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Assessment of the E-rickshaw operations in Delhi

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LOW CARBON • CLIMATE RESILIENT • CITY DEVELOPMENT

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1 Introduction

This report comprisesof a summary of e-rickshaw operations in Delhi. The main objective isto assess the operations of the e-rickshaws in Delhi, to understand the current situation of e-rickshaws and better understand their operations. The assessment will enable decision makers inovercoming the lack of information related to same. It will also helpin identifying the various barriers,in an effort to promoteelectric mobility in Indian cities.The assessment also intends to capture the perception of e-rickshaws from drivers as well as the users, relating to the profit, income, issues, feasibility, performance, safety, comfort, maintenance, and others which may or may not be true. Thus, this study might be of usein creating a clearer and betterunderstanding of e-rickshaws.

Delhi, being the national capital and centre of various activities, it has attracted a large number of people from different parts of the country. This unpredicted growth in population is one of the reasons for the increase in demand for mobility services. The population of Delhi increased by almost 9 million from 2001 to 2011(Census of India). This in-turn has put tremendous pressure on the urban transport infrastructure and services. The increase in population has also led to 8-fold growth in vehicular population since 1986. ((Delhi Traffic police, 2016))

Delhi was stated to have about 9704741 registered motor vehicles in 2015-2016 with 462225 of them registered only in 2016 (Delhi Traffic Police, 2016). This is more than the vehicles in Mumbai, Chennai and Kolkata put together, and showed an increase of about 9.94% over the previous year. The majority of the vehicles are two wheelers (6104070) and about 332933 public vehicles. Inspite of large vehicular numbers, more than 64% of the daily trips are taken by public modes of transport (Delhi Government, 2016-17). Also, the growth in public transport vehicles is negative which indicatesa dependency on private vehicles. To fill the above gap in provision of public transport, Delhi witnessed exponential growth in number of e-rickshaws. It significantly supported the transportation sector for last mile connectivity i.e. for filling up the gaps between the areas which are further away from the metro or bus routes.

E-rickshaws are a type of para-transit. These are three wheeled vehicles allowed to carry a maximum of 5 people (including the driver), with a weight restriction of 40 kilograms of luggage. They usually operate on the tertiary roads or roads away from the arterial roads. They run on a battery of 110-140 Ampere and have to be charged for 6-12 hours to run for about 80-110 km, depending on the life and condition of the battery.

E-rickshaws were introduced in Delhi during the 2010 Commonwealth Games for last mile connectivity to residential areas. They were planned to be taxed by the government after the games. With the advent of time, the number of these rickshaws grew at an unaccountable rate. Their number was 4000 in 2010, which increased to about 100000 in 2014(approximately) (Source: (Shashank Singh, 2014)).

The operations of e-rickshaws are regulated by CMVR 1989 and Delhi state notification on plying of e-rickshaw. They both restrict the maximum speed to 25 km/hr. Due to this, operations of e-rickshaws are permitted only on secondary roads.

Figure 1: Map showing the roads, on which plying of e-rickshaws is restricted. Source: (Delhi Traffic Police, 2015)

In context of Delhi,e-rickshaws have the following advantages:

- E-rickshaws reduce the stress and discomfort of the driver,unlike cycle rickshaws and are a much more affordable solution as compared to fuel/ CNG auto rickshaws. It is an important public transport option which offers affordable travel to people where the demand for intermediary transport arises. They are easy to run and maintain.
- They act as a feeder to other public transport (metro station/bus station/railway station) for small distances ranging from 1 km to 6 km.
- Theyplay the role of an environment friendly mode of transport to tourist places such asQutubMinar, Red Fort, etc.
- It provides a demand responsive mode of transport in which a group of people can travel to market places, workplaces or institutional centres.

- It offers alternative job opportunities to unskilled people.

E-rickshaw dispersion in areas of Delhi is as follows:

- Central-18%
- North-19%
- West-29%
- East-22%
- South-12%

The concentration is more in the market areas, near institutional areas, tourist spots, offices and residential areas.

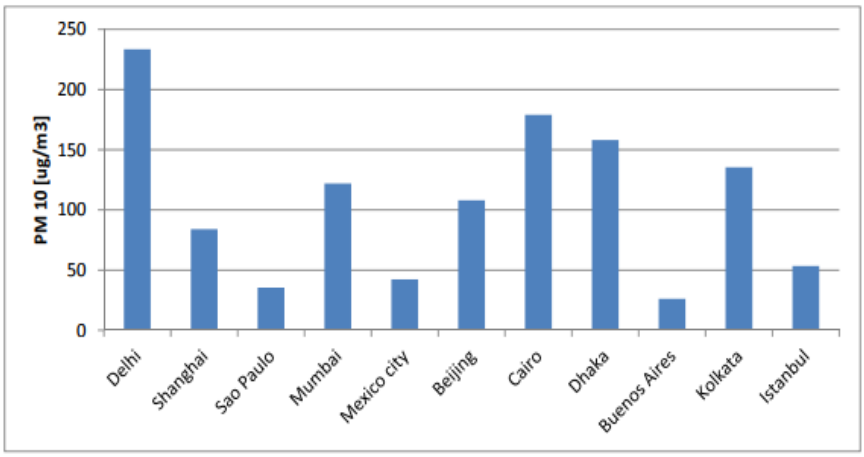
Statistics related to e-rickshaws: According to the data provided by Delhi Traffic Police website, the registered number of e-rickshaws in Delhi is as follows (Delhi Traffic Police, 2015), (Delhi Traffic Police, 2016), (Delhi Traffic Police, 2016), (Delhi Traffic Police, 2017) (Delhi Traffic police, 2017):

Year	Number of registered e-rickshaws	
	Fresh	Renewal
2015	281	3740
2016	5484	4648
2017	7817	8346

1.1 Need for the Study

Mobility is an important aspect of modern life. The economic development of region largely depends on connectivity of people and services. Owing to its flexibility, road transport is the major transport mode observed, but unfortunately this sector contributes to about 40% of pollution (as specified by Central Pollution Control Board). The emissions from this sector include greenhouse gases, CO_2, NO_2, sulphur oxides, particulate matter, lead and volatile organic compounds, posing a threat to environmental and human health.

Majority of the population depends on the motorized transport for their daily commute. The modes of transport include buses, trains, the metro, auto-rickshaws, mini buses, cycle rickshaws, local trains, etc. When a person has to travel short distances, there is a variety of informal transport modes available including autos, buses, minidor, e-rickshaws and cycle rickshaws. Most of them are fuel/ CNG powered. Thus, there is an urgent need to shift to more sustainable modes of transport or sharing modes.



Source: (WHO, 2016)

Figure 1: PM10 levelsfor mega-cities of more than 14 million habitants.

In order to ensure a safe, reliable, environmentally sustainable and economical mobility system, Delhi requires policy upgradation towards the development of NMT infrastructure in support of the existing public transport options, especially for short distances. In such a case, introducing e-rickshaws is one of the efficient low carbon options, but there remains an issue relating to the scale up of the e-rickshaws. Further, limited documented data is available on existing operations of e-rickshaws. Therefore,this study has been conducted to assess e-rickshaws by focusing on the issues, barriers and solutions that could beof importance and use.

There is a need to study e-rickshaws and matters relating to them, for better understanding and improvement. The following map shows 11 locations in Delhi where the study of e-rickshaws was conducted by means of surveyingusers and drivers.

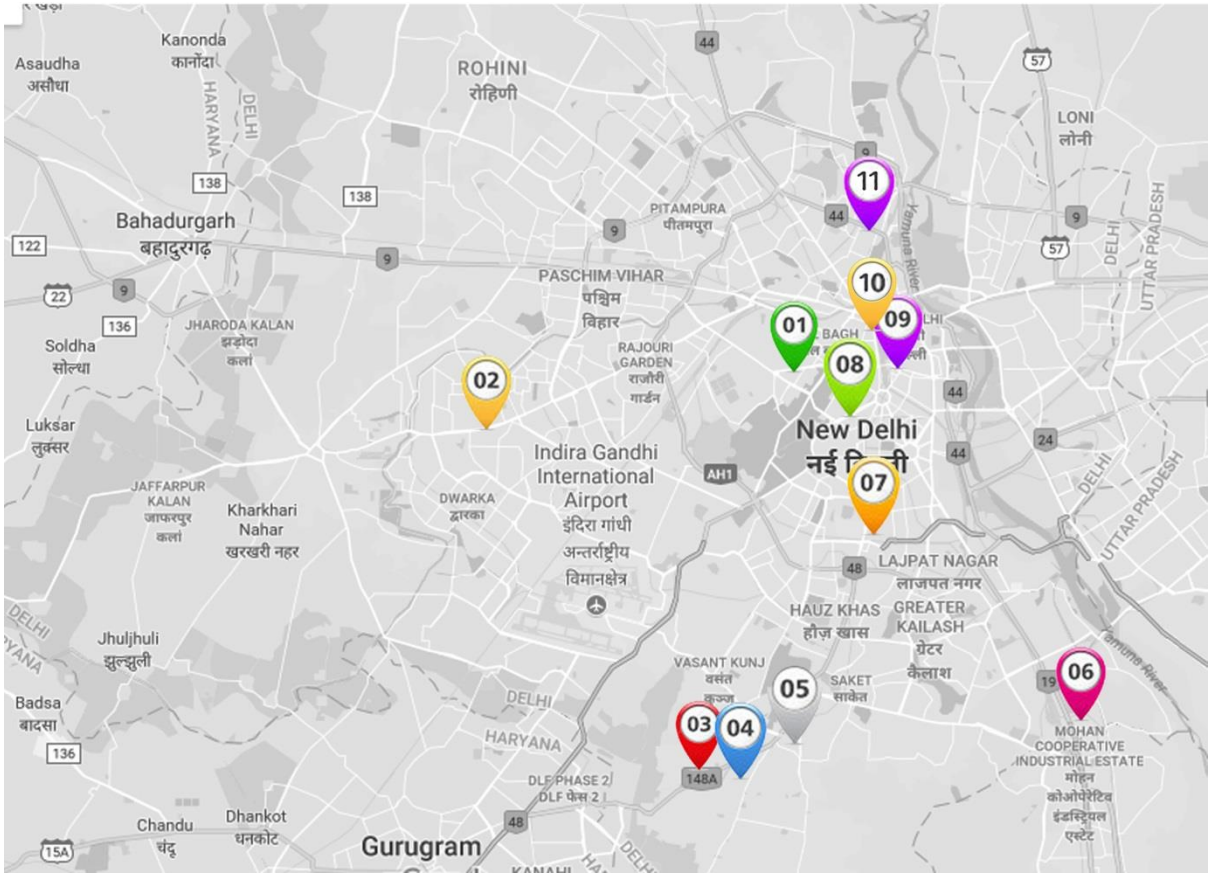


Figure 2 : Map with location of survey points

2 Understanding E-rickshaws

2.1 History of e-rickshaws in Delhi

E-rickshaws were first seen in Delhi in 2010

Initially during the Commonwealth Games(2010).These were seen in more numbers in 2012. (Government of India, 2015)

E-rickshaws banned in NCT Delhi

On 7 July 2014, Supreme Court issued a notice to the Government to ban e-rickshaws as they were not authorised by rule 126 of the Motor Vehicle Rules. It was stated that the power of the battery was more than the exempted limit of 250 watts and speed up to 25 kmph. E-rickshaws were banned on the roads of Delhi by the Delhi High Court on 31 July 2014 saying 'prima facie thay are hazard to other traffic as well as citizens'.

Legalisation of E-rickshaws on 17 June 2014

The Ministry of Road Transport and Highways legalised E-Rickshaws through the proposed Deendayal E-Rickshaw Scheme. ((Ministry of road Transport & Highways, 19 June 2014))

Involvement of local government

Union road transport ministry sent an advisory to state governments in August 2014, to involve local municipal bodies in framing rules regarding driving license, speed limit, design and other specifications.

