories of vehicles play diverse roles in the urban mobility scenario. The broad categories of vehicles and their role in urban settings are given in Table 3.

Table 3 states various intermediate modes and their roles, however the rider choice is dependent primarily on two categories: cost and time. Thus, motorcycle taxis have emerged as a personalized mode which offers affordable, fast, and convenient mode of mobility. However, motorcycle taxis are not allowed in all the states as they require amendment in the rules.

Table 2: Identified Key Strength, weakness, opportunity, and threat of the bike taxi service

Strengths	Weaknesses
Access to narrow lanes and deep area	Lack of regulatory support to maintain quality and quantity of vehicles
Ability to ply on difficult terrain	Limitation to plying in all-weather conditions
Improve livelihood and provide employment opportunities	Limitations in ensuring safety during night and for all user groups, especially children and pregnant women
Can be well integrated with app-based platforms to provide demand responsive and real time services	
Opportunity	Threat
Feeder to public transport	Safety concerns (related to vehicle quality and driver behaviour)
Offers fast, convenient, and affordable mode for mobility	Security of women and Children
Optimally utilizes the high ownership potential of motorcycles	

² Tier 2 cities are those which have population between 5 to 10 lakh and Tier 3 cities have population between 1 lakh to 5 lakh

Table 3: Intermediate public transport services available

Parameter/ Mode	Role and category	Cost/Fare	Speed	Waiting time	Capacity
Cycle rickshaw	Non-motorized mode for narrow and dense areas	Affordable	Slow	Low	Personalized mode of travel
E rickshaw	Electric vehicle serves short trip as feeder	Affordable	Slow	High as the driver waits for full occupancy	Shared vehicle
Auto rickshaw	Contract carriage vehicle serves an area	Minimum Rs30 per km-High	Fast	Low	Personalized mode of travel
Shared auto rickshaw	Shared vehicle with fixed routes	Low	Fast	High as the driver waits for full occupancy	Shared vehicle
Shared taxi	Contract carriage with demand-based routes	High	Fast	Medium	Shared vehicle
Taxi	Contract carriage with demand-based routes	High	Fast	Medium	Personalized mode of travel
Minibus	Shared vehicle with fixed routes	Low	Fast	High as the driver waits for full occupancy	Shared vehicle
Moto bike	Contract carriage demand-based areas	Low	Fast	Low	Personalized mode of travel

Indian Policy Landscape

The Constitution of India lists transport in the concurrent list; thus, both the Centre and State governments enforce rules and regulations for this sector. The policy interventions at national and state levels are given here:

National-level Policy Intervention

As per a central notification, bike taxis may ply as 'contract carriage' as defined in Motor Vehicle Act, 1988. The Central government on 5 November 2004 allowed motorcycles to be used as transport vehicles and allowed the registration of motorcycles as 'transport vehicles', where they can be used on hire to carry one passenger on pillion (MoRTH, 2004). A 'transport vehicle', as defined under Section 2(47) of the Motor Vehicle Act, means and includes 'public service vehicles' among other types of vehicles and a 'public service vehicle' is further defined under Section 2 (35) of the Motor Vehicle Act as 'any motor vehicle used or adapted to be used for the carriage of passengers for hire or reward, and includes a maxi-cab, a motor-cab, contract carriage'.

In December 2016, a report by the Ministry of Road Transport and Highways (MoRTH) constituted a committee to review the issues related to taxis, recommended State Transport Department to allow two-wheeler taxi permit on the lines similar to those for city taxi. This was recommended to achieve an economical and a convenient last mile connectivity solution for the citizens. Further, the bike taxis will allow existing private bikes to facilitate utilization of idle assets (MoRTH, 2016).

Later in 2018, NITI Aayog's report on shared mobility also stated the importance of bike sharing for last mile connectivity and as an affordable transit mode (NITI Aayog, Rocky Mountain Institute, and Observer Research Foundation, 2018).

Till 2015, Goa was the only state in India which allowed bikes as public service vehicles. The concept of bike taxis has now been legalized for operation in eight states with an aim to offer affordable transportation to people. After this notification by the Central government, some of the states permitted motorcycles to ply as contract carriage.