Delhi transport department launches e-rickshaw seva scheme

E-rickshaw seva scheme was launched by Delhi transport scheme in 2014. New modified e-rickshaws were launched in November 2014, according to the new rules notified through amendments in the Motor Vehicles Act.

Return of e-rickshaws on Delhi roads

In March 2015 the Motor Vehicles (Amendment) Bill was cleared establishing battery-powered e-rickshaws as a valid form of commercial transport

2.2 Specifications and details of E-Rickshaws

Definition of E-rickshaws: As defined by the Motor Vehicles (Amendment), 2015, an e-rickshaw is as follows:

"e-cart or e-rickshaw" means a special purpose battery powered vehicle of power not exceeding 4000 watts, having three wheels for carrying goods or passengers, as the case may be, for hire or reward, manufactured, constructed or adapted, equipped and maintained in accordance with such specifications, as may be prescribed in this behalf."

Type of e-rickshaws: There are three types of electric rickshaws:

Passenger, load carrier and vegetable/fruit cart.

- Passenger rickshaws are the type which are used for transporting people from one point to another. The specifications are briefly defined in the next section.
- Load carriers: These are used for carrying loads varying from 500kg to 1000kg. The motor power is higher in this case. These may be used at places like airports, shopping malls, railway stations, etc. These can be used for short distances also. It's maximum speed ranges from 20 to 25 kmph and requires a charging for 9-10hours.
- Vegetable/fruit cart/garbage e-rickshaw: There is a range of these e-rickshaws available as per use.

Passenger rickshaws have the maximum demand and maximum number of sales.

2.3 Components of passenger e-rickshaw

Motor: It is one of the main components of the rickshaw. Most of these e-rickshaws deploy 650W to maximum of 2000W motor which are driven by lead acid batteries.

The motor or choker may also be required to be changed in a time span of 1 year or whenever it is degraded. The cost of the motor is Rs.9000 and the choker is Rs.1200. The water in the battery has to be filled in every 2 months. The cost of oil ranges from Rs.30 to Rs.50. Oiling is also required every 2 months. (Source: Primary survey)

Controller: This connects the batteries with the DC motor. It has the function of controlling the acceleration of the vehicle.

Battery: They generally have 4 lead acid batteries with 12 V capacity. These may vary from 100 Ampere to 140 Ampere

Brake types: There are two types of brakes in an e-rickshaws, which are hand brakes on the handle and foot brakes on the floor of e-rickshaws. As seen on the field, some of the rickshaws had only the foot brakes and were fully operational in that case too.

Speed: They usually have a maximum speed in the range of 20 kmph to 40 kmph, depending on the model and age of e-rickshaw. Majority have the speed limit of 30 kmph and usually are driven at a speed of 20-25kmph. *(Source: Primary survey)*

Seating capacity: As per the regulation, they have a seating capacity of 5 including the driver. Additional luggage capacity of 40 kg is allowed. (Transport Department, GNCT of Delhi, 3 February 2015)

Vehicle charging facilities: These e-rickshaws lack authorised charging facilities. The charging infrastructure available can be classified into the following categories (*Krishna Prasanth and Kumar Mukund, 2014*):

- Public charging station on public domain (e.g. metro stations, parking areas)
- Public charging on private domain (e.g. shopping malls)
- Semi-public charging station on public or private domains (e.g. hotels, business parking for visitors, etc.)
- Privately accessible charging station (e.g. home or private charging points).

In Delhi, the drivers charge their vehicles at their houses or the market. These shops charge a daily amount of Rs.100 to 150 per rickshaw. The rickshaws can be put on charging overnight and also during the lunch hours of the drivers. The Government issued a notification on 31 August 2017 allowing the e-rickshaw operators to charge their vehicles at a domestic level.

Electricity consumption: The electric consumption of these rickshaws varies from 4 units to 7 units per day. This is the total number of units when the vehicle is charged for about 10 to 12 hours in a day. The electricity consumption increases as the age of the battery increases. As the age of batteries increases above 4 to 6 months, they require more charging hours to travel the same distance in a day. (*Source: Primary survey*)

Financial assistance: The drivers can approach banks for a loan to purchase the e-rickshaws under 'Mudra' scheme. They can also take the government loans which are provided at a subsidized rate of interest. In some cases, the drivers may also form a committee to collect the money and buy a rickshaw. They pay off the debt to the committee later on. The advantage is that this loan is usually interest free. Sometimes, the option of private loan is also available to the drivers. In this case, they don't have to provide documents or proof and the loan is provided without much hustle and at a lower rate of interest or is interest free. The operators have an option to pay off the debts in a time frame convenient to them.

Regulatory bodies: The Regional Transport Officer deals with the registration of these E-rickshaws. The infrastructure is to be provided by the Municipal Authority (Municipal Council/ Municipal Corporation/ Nagar Nigam; whatever is applicable).

The enforcement of regulations, permits etc., is to be dealt by the traffic officials. The traffic officials can impose challans in case of e-rickshaw defaulters of law. All of these authorities have to keep a close check for proper management and operation of E-rickshaws.

Fare structure: There is a flat fare range of Rs.10 to Rs.20 in case of shared travel. It ranges from Rs.50 to Rs.200 (or more) depending on the distance in case of reserved travel. (*Source: Primary survey*)

Registration issue: The Delhi Government beganthe process of registering the old unregistered e-rickshaws with a processing fee of Rs.1510, which is valid for a period of 5 years. The new rickshaws already have their registration numbers. The rickshaws which are unregistered are comparatively less expensive (price difference of about Rs.30000). (Transport Department, GNCT of Delhi, 3 February 2015)

2.4 Existing Policies to promote E-rickshaws

Clean Energy Ministerial: It is a global forum to promote policies and share best practices to accelerate the global transition to clean energy economy. It includes sharing the lessons learnt, best practices and encouragement for transition to a global clean energy economy. (Clean Energy Ministerial, 2017)

Electric Vehicle initiative (EVI): It was a government policy forum, established in 2009 under theClean Energy Ministerial (CEM), dedicated to accelerating the adoption of the electric vehicles worldwide. It had 16 countries as its members and India joined in 2014. (Clean Energy Ministerial, n.d.). The EV30@30 campaign, launched at the 8th Clean Energy Ministerial in 2017, redefined EVI ambition to increase the market share of electric vehicles to 30% by 2030 (including cars, light commercial vehicles, buses and trucks) (IEA, CEM and Electric Vehicles Initiative, 2017)

E-Rickshaw Sewa Scheme: It states that vehicles bought before October 2014 can obtain a certificate of road worthiness from the manufacturer or the registered e-rickshaw association. This scheme is aimed at allowing the plying of e-rickshaws in NCT of Delhi when the following 10 conditions are complied with:

- E-rickshaw should be battery operated with a seating capacity of 5 people including the driver and maximum load capacity of 40kg.
- The model of the rickshaw should be approved according to the section 126 of Motor Vehicles Act, 1988.
- It should be registered under the registration series DL-1ER and shall be granted carriage permits without fare meter.
- E-Rickshaws can operate on roads other than those restricted by the Delhi Transport Department.
- It should be equipped with a first aid box and fire extinguisher.
- The details including the name, address and telephone number of the permit holder should be painted on the vehicle.
- The helpline number should be displayed on the outsides as well as on both sides of the vehicle.
- There should be a yellow coloured reflective strip on the rear sides.
- The dimensions should not exceed 2.8 X 1 X 1.8 metre (LxBxH).

- The rickshaw should have valid fitness certificate issued by the Transport Department.

It also included permit conditions. ((Transport Department; GNCT, 29 December 2014))

National Electric Mobility Mission (NEMM 2020) was launched in 2013 to promote the manufacturing and use of electric vehicles in India. Its main aim was to achieve national fuel security by promoting hybrid and electric vehicles. The manufacturing and use of electric cars was promoted and itrevealedIndia's plans to phase out all the fuel based vehicles with electric vehicles by 2030. It had a target of 5-6million electric/hybrid vehicles in India by the year 2020. ((Press Information Bureau, 10 March 2015))

Motor Vehicles (Amendment) Act, 2014

This notification was issued on 8 October 2014 by the Ministry of Road Transport and Highways, Government of India. This is also known as the Central Motor Vehicles (Sixteenth Amendment) Rules, 2014. It came into force on 8th October 2014. In this rule, the definition and specifications of e-rickshaws were stated as follows:

"E-rickshaw" means a special purpose battery operated vehicle having three wheels and intended to Provide last mile connectivity for transport of passengers for hire or reward, provided,––

(i) Such vehicle is constructed or adapted to carry not more than four passengers, excluding the driver, and not more than forty kilograms luggage in total;

(ii) The net power of its motor is not more than 2000 W;

(iii) The maximum speed of the vehicle is not more than twenty-five kilometer per hour;"

It also stated that the driving license issued or renewed by the licensing authority to drive the e-rickshaws will be valid only for 3 years or till the expiry of validity of the driving license, whichever is earlier.

Central Motor Vehicles rules (CMVR (Amendment)) 2015(Source: (Ministry of Law and JUstice, 2015)**):** It can also be referred to as The Motor Vehicles Amendment Act, 2015. It stated that E-rickshaw models have to be approved by International Centre for Automotive Technology (ICAT) at Manesar, Vehicle Research and Development Establishment (VRDE) Ahmednagar, Automotive Research Association of India (ARAI) in Pune or Indian Institute of Petroleum (IIP) in Dehradun. CMVR (Amendment) 2015 was implemented on 7th January 2015 with the intent to provide provisions for the amendment of the CMVR, 1988. This amendment attempted to clarify the procedure of obtaining driving licenses, related permits and other formalities required to drive an e-rickshaw. It also clarified the definition of E-rickshaws. It also stated that the specifications for the speed and dimensions can be regulated through the rules which can be made under the Motor Vehicles Act, 1988.

The Ministry of Social Justice and Empowerment and The Ministry of Minority Affairs also run various finance schemes for welfare of SC/ST/OBC and minorities, under which loans on concessional rates of interest are be provided for purchasing E-rickshaws. (Government of India, 2015)

Pradhan Mantri Mudra Yojana (PMMY): It was launched by the GoI on 8th April 2015. Its basic aim was to 'fund the unfunded', which enables the small borrower to borrow money from PSUs as loans and return the money within a time period of 5 years. It has very low rates of interest. There were three categories, 'Shishu' (loan upto Rs.50000), 'Kishor' (loan above 50000 and upto Rs.5 lakh) and 'Tarun' (loan above Rs.5 lakh and uptoRs.10 lakh) (Micro units Development and Refiance Agency Limited, 2015)

Fame India: Faster Adoption of Electric/Hybrid Vehicles.It was announced on 8th April 2015 by the Government of India. It is a scheme under the Ministry of Heavy Industries and Public Enterprises. This scheme comes under the National Electric Mobility Mission Plan (NEMMP), which targets the sale of 6 to 7 million hybrid and electric vehicle by 2020. It is aimed at market creation through incentives across segments of 2 wheelers, 3 wheelers, autos, passenger 4wheeler vehicles, light commercial vehicles and buses. (Press Information Bureau , 10 March 2015). It had an approved subsidy outlay of Rs.795 crores.

It provides subsidy on the purchase of electric and hybrid vehicles and encourages the use of these vehicles for better air quality in India.

Central Taxi Policy: This provided provisions for e-rickshaws, in order to promote urban mobility. It stated that states should allow the e-rickshaws to ply on its city roads for last mile connectivity to major public transport source as they offer a low cost and zero pollution way of transportation. The states may restrict its movement in specific areas in view of traffic or differential speed of the vehicle.(Report of the committee constituted to propose taxi policy guideline to promote urban mobility, 2016)

Subsidy scheme: The Delhi Government has launched a **subsidy scheme**for providing a sum of Rs.15000 to the owners of e-rickshaws whose vehicle are registered. It has been increased to Rs.30000 for the registered rickshaws bought after 2016. It was declared that a total of about 6000 applicants will get the subsidy. The subsidy is provided by the Delhi Pollution Control Committee; an autonomous body under administrative control of the Department of Environment, GNCT Delhi.

The MLOs inspect the rickshaws and approve them if they are registered and then the report is sent to DPCC from where the subsidy amount is remitted.

2.5 Licensing procedure (Transport Department, GNCT of Delhi, 3 February 2015)

Grant of learner's license to the drivers: The applicants have to apply to the licensing authority in the area of their residence. The documents required include: the physical fitness declaration, medical certificate, proof of residence, age proof (>20 years of age). The driver has to pass a test for obtaining the learner's license.

Grant of permanent license to the driver: The applicant may again apply to the licensing authority in his/her area after 30 days of issue of learner's license or before its expiry. The applicant has to bring a certificate with a unique serial number, issued by a registered e-rickshaw

or e-cart association or a manufacturer stating that the person has undergone a training as per GSR 27(E) dated 13/01/2015.

Registration of New E-rickshaw(sold after 8/10/2014): The driver has to approach the licensing authority of his/her area along with the documents which include the application form, sale certificate (issued by the manufacturer/dealer), certificate of roadworthiness from manufacturer, manufacture's and dealer's invoice, residence proof, insurance certificate, vehicle verification from Delhi Police, driving license to drive e-rickshaw, PSV badge, one time road tax and MCD parking fee(if applicable).

Registration for in-use/existing e-rickshaw (Sold before 8/10/2014): The drivers have to approach the license authority with the documents as mentioned for the new rickshaws, except the sale certificate and invoice which is not required for older rickshaws. The model type should be approved from designated testing agency and should have been registered within 90 days from the date of approval certificate and in any case before 13th June 2015(6month period from the date of DSR 27(E) dated 13/01/2015.

Authorisation to drive transport vehicle (PSV badge): The applicant has to apply to the licensing authority in which he/she resides and shall be accompanied by documents including the form of issue of badge, residence proof, learner's license copy and verification certificate which is issued by the police department after verification. The badge is issued only after antecedents and character verification has been completed by the police department.

3 Assessment of the E-rickshaw operations

Delhi is a combination of residential, institutional, commercial, educational areas. The locations of the study areas were finalized by considering the area. The study was conducted at 11 spots and its adjoining routes in Delhi. The primary survey was conducted in these areas. This survey was conducted by intervening the drivers of E-rickshaws. The areas were chosen in an attempt to cover all types of land use (commercial, recreational, institutional, industrial and residential). The 11 areas were as follows:

Vishwavidyalaya (educational and commercial), Karol Bagh (educational, commercial and residential), INA (educational, commercial and residential), Uttam Nagar (residential), Mohan Estate (residential, industrial), Chattarpur (residential and recreational), Gitorini (commercial and residencial), Sultanpur (residential and on the periphery of South Delhi), Chandini Chowk (commercial and recreational area), Bangla Sahib Gurudwara (recreational) and New Delhi (major transport junction)

Major routes covered in the study while visiting the above 11 areas are as follows:

- Uttam Nagar west metro - Shukar Bazaar- Big Bazaar
- Karol Bagh metro station- Sir Ganga Ram Hospital, Gaffar market, Sarai Rohilla
- Sultanpur metro station to Sultanpur colony
- Chattarpur metro to Tivoli Garden,Nanda Hospital
- Gitorini metro to colony to GhitoriniEnclave
- Ali Mord to Beri Bag, Ali Village
- Gurudwara to Meru Bazaar, RK Ashram Metro, Pahadganj.
- INA metro station gate no 2 to KotlaMubaarakpur, South extension 2.
- Sarojini market to INA metro station.
- New Delhi railway station (Ajmeri Gate) to Sadar Bazaar, Dariyaganj, Pahadganj
- Vishwavidyalaya metro to Timarpur, KamlaNagar market, Faculty of Arts(and any other college)
- Chandini chowk to Red Fort, Fatehpuri, Sadar bazaar, Seelampur, Gandhi Nagar

3.1 Sample selection

The main aim of the study was to understand the details of operations which include techinical, financial and legal issues as well the perception of drivers, users, manufacturers, operators of E-rickshaws. The assessment included the interaction with the users of e-rickshaws, its drivers, the manufacturers/suppliers and the traffic officials. An effort was made to include drivers from a

variety of areas so that a difference could be traced between the highly regulated areas and the areas on the fringes of Delhi.

3.2 Survey locations

The surveys were conducted in the 11 areas of Delhi. The maps illustrated above show the routes and the position of the area on map of Delhi marked with their respective numbers. The following results were found from the same:

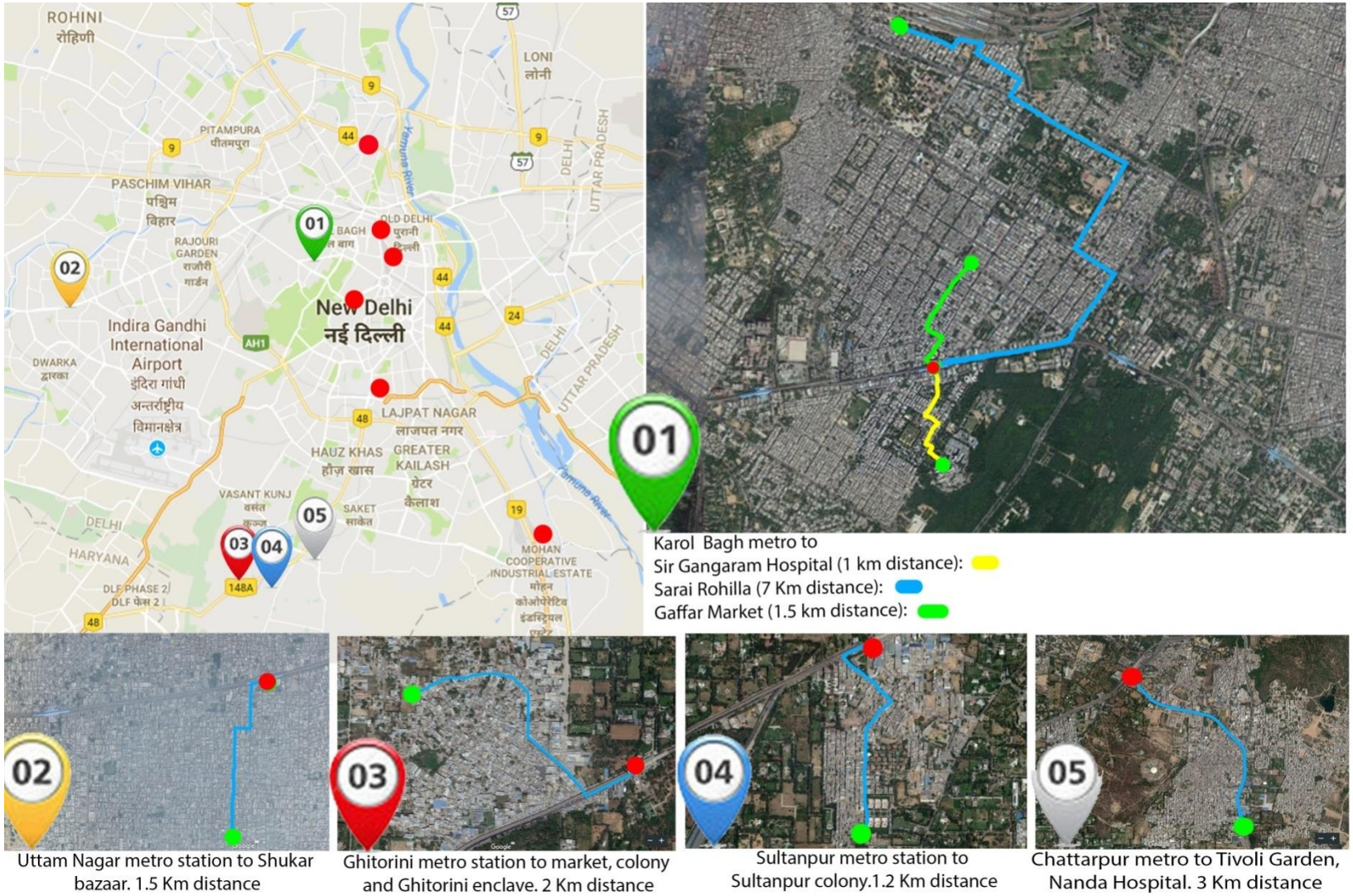


Figure 3 : Key map with location and routes of Karol Bagh, Uttam Nagar, Ghitorini, Sultanpur and Chattarpur

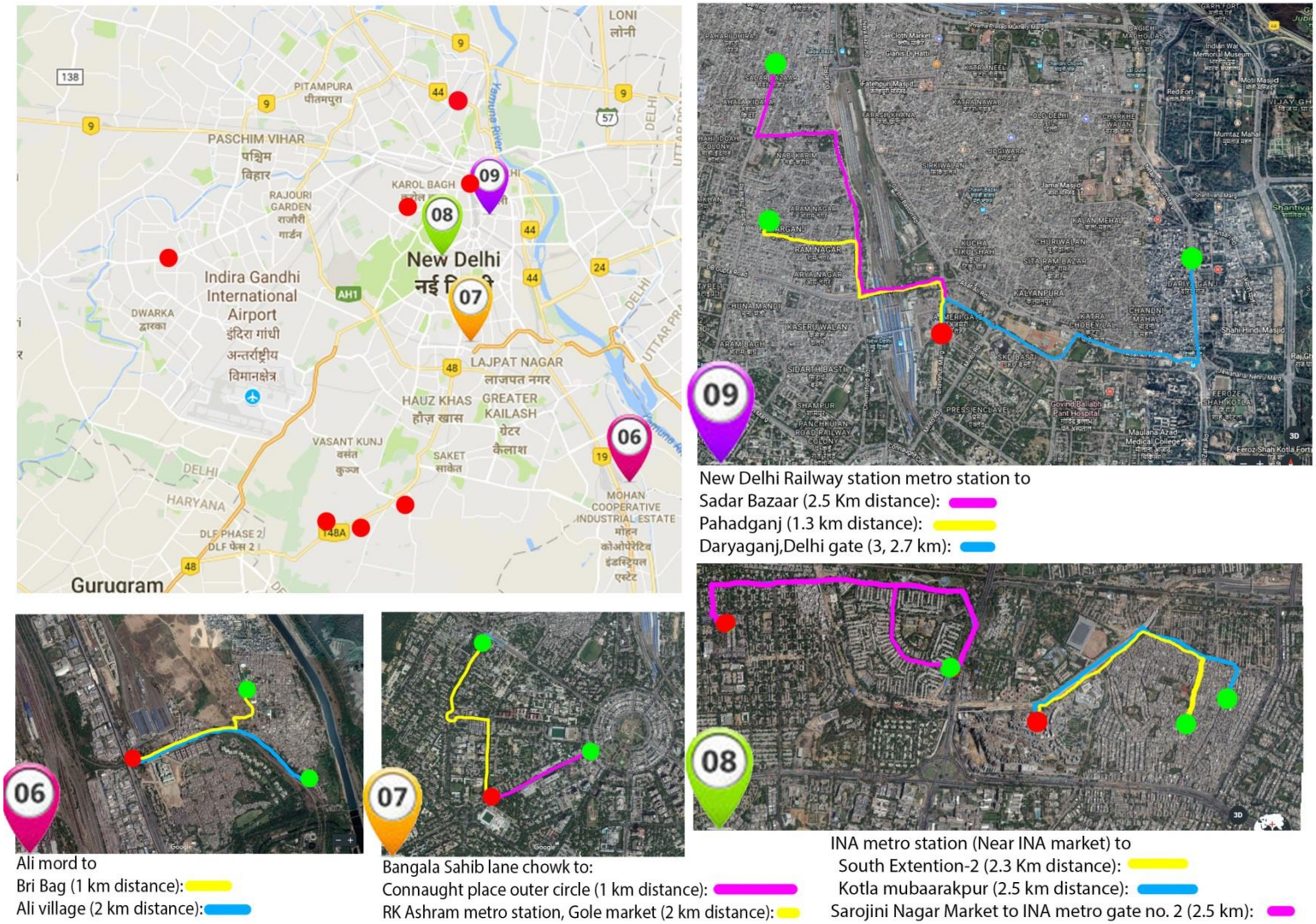


Figure 4 : Key map with location and routes of New Delhi, INA, Sarojini market, Bangla Sahib and Ali Village