State-level Policy Initiatives

Bihar Taxi Aggregator Operational Directives 2019, Department of Transport, Government of Bihar

The Bihar Taxi Aggregator Operational Directives, which are applicable to aggregators operating in Bihar, have the following directives:

- To ply in the state as a taxi aggregator, the aggregator has to get an agent's license from licensing authority. To obtain license, the licensee shall maintain a fleet of 50 motor vehicles either owned or through an agreement with individual permit holders in prescribed form to the effect for the private vehicle.
- Additionally, to ensure transparency the directives mandate that the licensee must display the fare rate and provide fare rate estimator on the website, Internet-enabled application or digital platforms used by the licensee to connect driver and passenger.

Highlights

- Registration
- Permit validity
- Operational infrastructure
- Safety measures
- Standard of comfort and cleanliness
- Emission standards
- Garage/parking space
- Real time monitoring
- Grievance redressed mechanism
- Ensuring transparency
- Fare rate estimator

- As per the directives, each vehicle should have the operational infrastructure such as valid fitness certificate issued under the Act, GPS-based tracking system in constant communication with the control room of the licensee.

In the case of bike taxis, additional restrictions include the following:

- Carriage of minors as passengers will not be allowed.
- More than one pillion rider shall not be allowed.

- Carriage of personal items by the rider would be allowed on very limited basis (for example a normal size backpack).

The notification decrees the need for setting up grievance redressal mechanism by ensuring adequate mechanism for receiving passenger's feedback and grievances. The notification further states that the transport department can review the grievance redressal' by the licensee.

Jharkhand On-Demand Transportation Technology Aggregators Rules, 2019

The Jharkhand government's official gazette introduced the Aggregators Rules and regulates the service providers who act as digital intermediaries for passengers to connect with drivers of vehicles (including bikes) by means of mobile phone/web applications. The duration of license issued under the rules is 5 years. There are general conditions which must be observed by the holder of license, which include that the licensee must ensure that every public service vehicle should have the following:

- A valid fitness certificate
- Relevant permits
- Valid insurance
- Comply with the safety requirements and be equipped with device tracking systems
- Meet emission standards

Highlights

- Licensing of aggregator
- Valid registration of vehicle
- Passenger safety
- Standard of comfort and cleanliness
- Emission control standards
- Parking space
- Area of operation
- Transparency through application programme interface (API)
- Power of licensing authority

The licensee must also ensure the following conditions for the driver:

- Valid driving license

- Be permitted to log-in and log-off the platform at their discretion; and not be compelled to drive a minimum number of hours
- Should follow safe driving rules

The general conditions on passengers are the following:

- They should not be allowed to smoke and drink in the vehicle
- They should behave in a civil and an orderly manner and not wilfully or negligently damage the public service vehicle
- They should not ask the driver to drive above the speed limit.

The gazette directs to ensure transparency in the fare and the distance travelled should be monitored and integrated with application programme interface that the Department of Transport may create in the future.

Chandigarh Transport Department Notification 2019

Highlights

- Bike taxi as 'contract carriage'
- Valid insurance
- Safety provisions
- Standard of comfort and cleanliness
- Non-transferrable Permit

As per the notification, the transport authority will allow operation of Bike taxis, to the applicant who is either an individual or a firm registered under the Partnership Act 1932 or a Company registered under the Companies Act 2013. The licensing authority will allow the conversion of the private vehicle into the commercial vehicle within 15 days from the date of application. The validity of license is not more than 7 years from the date of application.

The motorcycle taxi is mandated to carry the first aid box. The vehicle must be with yellow number plate for identification. Both the driver/rider must wear helmet of ISI mark. The owner of vehicle must have adequate parking space with themselves.

West Bengal Transport Department Notification 2016

The government of West Bengal notified the bike taxi by allowing the registration of two-wheelers as 'contract

carriage vehicle'. The notification directs bike taxi service providers to follow the following conditions:

- Service provider must own a minimum of 15 motorcycles.
- Service provider needs to have a 'Letter of Intent' for bike taxi service operation from the regional transport authority.
- The company needs to maintain a daily log for each motorcycle and make available for scrutiny by the law enforcing agencies.