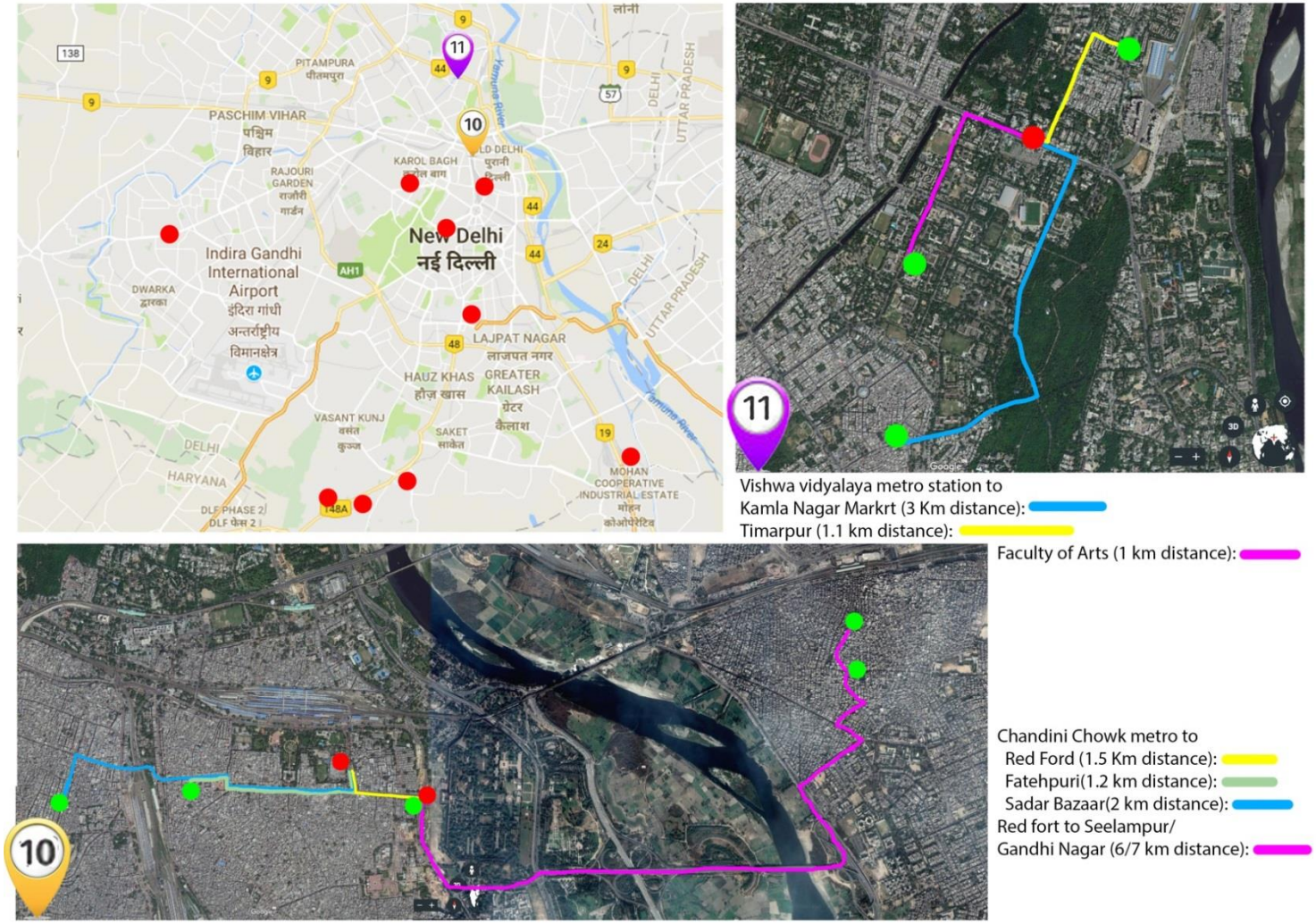


Figure 5 : Key map with location and routes of areas of Vishwavidyalaya and Chandini Chowk

Table 1 : Illustrating the gradient of routes on which the study was conducted

S.no	Route	Route Length (km)	Maximum Gradient
1	Karol Bagh to Sir Ganga Ram hospital	1.0	3%
2	To Sarai Rohilla	7.0	7%
3	To Gaffar Market	1.5	2%
4	Uttam Nagar West Metro Station to Shukar Bazaar	1.5	2%
5	Ghitorini to Ghitorini Enclave	2.0	3%
6	Sultanpur metro station to Sultanpur colony	1.2	3%
7	Chattarpur metro station to Nanda Hospital	3.0	3%
8	New Delhi to Sadar	2.5	4%
9	New Delhi to Pahadganj	1.5	4%
10	New Delhi to Daryaganj	3.0	4%
11	Ali Mod to Beri Bag	1.0	3%
12	Ali mod to Ali Village	2.0	3%
13	Bangla Sahib lane to CP Outer Circle	1.0	2%
14	Bangla Sahib lane to RK Ashram metro station	2.0	6%
15	INA to South Extension-1	2.3	3%
16	INA to KotlaMubaarakpur	2.5	3%
17	Sarojini Nagar to INA metro station	2.5	2%
18	Vishawavidyalaya to Kamla Nagar	3.0	7%
19	Vishawavidyalaya to Timarpur	1.1	3%
20	Vishawavidyalaya metro station to Faculty of Arts	1.0	3%
21	Chandini Chowk to Red Fort	1.5	3%
22	Chandini Chowk to Fatehpuri	1.2	2%
23	Chandini Chowk to Sadar Bazaar	2.0	4%
24	Red Fort to Seelampur/ Gandhi Nagar	6.0	5%

Source: Calculated from Google Maps elevation for a route (https://www.doogal.co.uk/RouteElevation.php)

4 Results and discussions

4.1 Status of registration

About 79% of the surveyed rickshaws were registered. These included the preregistered rickshaws, rented rickshaws and the second-hand rickshaws. The rickshaws bought before October 2014, were registered by the government after inspection of the e-rickshaws. These were registered when these complied with the specifications, along with the complete documents. About 21% e-rickshaws were still unregistered. The route was away from the metro station and the connectivity was from the main Badarpur road to the Ali village and vice versa. There were no traffic police in the area so the drivers usually don't comply with the regulations. These unregistered e-rickshaws are not insured, and in case of accidents or any checking, they are confiscated by the police. The drivers are not aware about the overall pros and cons and prefer unregistered vehicles in order to save money.

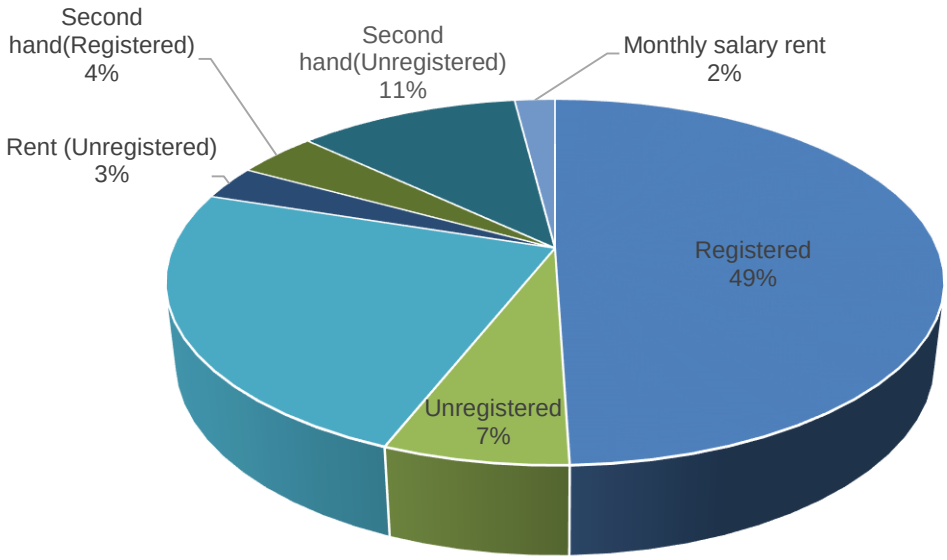


Figure 6 : percentage of registered and unregistered rickshaws

4.2 Batteries

In all the e-rickshaws surveyed in Delhi, lead acid batteries are used. The cost of these lead acid batteries depends on their power, ranging from Rs.18000 to Rs.25000. If the old battery is exchanged with a new one, there is a discount of about Rs.7000-9000. In case of rented rickshaw, the battery is replaced by the owner and so the driver is unaware of the cost. Battery water is to be changed every 2 months which costs about Rs.10-30. These have a replaceable warranty of 6 months from the company and have to be replaced at a time period of 7months to 12 months, depending on the operator and maintenance capacity.

With recent innovations in technology, lithium ion and lead carbon batteries are being tested and proposed for e-rickshaws. The cost is biggest disadvantage in these (minimum cost of Lithium ion battery, inclusive of taxes is about Rs.90000). Further the process of disposal or recycling of these batteries is also not so clear.

4.3 Tyres

Tyres have to be replaced at a time interval of 7 to 9 months (sometimes even up to an year). The cost of tyre is about Rs.11000.Initially the tyres in the e-rickshaws were of 14 inches size and now the latest rickshaws have 12 inch tyres which make its operation easier. It is easier to turn and overturning of the rickshaw is reduced.

4.4 Education and past occupation of drivers

Most of the drivers were either illiterate or very less literate and were involved as unskilled labourersprior to driving the e-rickshaws. 34% of drivers were illiterate. 17% didn't have any response to this question. 23% had studied till the 8th standard and about 26% had studied above 10th standard, including 3% drivers who had completed their bachelor degrees (B.Sc., B.com, B.A).

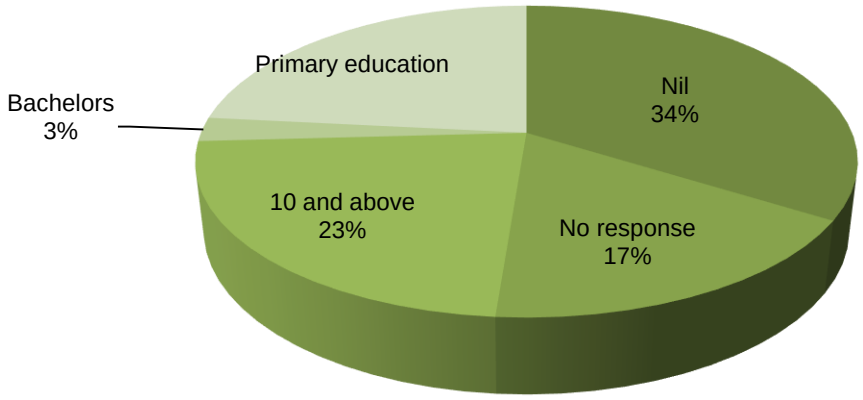


Figure 7 : Educational background of drivers

Only 11% drivers were involved in skilled labour prior to this, which included jobs such as clerical, electrician, mechanic, etc. 72% of these drivers were unskilled labourers and 17% didn't have any response for the same. 15% of the drivers were unemployed before driving the e-rickshaws and have come to Delhi from villages leaving their home for livelihood. These drivers now have a source of income to support their families. This has been one of the positive impacts of introducing the e-rickshaws, where even the unskilled or unemployed people can indulge themselves in productive work. Thus, from the primary survey it can be concluded, that as far as employment is concerned, e-rickshaws have been proved to be useful in increasing the income source and also the income of drivers who had to work very hard to earn a part of

this amount. Unfortunately, the drivers are not aware about their vehicle specifications and the regulations related to it. They haveminimal awarenessabout the rules and specifications of e-rickshaws. This is one of the drawbacks.

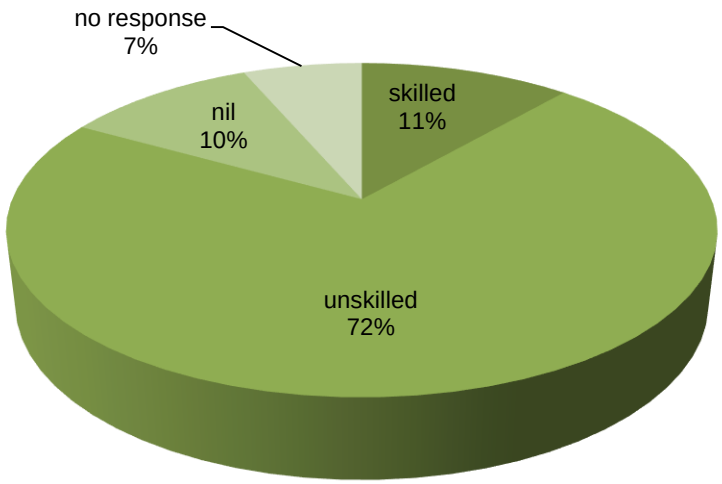


Figure 8 : Past occupation of the drivers

4.5 Charging sources and cost

The maximum number of drivers charge their vehicle at their own homes, accounting to 74%. This also includes the rented rickshaws which are charged in the owner's house or the renter's house. In case the renter charges the vehicle at his own house, he takes the charge of electricity from the owner. About 26% of the drivers charge them at shops or garages which are privately owned areas. In case of parking, the drivers can park their vehicles overnight and charge them there.

The batteries of the e-rickshaws have to be charged for about 9 to 10 hours, for covering a distance of about 80-90km. The time duration of charging increases with the battery life. As it gets older, it requires more charging to run the same distance. The battery has to be changed when it deteriorates. The battery life is defined in charging cycles and the more number of times the battery is charged, its life is subsequently reduced.

Charging of these batteries can be done at the individual's house or at shops. The cost of charging ranges from Rs.100 to Rs.150 per day. Since the maximum number of drivers prefer to charge them at their own houses, 30% of the drivers have to pay about Rs.1000 to Rs.2000 per month as the cost of electricity while 21% pay Rs.2000-3000 per month. They sometimes face the issueof the vehicle being plugged off from the charging point even when it is not fully charged. Some drivers have their houses in narrow lanes so they have to charge it from a shop which is more expensive. In their opinion charging points should be provided by the Government for their convenience. The electricity

cost for drivers charging at domestic level is comparatively lower than the cost in shops and garages. Approximately 7 units are consumed per day by the rickshaws.

4.6 Income and maintenance

The monthly income of the drivers ranges from about Rs.6000 to Rs.42000. About 11% of the operators earn less than Rs.15000 per month while 80% drivers havean income range of Rs.15000 to Rs.30000. The rickshaw drivers operating in the areas of Vishwavidyalaya and Karol Baghearn the most. This is because majority of the users are students, who usually travel in groups and this enables the drivers to carry more number of people in less frequent trips. The chance of operating the rickshaw with lesser occupancyis almost negligible.

In the area near the Gurudwara Bangla Sahib lane, there was more income during the holidays or in the evening, when there were comparatively more visitors to the Gurudwara.

In the residential areas (specifically Ghitorini and Sultanpur) the number of passengers increase during the mornings and in the evenings, when people leave/return from their residences to their work places, thereby increasing thedrivers' income. This was not the case with Uttam Nagar, which thougha residential area was less affected due to presence ofmarket area(Shukar Bazaar). The industrial area of Mohan Estate adjoins the main road where the drivers are not allowed to ply on the main road, so they operate on the road connecting to Ali village or Beri Bag which are the residential areas. The number of passengers reduce considerably during day time and are considerably reducedduring the peak time as they are not connected to the metro directly. People prefer to travel by rickshaw or auto which take them directly to the metro station. This was the area wherein the least income of drivers was observed. The maximum number of second hand e-rickshaws were seen in this area due to the same reason i.e.the income is not sufficient to balance the cost of the e-rickshaw. The maintenance cost in this area is also high (ranging to about Rs.4000 per month) due to the age of rickshaws and also because ofthe road, which has a lot of bumps and dust everywhere. The batteries and tyres wear out frequently. During the rains, the e-rickshaw drivers encounter major breakdowns as water penetrates into the rickshaw parts.

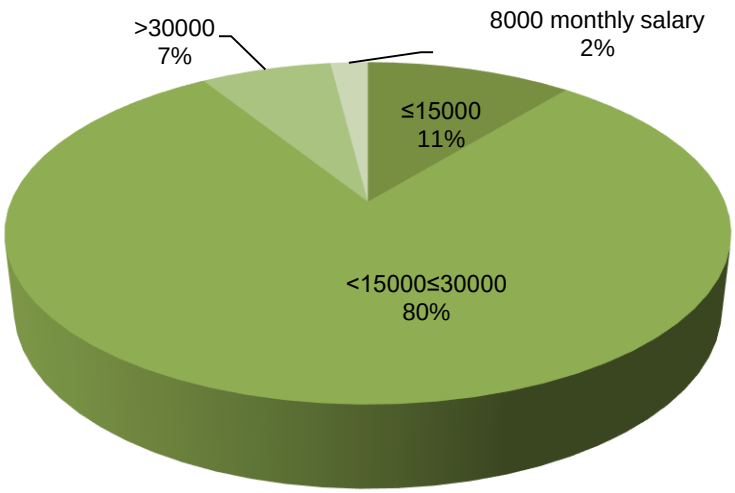


Figure 9 : Monthly income of the e-rickshaw drivers

Thus, the income and maintenance cost varies considerably within areas, depending on the age, weather, passenger demand, type of area and roads in the area. When the age of rickshaws is about 3 months, it requires less maintenance. As the age increases from 6 to 12 months the cost increases considerably, with the need to replace battery and tyres. The manufacturer's usually offers free service for a period of 6 months, but majority of the operators are not aware about this. They prefer to get the servicing done from local mechanics as the manufacturers have token systems requiring additional time and they also have a conception that the cost of parts is higher as compared with the local shops.

4.7 Nature of finance for the purchase of e-rickshaw

Nature of finance refers to the source of finance to purchase the e-rickshaw. The buyer can purchase it by paying the entire sum in cash or take a loan. According to the survey results, most of the drivers paid by cash to buy the rickshaws, as the rate of interest was very high and there was a difference of about Rs.20000. The drivers preferred taking loans from private sources rather than from the bank as the private loans are easy to pay off and usually at lower rates of interest.

Subsidy: The Delhi Government agreed to provide a subsidy of Rs.15000 to the e-rickshaw buyers, complying with the specifications laid out by the government. It was further increased to Rs.30000 by the Government for the rickshaws bought after 2016. Only 1% of the 200 drivers surveyed, revealed that they had received the subsidy of Rs.16000 by the Government. About 90% of the registered e-rickshaw drivers were making continuous efforts: they have submitted all the documents required and also reported to the Government offices but they have not been able to get the subsidy, yet. The drivers lag behind in awareness relating to compliance criteriain order to obtain the benefits of the subsidy.

4.8 Trip length

A trip of length less than 5 kilometers is characterized as a 'short trip', the one between 5 to 10 kilometers it is defined as 'medium trip' length and the one above 10 kilometers is a 'long trip' length. The study conducted, illustrates that maximum number of rickshaw operators make short trips as normal trips and take up long trips if they have passengers who reserve the rickshaw to their destinations. Short trips usually serve the demand of the people in the demarcated areas and sometimes medium trips also fall in the same category. The long trips usually include inter town travel.

About 88% of the trips were short trips, which forms the general routes of the rickshaws. The mode generates medium trips also at considerable percentage butonly about 2% go for longer routes during their normal operational hours. However, the average trip length made by the e-rickshaws is 4.05 km.

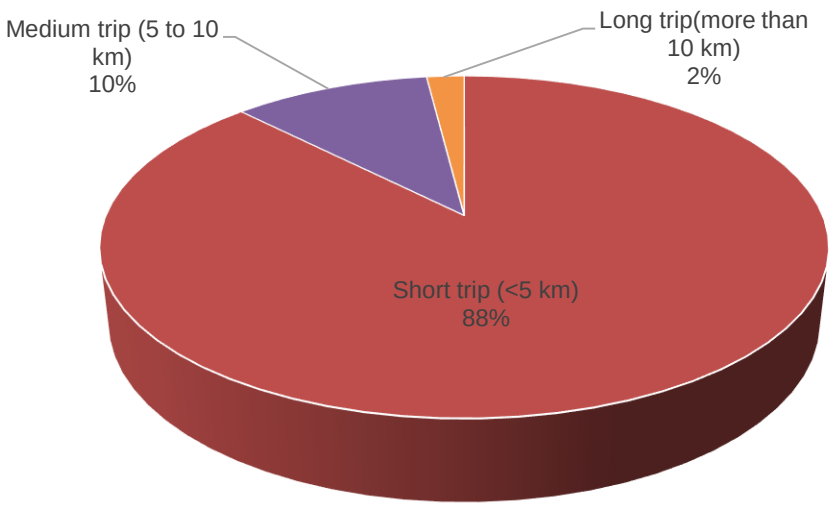


Figure 10 : Trip length (Distance covered by the drivers per trip-to and fro)

4.9 Frequency of trips

As per the survey,the following information was obtained

S.no	Type of trip	Frequency of trips	
		< 15 trips or 15 trips per day	>15 trips per day
1	Short trips (<5km or 5km)	74	56
2	Medium trip (>5 km <10 km)	15	2
3	Long trip (>10 km)	3	0

The table shows that as the distance of the trip increases, the number of trips decreases. In case of the trip distance being more than 10 km, the number of trips remained less than 15. The average trip frequency was found to be 14.97 i.e. approximately 15 trips per day covering an average distance of 4 km. This varies within the areas.

4.10 Fare

The average income generated by the battery-operated rickshaws was found to be about Rs.770 per day as per the interaction with the e-rickshaws. This indicates that the e-rickshaws have the capacity to generate an average income of Rs.51 per trip. Since the average trip length is about 4 km, these e-rickshaws generate an income of about Rs.12.8 i.e. approximately Rs.13 per km of operation.

4.11 Grade climbing capacity

The capacity to climb on flyovers depends on the age of battery, occupancy and the charging. When the batteries are in good condition and are fully charged, the e-rickshaws can easily climb the flyovers. When the battery is less charged or old, then there is a difficulty in climbing with full occupancy (with 1-2 passengers it can climb it is not an issue). From the survey results it was noticeable that 39% of the rickshaws had no difficulty in climbing and 41% face difficulty and try not to use the route with flyover. 15% of the drivers responded that there was no flyover around their route so they rarelyface such a situation and 5% didn't have any response to the question. Thus, these rickshaws can be utilized to operate on routes with gradient, but the mileage may be reduced.