Highlights

- Registration of motor bike as 'Contract Carriage'
- Governing the operation of bike-taxi service
- Transparent fare calculation
- Measures on safety and security
- Standard of comfort and cleanliness
- Data sharing with law enforcement authorities
- Real time monitoring
- Urgent contact facility

- The operational area will be limited initially to New Kolkata Development Authority (NKDA).
- To ensure safety and security of the passenger, the service providers must provide GPS tracking of vehicle.
- The real time monitoring by the service provider must be shared with administrative/police authorities.
- Urgent contact facility must be provided by service provider in the case of emergencies.
- The service duration will be between 8 am and 8 pm initially, which later can be extended by the concerned RTA after due consideration of safety of passengers.
- The driver must wear smart and light jacket with reflective colour with markings as 'bike taxi'.
- There should be provision of adequate garage/parking facility of all such motorcycles.

Rajasthan Bike Taxi Policy 2017

The Rajasthan government has allowed the registration of two-wheelers as contract carriage vehicles under the

Highlights

- Bike taxi as transport vehicle
- Ensuring last mile connectivity
- Aims to generate self-employment
- Validation of license
- Conditionality's on governing operation
- Safety and security measures
- Standard of comfort and cleanliness
- Emission standards
- Conditions observed by passenger
- Power of licensing authority

'Rent a Motor Cycle Scheme, 1997'. Thus, the vehicles can be registered under both transport and non-transport categories. The policy aims to ensure last mile connectivity and generate self-employment for unemployed youth.

The bike taxi policy governs the operation of motorcycles thereby mandating compulsory licensing for any company/organization. The license shall be valid for one year from the date of issue and the licensee is required to deposit a cash security of Rs. 5000 to the licensing authority as provided in Rajasthan Motor Vehicles Rules, 1990. The policy sets out the power of licensing authority to suspend or cancel licence of the service provider where the service provider failed to comply the terms and conditions as detailed in the policy document. The licensee is permitted to apply for another licence to the licensing authority after a period of six months from the date of cancellation. The policy also lays down the mechanism for appeal with an appellate authority.

The driver is required to have garage/parking facility for the vehicle. The driver is required to carry a first aid box. The vehicle should meet the required emission standards. The driver should be well-mannered with the passengers and should not carry more than one pillion rider. The driver is not allowed to carry minors as passengers.

State Transport Authority Uttar Pradesh Notification 2016

The State Transport Authority of Uttar Pradesh issued a notification to allow two-wheelers to be used as motor cabs or as 'contract carriage'. The notification mandates the following provisions for the bike taxis:

Highlights

- Vehicle registration
- Safety and security provision
- Contrasting colour of bike taxi
- Parking space
- Standard of comfort and cleanliness
- Complaint book
- Non-transferrable permit
- Comprehensive insurance

- The vehicle should have bike taxi imprinted in front as well as behind the vehicle.
- The driver details: name, address and phone number should also be pasted on the vehicle body.
- The vehicle body must have contrasting colour and should maintain decent standards of comfort and cleanliness.
- The vehicle should carry a first aid box.
- The driver should carry a complaint book to register any complaint by the passenger.
- The driver should ensure safety of women and children.
- The bike taxi permit will be valid for two years from the date of registration.
- The vehicle must have comprehensive insurance which should include both the driver and the passenger.
- Both the driver and the passenger must wear helmet.
- The driver should not deny plying of vehicle except in circumstances of exceptional nature.

Haryana Government Notification

Highlights

- Bike-taxi as 'contract carriage'
- Safety measures
- Emission standards
- Standard of comfort and cleanliness
- Adequate parking space
- Complaint book
- Non-transferrable permit

The Government of Haryana in its notification to all regional transport authorities approved the grant of contract carriage permission to bike taxis. The permit issued to the bike taxi will be non-transferrable. The bike taxi with the permit should follow the ensuing rules:

- The driver information: name, address, and photograph should be attached to the vehicle.
- The driver should maintain cleanliness and comfort within the vehicle and should not allow carriage of dangerous or hazardous goods.
- A complaint book should always be available with the driver.
- Except in circumstances of unusual nature, the plying of vehicle or carrying of passenger shall not be refused.
- The vehicle owner must have adequate parking space with themselves.
- The vehicle must carry first aid box and should meet required emission standards
- Safety of women and children should be ensured.

Department of Transport, Government of Punjab Notification 2017

The Government of Punjab approved the contract carriage permission for bike taxis, subject to fulfilment of conditions laid down in Section 74(2) and 84 of Motor Vehicle Act, 1988. The department has set the following conditions for bike taxis:

- 'Contract carriage' must be written on the vehicle along with a yellow number plate for identification purpose.
- To ensure safety, driver's police verification for the last six months is mandated. The service provider/ aggregator is required to maintain documentation of the driver with photo and phone number.
- The bike taxi permit will not be transferrable.
- The maintenance of vehicle with decent standard of comfort and cleanliness should be ensured.
- The vehicle with designated parking space will only be given permit.