4.12 Nature of e-rickshaw services (Shared/ hired)

As specified above, the cost per head per km of e-rickshaw service is Rs.3.2. This is the fare in case the rickshaw is shared with other users. If the rickshaw travels for 5km in such a case, then the fare will be around Rs.15. With an occupancy of 4 passengers, the driver earns Rs.120 to and from the destination. If the rickshaw is hired privately by one passenger, for a distance of 5km, the driver seeks Rs.100 as the fare. In this case, the cost per head is Rs.20 per km for the passenger. It can be concluded that E-rickshaw is the best as a shared mode of public transport.

4.13 Safety perception

Safety perception refers to the thought process of the people about the safetywhile travelling in e-rickshawwhen compared to cycle rickshaws. According to the primary survey, 94% of the e-rickshaw drivers felt it to be safer in comparison to the cycle rickshaws and autos. Since there is a perception that the majority of these e-rickshaws are not insured, the passengers assume that they can't claim for the insurance cover in case of injuries. It is only the new rickshaws that come with an insurance cover. Chart 13 illustrates the perception of users and drivers as per the primary survey. As mentioned by the users, when the e-rickshaws are overloaded i.e. carry more than 4 passengers, the risk of accidents increases as they are not designed for more than 2 passengers to be seated on one side.

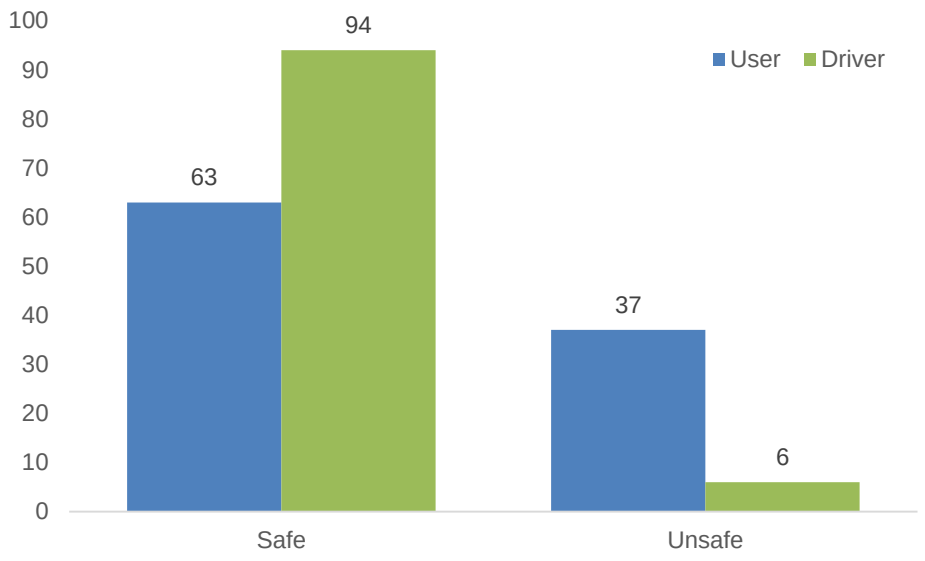


Figure 11 : Graph illustrating the safety perception of passengers as well as the drivers

4.14 Comfort perspective

The users as well as the drivers find e-rickshaws to be comfortable.

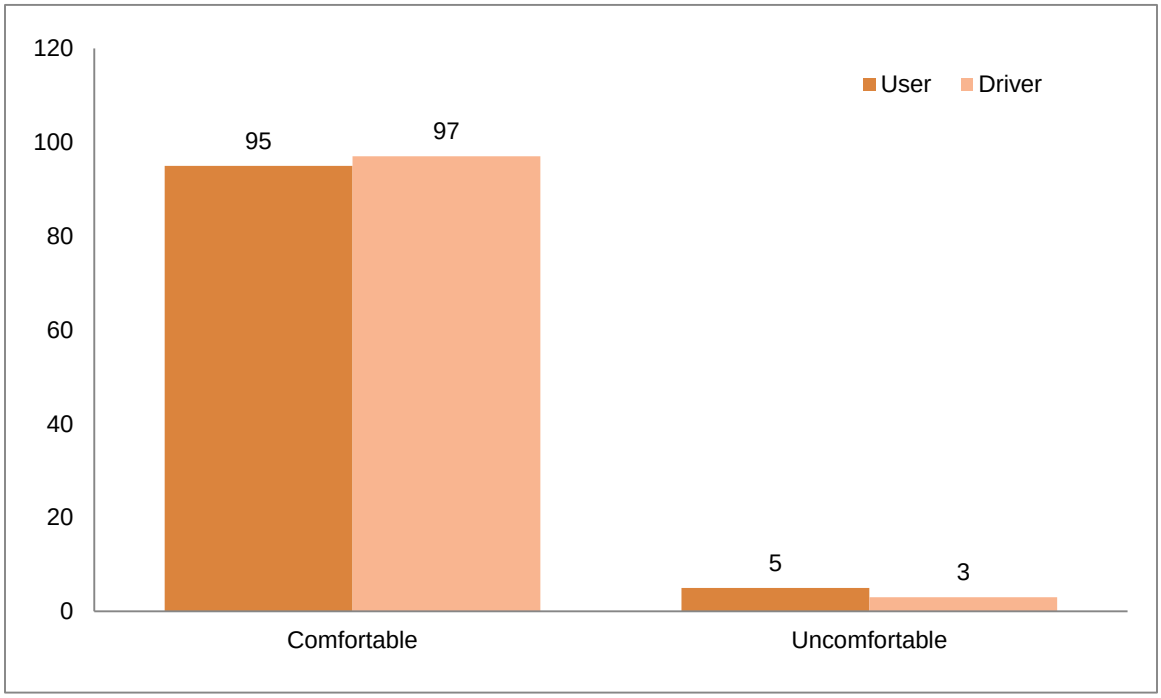


Figure 12 : Graph of comfort perception of drivers and users

From the graph, itis evident that the e-rickshawsare comfortable for the drivers and the users. The users state that there is lesser noise as compared to autos and people can travel in larger groups which was rather difficult in the case of rickshaws or autos. The passengerscan observethe city with ease and travel at greater speeds. Theyare comfortable as compared to rickshaws because of their larger seating space.Furthermore, the entry/exit height from ground is less, and hence people find it easier to climb, as compared to rickshaws. Another advantage is that they feel that the ride in e-rickshaw is less bumpy than that in cycle rickshaw.

4.15 Environment friendly

It is quite evident from the study and also from people's perceptions that the e-rickshaws are an environmental friendly mode of transportation when compared to auto rickshaws.

From the figure below, it can be deduced that the users as well as the drivers feel that it is environmental friendly as it operates on battery, which helps in reducing pollution in the city. About 8% of the users find it less environment friendly as they feel that the batteries have to be disposed ofat the end of their life. They suggest that there should be a way to reduce this waste generated and to make the e-rickshaws more environment friendly. They lack the awareness about the fact that these batteries are already being recycled in the market. The dealers take back the batteries and provide a discount to the drivers when new batteries are purchased. The old batteries are later sent to the recycling plants to be recycled. The discount is provided on the basis of theweight of the batteries.

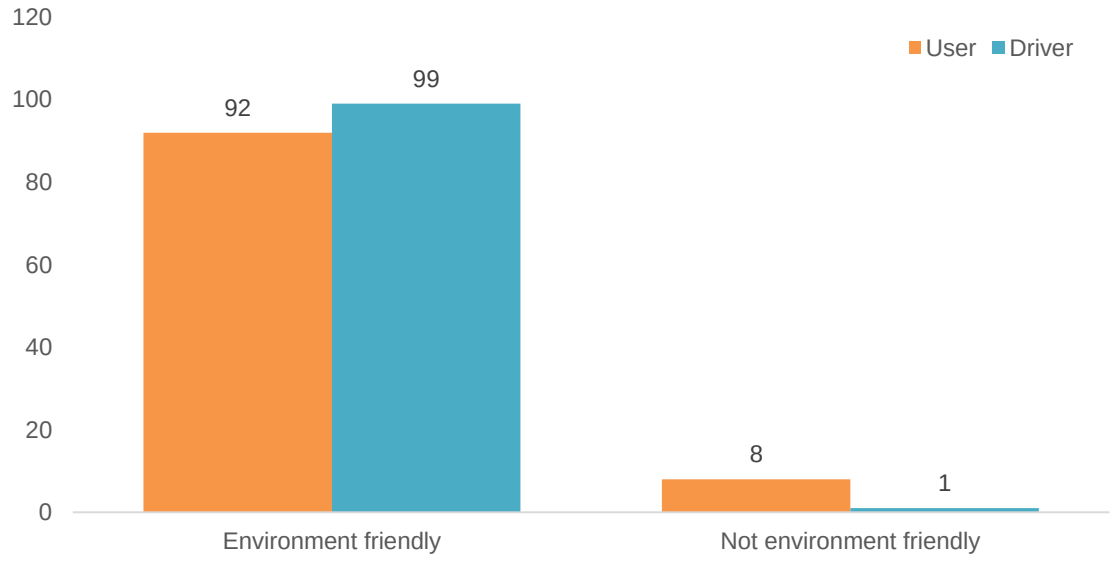


Figure 13: Graph illustrating the environment related views of drivers and users of e-rickshaw

5 Issues and challenges

The issues related to e-rickshaws can be categorized into the following:

5.1 Enforcement Issues-Overloading of E-rickshaws

Enforcement issues on interior roads:

The problem of overloading is the biggest issue noticed in these areas,leadingto accidents. The main reason is that the e-rickshaws operate on the tertiary or the intermediary roads, where there are no traffic police stationed, and so they are able to violate the rules. As per the interaction with the drivers, the traffic police stop them and don't allow them to ply on main roads, even if they have registered vehicles.

Source: Primary survey

Figure 14: Overloading cases in the areas on periphery of Delhi

- **Undefined halt points:** They are low speed vehicles with undefined stoppages and stops according to the passenger needs. They usually operate on narrow streets or lanes. This increases the chances of congestion as the vehicles behind them have to stop with them, if there is a group of rickshaws stopping together on narrow roads.
- **Insurance and claim:** Insurance cannot be claimed in case of theft of the vehicle. The drivers said that even if their vehicles are licensed, they face a lot of difficulty in registering a complaint or claiming the insurance cover. There is lack of awareness which results in this issue.
- **Absence of manufacturing regulation:** There is lack of standardization on manufacturing and assembling. They do not have any clear policies or regulations to abide with. The manufacturers have to obtain a certification from ICAT, but after approval there is no check on the quality of production.

- **Lack of provision for differently abled people:** There is no provision to allow the differently abled people to drive the e-rickshaws in the amended rule of 2014. The person who has locomotive problems can drive the e-rickshaws (with handle brakes) with hands. The modification has to be provided in the braking system of the rickshaws.

5.2 Technical/mechanical issues:

- Vehicle operation issue: 63% of the drivers face technical issues in operation and about 77% face mechanical breakdowns during operation after about 3-4 months from the date of purchase of the vehicle. This issue is faced even by the certified e-rickshaws. Issue due to rains: During the rainy season, there is greater chance of their breakdowns. The water may penetrate into the oiled parts in the handle and affect its operation. The speedometer and other parts also become dysfunctional if water penetrates into them. The e-rickshaw operators cover the handle to avoid this problem.

5.3 Infrastructure related issues:

Grade climbing capacity: The drivers face difficulty in climbing flyovers when the battery of the vehicle is used up or the rickshaw has full occupancy. In such a case, the drivers prefer to take routes without flyovers. If they have the routes on flyovers, then their charging is exhausted in 40-50km which otherwise would had lasted for about 80-90km on plain routes.

Lack of designated charging points: There is no subsidized provision or authorised charging stations for charging the vehicles. When the drivers charge them at shops it is expensive, costing them about Rs.3000-4500 per month, while at home they charge at usual electric points.

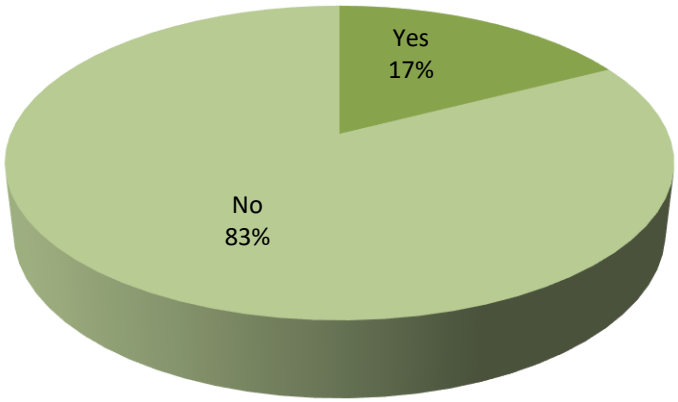


Figure 15: Illustrating the percentage of drivers facing the problem of charging points

With the latest notification dated 31 August 2017 by the DERC, the charging woes are expected to be alleviated as the drivers are now legally allowed to charge at their houses.The problem persists for the drivers who can't take their vehicles to their houses due to various reasons(narrow lanes, unavailability of facilities, etc)

In the cases where the drivers charge them at their houses, stay away from their routes of operation and have to travel to their routes in the morning and also return to their residences in the evening,they either travel on the restricted routes or don't get any passengerson their way. This increases the 'dead distance' (the distance between the operational route and residence of the driver on which the rickshaw is vacant and does not create any income for the driver). This reduces the distance which he/she could have covered if the rickshaw had a parking and charging space near the route.

Chart 15 shows that only 17% of the drivers face the problem of charging. It is because the drivers consider the dead distance as the part of their operation. The response doesn't have the wastage of power and time in consideration.

Lack of designated parking spaces: Parking spaces are not available for the rickshaws. Drivers who can't take their rickshaws to their houses, have to park them in shops or in rented places. Chart 18 illustrates that 91% of the drivers do not haveproper parking spaces and they have to park their vehicles at their own risk. The remaining 9% don't have to face any problems because they park their vehicles in their own houses.

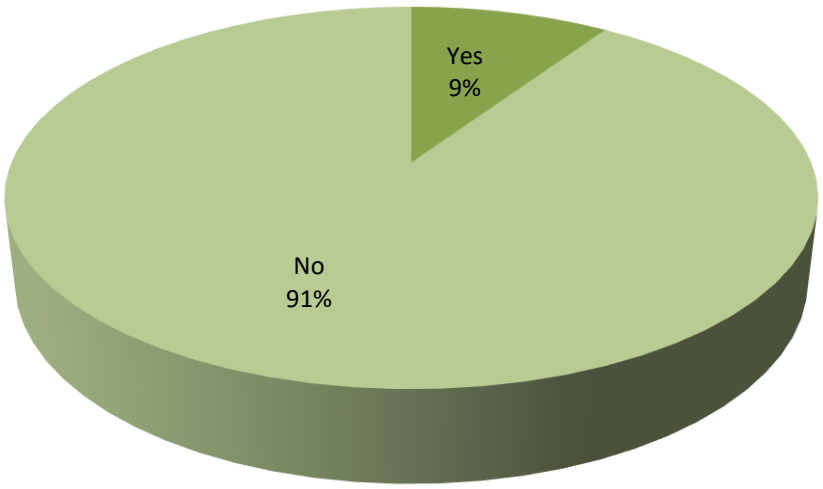


Figure 16: Availability of parking spaces

Lack of stopping and resting areas: 98% drivers consider this as one of the problems during operation (Chart 18). There is a lack of resting facilities or designated areas where these can wait for their passengers. In some areas, the drivers have to pay an amount of Rs.100-200 per month for standing in que to take the passengers. It is illegal to stop in those areas and they have to flee from that area in case any traffic official comes.

Source: Primary survey

Figure 17: Line of e-rickshaws waiting for passengers in the area near the metro station

6 Key takeaways

E-rickshaws in Delhi have helped in transporting groups of people for short distances, but their unregulated rise in numbers and lack of awareness are a cause for concern. These can be resolved by policy, financial, infrastructural, technical and technological solutions. Recommendations for improving the situation of e-rickshaw operations are as follows:

Policy: The policy and regulations play a very important role in managing the e-rickshaws. If these are managed and implemented properly, then the e-rickshaw operation can be improved to a large extent. The following recommendations can be provided regarding policies:

Licensing and registration of old e-rickshaws: Though the government has a scheme for registration of old rickshaws, the drivers are unable to get them registered due to the lackof awareness. In some cases, modifications were required in the e-rickshaws to comply with the standards, which proved to be expensive for the drivers.To counter the lack of awareness among the drivers, camps can be organized so that the drivers are aware about the prerequisites and authorities to approach for the registration/modifications. This may reduce the time and difficulty of the drivers for regulated operations and also improve the accountability of these e-rickshaws.

Enforcement of safety norms: The drivers can easily overload the vehicle while operating on the interior roads. This should be taken care of by proper enforcement of rules. The regulation of 4+1 people already exists, but its implementation on ground is lacking. The traffic police can check the routes at specific times for proper implementation.

Source of finance: According to the primary survey, the drivers had difficulty in arranging the initial amount to purchase the e-rickshaw. They preferred to purchase them through a private loan. A large percentage of the drivers could not afford the e-rickshaw by taking a bank loan (due to high rates of interest) or pay the entire sum of money at the time of purchase. This created a market for the wealthy people to buy large number of these rickshaws and give them at rental basis or hire a driver on the basis of a monthly income.

Technical/ Mechanical/ design recommendations:

Lack of quality checkby the manufacturers: According to the study, the vehicles require almost no maintenance during the first 3-4 months of purchase but then as the age of vehicle increase, the problems related to mechanical and technical issues also increase. This is due to the leniencyin quality checks of parts and the entire vehicle from time to time. The enforcement of COP (Continuity of Production) will help in maintaining the standard of rickshaws available. There are regulations for checking the quality of the manufactured vehicle once, but after certification there is a lack of monitoring. Thus, monitoring of manufactured products at specific intervals would help in better operation of e-rickshaws.

Infrastructural: E-rickshaws have major issues related to infrastructure which is resulting in their unregulated operation. Though the owners have found some temporary solution for the same, there is a need to solve these issues for efficient operation.

Provision of designated halt points: There are no stops for the e-rickshaws, which result in instant stoppage of them on the roads, causing accidents. When the rickshaws will have designated stops/marks then the instances of these accidents may be reduced.

Provision of charging/ parking spaces: Though the government has allowed the charging of e-rickshaws at domestic level, the problem related to charging may still persist. There are no parking areas during night and so the drivers have to take their vehicles home every day and return every morning. Authorised charging cum parking spaces would increase the income and savings of the drivers as they can use that charging for carrying passengers and save the money to be given to committee heads or unauthorized parking areas. The proposal of using metro stations as charging stations at night might be a positive step. The Government can even involve private players to set up charging points under PPP mode.

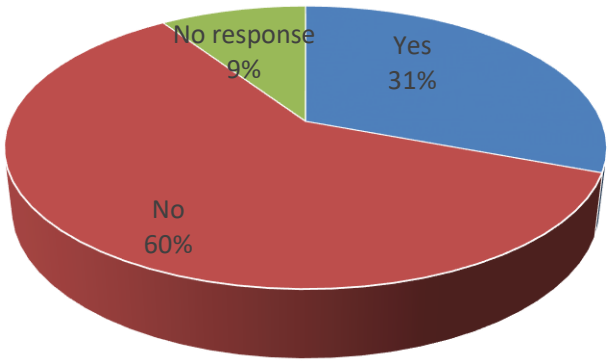


Figure 18 : Problem of disrupted power supply for charging battery

Type of battery: The inclusion of lithium ion or lead carbon batteries would improve the situation of unavailabilityof charging points as they require less time for charging, although the cost of these batteries is almost 30% more than that of lead acid batteries. The use of lithium ion or lead carbon batteries is not so prevalent in e-rickshaws so their performance on field can't be estimated in comparison to the existing lead acid batteries.

High Charging time

An e-rickshaw can run a maximum of 65 kms in a single charge after which it needs to be recharged. A conventional lead acid battery takes around 8 hours for charging. A Lithium ion battery offers faster charging options; however, its high cost makes them unaffordable.

Battery swapping technology and Standardization of charging infrastructure

There is a need to develop and standardize the charging infrastructure so that use of e-rickshaws can be promoted. Charging, and possibly fast charging infrastructure must be deployed or retrofitted in public spaces and petrol pumps.

It is also critical to develop standard frameworks for the charging infrastructure (including voltage norms and access). This standardization process might promote the battery swapping technology. "Battery swapping" is a way forward to promote electric rickshaws and also electric vehicles by bringing down upfront capital cost and reduced operational cost and charging time.

The Indian Government is actively working in this direction; however,it requires the participation of manufacturers as well. The private players should be encouraged to use existing examples from around the world to explore this model (including battery loading and swapping), best suited to local context.

Involvement of aggregators:E-rickshaw services can also be improved by integration of technology. The facility to book an e-rickshaw from phone based applications can be more effective in reducing the unnecessary traffic, which is caused bythe line of rickshaws waiting for passengers. Pool rides can also be booked. Complaint registration and redressal may also improve the services provided. Incorporated GPS tracking facility may also improve the safety and comfort of public.

7 Conclusion

The assessment reveals that e-rickshaws are flexible, non-polluting and an affordable means, and havethe potential to play a significant role in solving the last mile connectivity issue. However, in the absence of rules and norms, it is difficult to tap on the full potential. While the licensing of e-rickshaws has been given the nod by the Delhi State Government, due to a large number of unregistered e-rickshaws, the operation of this system still remains controversial.

Due to the low output power of available models in India, e-rickshaws are comparatively slow, when operated at full capacity (4 passengers), which is around 20 km/hr. This has created a general perception amongst decision makers as well as public that e-rickshaws restrict the speed of traffic and are responsible for traffic congestion. However, it may be noted that during the peak hours on workdays, the average traffic speed of India's cities is 22.7 kmph (Ola annual survey based on data from 5 lakhs moving vehicles). Therefore, the perception about e-rickshaws slowing the traffic needs to be changed. The e-rickshaws usually operate on roads where the max speed is 30kmph. In such a case, the speed of e-rickshaws rarely cause a problem. Only a random halt by these vehicles causes chaos.

Inspite of heavy dependence on e-rickshaws for last mile connectivity, the problem of suitable infrastructure stillis of the major barriers in the city. The perception that the e-rickshaws have problems while climbing gradients is somewhat true since most of the vehicles are quite old with low power and they do not meet the necessary requirements as mandated by government. There is also a perception that e-rickshaws are not safe, however based on the user survey it was established that the users foundthem to be safe and comfortable due to their low noise. However, due to the lack of enforcement, overloading was very frequently observed, which putsthe safety of these vehicles at risk.

A-1 Annexures

A-1.1 Notification regarding charging

DELHI ELECTRICITY REGULATORY COMMISSION

PRESS NOTE - 31st AUGUST 2017

The Generation Companies - Indraprastha Power Generation Company Limited (IPGCL) and Pragati Power Corporation Limited (PPCL), Transmission Licensee-Delhi TRANSCO Ltd. (DTL) and Distribution Licensees - Tata Power Delhi Distribution Limited (TPDDL), BSES Rajdhani Power Limited (BRPL), BSES Yamuna Power Limited (BYPL) and New Delhi Municipal Council (NDMC), had filed their Petitions for true up of Aggregate Revenue Requirement (ARR) for FY 2014-15 & FY 2015-16 and for determination of Aggregate Revenue Requirement (ARR) and Tariff for FY 2017-18. After admission of the Petitions, Executive Summary of the Petitions was prepared and uploaded along with their Petitions on Commission's website for information to all stakeholders. Simultaneously, the comments were invited from all stakeholders on various tariff issues for which a Public Notice was issued in newspapers by the Commission. The Commission conducted the "*Public Hearing*" to consider the suggestions/inputs received from stakeholders, thereby giving adequate opportunity to all stakeholders to express their views on the matters pertaining to tariff determination.