Highlights

- Motorcycle as 'contract carriage'
- Identification - yellow number plate
- Drivers verification
- Ensuring women and child safety
- Emission standards
- Bike taxi permit non-transferable

- The bike taxi driver will adhere to all the provisions of Motor Vehicle Act, 1988 and rules.
- For safety measures, the vehicle must carry a first aid box and the vehicle owner will be responsible for ensuring the safety of women and children passengers.
- For the environment, the vehicle is required to meet the emission standards laid by the transport authority.
- The motorcycle taxi permit shall be issued only to a new vehicle or a vehicle which is not more than five years old from the date of registration.

The summary of the above-mentioned state policies is mentioned in Table 4. The table tends to compare the notifications/ policies on the ground of quality, environment, safety and economic regulations and have summarized following key gaps :

1. Lack of uniformity among the various state policies
2. Lack of clarity among the regulatory documents for instance fitness certification is required for motorcycle taxis in certain states but they do not specify the time line and the basis
3. Ease of entry and exit should be ensured by the regulatory authority. In some states there are restrictions imposed with regard to minimum fleet size.
4. The policies lack integration approach with other modes especially public transport services
5. The policies do not address the data collection mechanisms

Table 4: Summary of state policies

State	Quality regulation	Environment regulation	Quantity regulation	Economic regulation
Bihar	No company shall act as a taxi aggregator without issuance of agent's license from licensing authority, mandatory operational conditions such as valid fitness certificate, GPS, carriage of minors as hirers shall not be allowed, grievance redressal mechanism required	None	The licensee shall maintain a fleet of 50 motor vehicles either owned or through an agreement with individual permit holders,	The fare rate should be displayed and fare rate estimator should also be available
Jharkhand	Aggregators rules for bike by means of mobile phone/ web application, valid fitness certificate, relevant permit, hold valid insurance, comply with safety requirements, equipped with device tracking system, valid driving license, logbook, good behaviour conduct	Must meet emission standards	Licensing of the aggregator for five years, should follow the maximum number of hours for safe driving wherever applicable	Transparency in subject of fare calculation,
Chandigarh	Allow operation of bike taxis as an individual or firm registered under the Partnership Act 1932 or a company registered under the Companies Act 2013. Allow the conversion of the private vehicle into the commercial vehicle within 15 days from the date of such application, first aid box	None	Yellow number plate, parking space, validity of license shall not be more than seven year from the date of application	None
West Bengal	Allowing the registration of two-wheelers as a 'contract carriage', 'Letter of Intent' from regional transport authority, daily log, GPS tracking, uniform with reflective print of bike taxi	None	Service provider must own a minimum of 15 motorcycles to undertake such services, parking facility, limited operational area and timing	None
Rajasthan	Police verification, clean and comfortable vehicle, first aid box, bike taxi printed, complaint book, responsibility for women and child safety, comprehensive insurance, behaviour of driver to be courteous, no minors allowed	Adhere to emissions standards	Registration of two-wheeler as a contract carriage vehicle under 'Rent a Motor Cycle Scheme 1997, governing operation of motor cycle with compulsory licensing for any company/organization, license valid for 1 year adequate garage/parking facility	None

Table 4: Summary of state policies

State	Quality regulation	Environment regulation	Quantity regulation	Economic regulation
Uttar Pradesh	Police verification, clean and comfortable vehicle, first aid box, bike taxi printed, complaint book, responsibility for women and child safety, comprehensive insurance	None	Registration of two-wheeler as a contract carriage vehicle, permit valid for 2 years	None
Haryana	Police verification, clean and comfortable vehicle, first aid box, complaint book, responsibility for women and child safety	Adhere to emissions standards	Contract carriage vehicle, non-transferrable permit, parking availability	None
Punjab	Police verification, clean and comfortable vehicle, first aid box, responsibility for women and child safety	Adhere to emissions standards, permit allowed for new vehicle which are less than 5 years old	Contract carriage permit with yellow number plate, non-transferrable permit, parking availability	None

Primary Survey Results

A primary survey-based approach was used to understand the factors that affected the choice of public transport users for their first and last mile connectivity options. The aim of this exercise was to understand the role of bike taxis as a first and last mile connectivity option and suggest the policy regulatory framework which would be required for their implementation.

Target

As part of this study, a survey of potential bike users, existing bike taxi users, bike taxi drivers, and policy experts was designed in order to understand the following:

- **Potential bike taxi users:** Willingness to shift; and risks associated with bike taxis
- **Existing bike taxi users:** Key reasons for using bike

taxis; their experience of using bike taxis (benefits, costs, and risks); and the future expected improvements.

- **Bike taxi drivers:** Asset utilization patterns and infrastructure needs
- **Policy experts:** Regulatory framework required for bike taxis

Survey locations

The survey for existing drivers and users was conducted on peripheral metro stations: Huda City Centre, IFFCO Chowk, MG Road and Sikandarpur in Gurgaon; and Noida City Centre, Electronic City in Noida. Apart from Noida and Gurgaon, potential bike taxi users from Delhi were also surveyed. The selection of the location was based on high footfall and proximity to other public transport stations such as Rajiv Chowk, Kashmiri Gate, and Anand Vihar metro stations.

The survey results are given here:

Key Findings – Moto-taxi Driver Survey			
Drivers Details	Vehicle Details	Trip Details	Driver Perception
<ul style="list-style-type: none"> Age: 60% of drivers were 21–30 years old, 30% were 31–40 years old Educational qualification: 38% were 12th pass, 28% were 10th pass, 25% were graduates, 3% were post-graduates Monthly income: 57% earned between Rs. 12,000–21,000, 21% earned more than Rs. 21,000, rest earned less than Rs. 12,000 Driving experience: 78% of drivers had driving experience between 3–15 years, while 13% drivers had experience less than 1 year Distance travelled: 38% drove >150 km per day (pd), while 45% drove between 100–150 km pd, remaining drove <100 km pd Hours spent driving: 52% drove between 10–14 hrs pd, 31% drove 5–10 hrs pd, 8% drove 14–16 hrs pd, 8% drove 0–5 hrs pd Satisfaction: 87% of drivers were satisfied driving bike taxis About 71% of the drivers were fully employed in the bike taxi operation 36% of the drivers would be unemployed if not employed by bike taxis. 	<ul style="list-style-type: none"> Age: 88% vehicles used as bike taxis were in the range of 0–5 years Fuel efficiency: 50–55 km per litres Average annual vehicle km travelled: 45,000 km Ownership: 95% of the drivers fully owned their vehicles, very few owned second-hand bikes Average fuel cost : Rs. 5855 Average maintenance cost: Rs. 1147 Average insurance cost: Rs. 1154 Average speed for 75% riders was between 40 km/hr to 50 km/hr. Most of the vehicle used are new vehicles with efficient mileage. 	<ul style="list-style-type: none"> No. of trips per day: 16 Average per day earning: Rs 650 Feeder to public transport: 50% had metro stations as origin or destination Waiting time: Average waiting time per trip for 50% of the drivers was 5 to 10 minutes Speed: 50% of the drivers went up to maximum speed of 50 km/hr 	<ul style="list-style-type: none"> 50% drivers showed willingness to shift to electric. The other half raised lack of charging infrastructure as a major concern for shifting to electric 67% drivers felt accidents as a major threat for plying bike taxis. Rest had raised concerns such as theft, robbery, etc. 70% drivers assured that women felt safe while using bike taxis 66% were aware about the risks associated with carrying young children (age less than 10) 50% drivers had no issues with government regulating fares 68% indicated high resistance to observation of fixed operational timings 50% drivers wanted permit cap for bike taxis 60% drivers wanted dedicated parking stands for drivers 80% drivers wanted mandatory safety training

Key Findings – Existing Users Survey

Personal Profile

- Age: 54% of the users were in the age group of 20–25 years old, 24% were 26–30 years old.
- Gender: 91% of the bike taxi users were male.
- Educational qualification: 42% were graduates, 35% were 12th pass, 11% were 10th pass, and 9% were postgraduates.
- Profession: 53% had private jobs, 31% were students, 11% were self-employed, and 4% were in government service.
- Monthly income: 61% earned between Rs. 10,000–30,000, 18% earned between Rs. 30,000–50,000, 15% earned less than Rs. 10K and 6% earned more than Rs. 50K.
- Vehicle ownership: 45% didn't own any vehicle, 34% owned only 2W, 10% owned only cars, 4% owned only cycles, 6% owned both cars and 2W and 2% owned both cycles and 2W
- Thus, mostly younger population/ students with age less than 30 years and low monthly income are existing user for the service. Primarily because moto bike taxis offer cheaper service and they do not own any vehicle.

Trip Characteristics

- Purpose: 70% used bike taxis for work trips, 25% for education, 3% for recreational and 2% for social and others.
- Trip type: 67% of the users were bike taxi for first and last mile connectivity while 33% used it as a transfer mode.
- Alternative modes available: Auto, taxi, shared cab and grameen sewa were the other alternative modes available as per users knowledge. Thus they choose bike taxis as a personalized cheap alternative mode for mobility
- Average trip distance: 6.5 km
- Average waiting time: 5 min is the average waiting time for bike taxis.
- Average time taken on bike taxi: 19 min.
- Average time taken via alternative mode: 31 min.
- Frequency of usage: 72% users were regular users, 24% were first-time users and 4% were occasional users. Average frequency of daily users was 2 trips.
- Average Fare: Rs.39

User Perceptions

- Most of the users believed that bike taxis were cheaper, faster, comfortable and conveniently available.
- 87% of the users thought that fares of bike taxis were lower as compared to other modes.
- 93% of the users felt that bike taxis were safe from accidents.
- 99% of the users felt secure on bike taxis.
- 89% of the total women users felt bike taxis are safe
- 98% of the users received helmets while riding bike taxis. However, some of the users did not wear the helmet in spite of receiving them.
- 95% of the users thought that bike taxis were easily available.
- 94% of the users felt comfortable using bike taxis.
- Some of the users believed that quality of bikes and services could be improved.
- Some users suggested that facilities for phone charging plug in the bike.

Key Findings – Moto-taxi Potential User

Non-users	Trip Information	Non-user Perception of Bike Taxis
<ul style="list-style-type: none"> Age: 20% of potential users were less than 21 years old, 67% were 21–30 years old, 9% were 31–40 and 4% were above 40. Gender: 83% of the respondents were male and 17% were female Educational qualification: 40% were 12th pass, 13% were 10th pass, 37% were graduates, 6% were post-graduates Monthly income: 28% earned less than Rs. 10,000, 51% between Rs. 10,000–30,000, 15% earned between Rs. 30,000–50,000, 5% earned between Rs. 50,000–100,000 Vehicle ownership: 43% did not own any vehicle, 36% owned only 2W, 14% owned only car, and 5% owned only bicycle Thus, mostly younger population/ students with age less than 30 years and low monthly income are potential user for the service. Primarily because moto bike taxis offer cheaper service and they do not own any vehicle. 	<ul style="list-style-type: none"> Average trip distance: 8.89 km (women = 6.8 km, men = 9.3 km) Average waiting time: 5.3 min (women = 4.2 min, men = 5.2 min) Average journey time: 27 min Trip purpose: 62% trips were work related and 23% were educational trips (for women 46% were work trips and 22% were educational) Main haul trip: 63% used metro and 34% used buses Mode for first/last mile: 77% used autos (including 34% personal autos, 33% shared autos, and 10% gramin seva), 9% used e-rickshaw, 6% used taxis Key reasons for choosing the mode: Cheaper, faster, lesser waiting time Most of the potential users have shorter trips thus they prefer using motor bike taxis as a feeder service to public transport. 	<ul style="list-style-type: none"> Awareness: 89% non-users were aware of bike taxis. Whereas 56% of the women were aware about bike taxis. Willingness to pay: Rs 3 per km Willingness to shift: 90% non-users were willing to shift to bike taxis if the fares were cheaper than current modes. 88% of women non-users were also willing to shift Safety: 80% users believed bike taxis are safe. However, only 29% of the women feel it is a safe mode. Availability: 82% believed bike taxis are easily available. Also, only 39% of the women says bike taxis are easily available Comfort: 81% of the total potential users perceived bike taxis as being comfortable. However only 33% of the women feel bike taxis are comfortable. Reasons for not choosing bike taxis: Not aware about the technology, perceived driver behaviour, safety and security of the two-wheeler were the top reasons for not choosing bike taxi.

Regulatory Interventions

As discussed in the above sections, motorcycles have emerged as a mode of first and last mile connectivity in various states, which have notified the plying of motorcycles as being legal and have mandated regulatory provisions. The notifications are intended to improve the mobility within cities and enhance livelihoods, thereby increasing employment. However, there are a few states which have refrained from legalizing moto-bike taxi services. Based on extensive stakeholder consultations with academicians, policy-makers, service providers and public transport operators, along with primary and secondary research, TERI recommends the following regulatory interventions in order to overcome barriers for mainstreaming bike taxis as a first and last mile mobility mode:

- **Quality & safety regulation:** Safety is one of the major concerns raised for using two-wheeler as a mode of travel. At 35.2% of the total accidents in 2018, the highest accident share was observed with two-wheelers (MoRTH, 2018). However, bike taxis can be regulated to reduce accident risks through the following mechanisms.
 - » Driving license: Non-g geared two-wheelers can ply with learner's license. However, persons with learner's license should not be allowed to ply as bike taxi drivers. They should attain contract carriage permit license by plying for some time with general license.
 - » Age: The driver should not be very young or very old. They should understand the responsibility of carrying the pillion and be well-versed with the safety rules and emergency measures.
 - » Insurance: The service provider should insure insurance provisions for both the driver and the pillion. The insurance coverage should cater to both death and accident along with vehicle insurance. The vehicle insurance should cover both third party and vehicle damage insurance. Bike related services, both sharing and taxis, should have comprehensive insurance irrespective of whether they are operating under contract carriage or not.
- » Training the driver: The drivers should be given mandatory safety trainings by the service provider. Their feedback mechanisms should be scrutinized with respect to safety and accordingly they should be given training.
- » Speed limit: A technology to limit the speed of vehicle should be designed by the service provider. The maximum speed should not be above the city permitted speed limits.
- » Helmets: Drivers should follow rules and carry mandatory helmet both for themselves and for the pillion rider.
- » The driver should be restricted for plying pregnant women, children below 12 years, and the elderly.
- » The drivers should carry a first aid kit and be given adequate training for the accidents
- » The device should have mandatory GPS tracking and have emergency response numbers connecting them with ambulance services
- » The drivers should wear identifier with reflectors in the night to ensure safety
- » The operational timings of the driver should be limited with respect to comfort and convenience. The driver should be restrained for doing overtime and risking the safety of the rider. Vehicle Fitness Certificate: The vehicle should be well maintained and should obtain a fitness certificate annually.
- **Environment regulation:** The bike taxis should follow rules, have mandatory pollution under control certificate, and follow emission standards. They should eventually be phased out and be converted to electric.
- **Quantity regulation:** The regulatory provisions to manage congestion and promote optimal asset utilization can be in the form of permit and integration with public transport.
 - » Integration with public transport - The bike taxis should serve as feeders to public transport. They should cater primarily to short trips and should not compete to the public transport. This can be achieved by route rationalization and integrating the fares with the means of common mobility card.

- **Economic regulation:** Motorbike taxis have emerged as an affordable mode of mobility. However, variation in their fares at times can become either competitive to public transport modes or can affect the affordability of the users. Dynamic and transparent fares should be adopted in compliance to the transport authority. These services should offer seamless mobility by integrating fare mechanisms with those of public transport.
- **Technological Regulation:** The authority should also promote vehicle pooling, including bike pooling, to improve vehicle utilization. In this regard, adequate regulatory framework should be devised by the MoRTH/ state government. The vehicle data inventory should be submitted to the transport authority and should get reflected in the vehicle database as separate category.

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End Note

(State-level Policy/Notifications)

Bihar: <http://transport.bih.nic.in/Docs/Notifications/403-10-01-2019.pdf> (Hindi Version)

<http://www.bareactslive.com/BIH/bh583.htm> (English Version)

Jharkhand: http://jhtransport.gov.in/pdf/678_2_2019.pdf

Chandigarh: <http://chandigarh.gov.in/pdf/tpt19-10374.pdf>

Rajasthan: http://www.transport.rajasthan.gov.in/content/dam/transport/transport-dept/pdf/Policies/bike_taxi_Policy.pdf

West Bengal: <http://transport.wb.gov.in/wp-content/uploads/2016/10/2016-08-22-notification-for-introduction-of-bike-taxi-2979.pdf>

Punjab: <https://olps.punjabtransport.org/Moter%20Bike%20Tax%20Policy%202017.pdf>

Uttar Pradesh: hard copy available with TERI

Haryana: hard copy available with TERI

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