The Commission, after duly analyzing the Petitions submitted by the Distribution Utilities and considering the suggestions / inputs from stakeholders has Trued up the ARR for FY 2014-15 & FY 2015-16.

Penalties have been imposed on the Distribution Licensees for non compliance of Regulations/Directives e.g. Renewable Purchase Obligation, Cash collection over Rs. 4000/-, Non achievement of AT&C loss targets etc.

Based on the True up of FY 2014-15 & FY 2015-16, Liquidation of Accumulated Revenue Gap has been observed.

Revenue (Gap)/Surplus at end of FY 2015-16 of Distribution Licensees (Rs. Cr.)

Sr. No.	Particulars	BRPL	BYPL	TPDDL	NDMC	Total
1	Opening (Gap)/Surplus for FY 2014-15 as per Tariff Order dtd. 29/09/2015	(5,105)	(3,051)	(3,351)	45	(11,463)
2	Revenue (Gap)/Surplus for FY 2014-15	(16)	(39)	157	(166)	(64)
3	Revenue (Gap)/Surplus for FY 2015-16	1,223	861	843	31	2,957
4	Total Liquidation during FY 2014-15 & FY 2015-16	1,206	821	1,001	(136)	2,893
5	Impact of Hon'ble APTEL Judgments	(334)	(432)	(103)	-	(869)
6	Closing Revenue Gap with impact of Hon'ble APTEL Judgments	(4,233)	(2,662)	(2,454)	(91)	(9,440)

The Commission has conducted Billing & Metering Audit and has further invited bids for Energy Audit for independent assessment of Technical & Commercial Losses of the Distribution Licensees.

The Commission has also appointed consultants for physical verification of 100% assets of DISCOMs.

The Aggregate Revenue Requirement (ARR) for FY 2017-18 has been estimated based on the normative parameters specified in DERC Tariff Regulations, 2017 and DERC Business Plan Regulations, 2017. The uncontrollable parameters viz., fuel cost, power purchase and sales are based on past trends of actual available information.

The ARR of FY 2017-18 as approved by the Commission and revenue surplus/(gap) for FY 2017-18 is:

Summary of ARR for FY 2017-18 of Distribution Licensees (Rs. Cr.)

Sr. No.	Particulars	BRPL	BYPL	TPDDL	NDMC	Total
A	ARR as claimed by Petitioner	9052	4892	7680	1148	22,772
B	ARR as approved by Commission	8414	4441	6449	1031	20,336
C	Revenue at Existing Tariff	8374	4483	6591	946	20,394
D	Revenue Surplus/(Gap) at Existing Tariff	(40)	42	142	(86)	58
E	Revenue at Revised Tariff	8457	4525	6648	1038	20,667
F	Revenue Surplus/(Gap) at Revised Tariff	43	83	198	7	331

As there is deficit in revenue for BRPL & NDMC, the Commission has decided to rationalize the Tariff for FY 2017-18 based on the Fixed Cost and Variable Cost incurred by the Distribution Licensees v/s Fixed Charges and Energy Charges recovered through Tariff.

Highlights of the Tariff Schedule for FY 2017-18

1. **No Change in the Energy Charges for all Categories**
2. Fixed Charges methodology has been revised for Domestic Category upto 5 kW from Rs./month basis to Rs./kW/month basis.
3. Fixed Charges for the consumers having sanctioned load upto 1 kW has been reduced by 50% from Rs. 40/month to Rs. 20/month.
4. The Domestic Tariff category has been extended to consumers running small commercial establishments from their households having sanctioned load upto 5 kW as against earlier restriction of JJ clusters having consumption upto 400 units/month.
5. In order to promote pollution free transportation & clean environment, separate Tariff category has been created for Charging Stations for E-Rickshaw/E-Vehicle with Tariff at flat rate of Rs. 5.50/kWh.
6. The limit for Sanctioned Load for Agriculture Category has been increased from 10 kW to 20 kW.
7. Gaushala and Paying Guest accommodation registered under any scheme of GoNCTD has been covered under Domestic category.
8. Commission has retained the prevailing ToD time slots, Surcharge and Rebate thereof.
9. There is no change in levy of additional surcharge of 8% on the consumers of the DISCOMs (BRPL, BYPL and TPDDL) for gradual liquidation of principal amount of the accumulated revenue gap as submitted by the Commission before the Hon'ble Supreme Court of India in Civil Appeal No. 884 of 2010.
10. The Commission has retained the prevailing limit of cash deposit upto Rs. 4,000/- at counters of DISCOMs.
11. The Commission has allowed payment of Electricity Bills upto Rs. 50,000/- in cash by the consumers at designated scheduled commercial bank branches.
12. The funding of amount of Rs. 694 Cr towards Pension Trust, as recommended by GoNCTD, shall be met partly through levy of surcharge @ 3.70% on the consumers of the DISCOMs (BRPL, BYPL and TPDDL) and the amount shall be directly credited to the Pension Trust account.

The Tariff Schedule shall be applicable with effect from 01/09/2017.

A-1.2 Procedural guidelines for licensing/registration/fitness/grant of permit of e-rickshaw

GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI
TRANSPORT DEPARTMENT: OPERATION BRANCH
5/9, UNDER HILL ROAD: DELHI – 110054

F.No. DC/OPS/TPT/225/2014/II/ 8961-99 Dated : February 07 – 2015

PROCEDURAL GUIDELINES FOR LICENSING / REGISTRATION / FITNESS / GRANT OF PERMIT OF E-RICKSHAW

The Ministry of Road Transport & Highways vide notification G.S.R. 709(E) dated 08/10/2014 has notified E-rickshaw and E-cart as separate categories of transport vehicles. As per the said notification **"E-rickshaw means a special purpose battery operated vehicle having three wheels and constructed or adapted to carry not more than 04 passengers, excluding the driver, and not more than 40 Kilograms luggage in total; the net power of its motor is not more than 2000 Watt and the maximum speed of the vehicle is not more than twenty-five kilometer per hour."**

In pursuance of the notifications GSR 709(E) dated 08/10/2014, GSR 27 (E) dated 13/01/2015, S.O. 2590 (E) dated 08/10/2014 and the Motor Vehicles (Amendment) Ordinance, 2015 No. (2 of 2015) dated 07/01/2015, the Transport Department has made following procedural guidelines for granting driving license to drive E-rickshaw, grant of PSV badge, certificate of fitness, registration of E-rickshaws and grant of permit in NCT of Delhi. It has been decided that the applicant shall apply to the licensing authority / registering authority in whose jurisdiction he / she resides alongwith requisite documents. Further, a separate registration series **DL 1ER** has been assigned to the E-rickshaws by the STA.

(A) GRANT OF LEARNER'S LICENCE TO DRIVE E-rickshaw ON SPECIFIED AREAS OR ROUTES

The applicant shall apply to the licensing authority in whose jurisdiction he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application-cum-declaration as to physical fitness in Form-1.
(ii) Medical Certificate in Form-1A.
(iii) Application for grant of Learner's License in Form-2.
(iv) Proof of residence.

v) Proof of age.

(vi) Applicant must have completed 20 years of age.

(vii) Appropriate fee as specified in Rule-32

NOTE : No Learner's license shall be issued to any applicant unless he passes to the satisfaction of the Licensing Authority such test as may be prescribed by the Central Government.

(B) GRANT OF PERMANENT DRIVING LICENCE TO DRIVE E-rickshaw ON SPECIFIED AREAS OR ROUTES

After 30 days of issuance of learner's license & before its expiry, the applicant may apply to the Licensing Authority in whose jurisdiction he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application for grant of license to drive an E-rickshaw in Form-4.

(ii) An effective Learner's License (Original).

(iii) Appropriate fee as specified in Rule-32

(iv) A certificate with unique serial number issued by the registered E-rickshaw or E-cart association, or a manufacturer producing E-rickshaw or E-cart, as the case may be to the effect that the applicant has undergone a training at least for a period of ten days as per GSR 27(E) dated 13/01/2015.

NOTE :

1. The applicant has to come with an E-rickshaw, affixed to the front and rear with card / plate, the letter "L" in red on a white background for test of competence to drive an E-rickshaw.
2. On successful passing of test of competence prescribed in Rule 15 of C.M.V.R, a driving license to drive an E-rickshaw on a specified area / route will be dispatched at the given address of the applicant.
3. Syllabus for imparting instructions for driving of E-rickshaw is enclosed.

(C) ISSUE OF DRIVER'S PUBLIC SERVICE VEHICLE(PSV) BADGE

The applicant shall apply to the licensing authority in which he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application for issue of P.S.V Badge in Form- L.Con.A.

(ii) Proof of residence.

(iii) An effective Learner's License copy.

(iv) Antecedent's verification form of applicant.

(v) Appropriate fee as specified in CMV Rules

NOTE : The PSV Badge shall be issued only after antecedents and character verification from the Delhi Police and on production of an effective driving license to drive E-rickshaw.

(D) Documents required for registration of an E-Rickshaw

(I) For new E-rickshaw sold after 8/10/2014

The applicant shall apply to the licensing authority in which he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application for registration in Form-20.

(ii) Sale Certificate in Form-21 (from manufacturer / dealer)

(iii) Certificate of Roadworthiness in Form-22. (from manufacturer)

(iv) Manufacturer's Invoice.

(v) Dealer's Invoice.

(vi) Proof of residence.

(vii) Certificate of Insurance / Cover note.

(viii) Certificate of Fitness.

(ix) Antecedent's verification of vehicle owner from Delhi Police.

(x) Effective Driving License to drive an E-rickshaw.

(xi) Effective Public Service Vehicle (PSV) Badge authorising to drive an E-rickshaw.

(xii) Appropriate fee as specified in Rule-81

(xiii) One time Road Tax (if applicable)

(xiv) MCD Parking Fee (if applicable)

(I) For in-use / existing E-rickshaw sold on or before 08/10/2014

Documents required for registration of in-use / existing E-Rickshaws

The applicant shall apply to the licensing authority in which he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application for registration in Form-20.

(ii) Sale Certificate in Form-21 (to be issued by the manufacturer or dealer or registered E-rickshaw or E-cart association)

(iii) Certificate of Roadworthiness in Form-22. (to be issued by the manufacturer or dealer or registered E-rickshaw or E-cart association)

(iv) Proof of residence.

(v) Certificate of Insurance / Cover note.

(vi) Certificate of Fitness.

(vii) Antecedent's verification of vehicle owner from Delhi Police.

(viii) Effective Driving License to drive an E-rickshaw.

(ix) Effective Public Service Vehicle (PSV) Badge authorising to drive an E-rickshaw.

(x) Appropriate fee as specified in Rule-81

(xi) Invoice for calculating road tax (if applicable)

(xii) One time Road Tax (if applicable)

(xiii) MCD Parking Fee (if applicable)

Note :

1. **The model under consideration should have type approval certificate from designated testing agency.**
2. **The in-use E-rickshaws shall be got registered within 90 days from the date of type approval certificate and in any case before 13th June, 2015 (period of 06 months from the date of GSR 27(E) dated 13/01/2015).**

(II) CERTIFICATE OF FITNESS

The certificate of fitness to E-rickshaws shall be issued in Form-38 as prescribed in Central Motor Vehicles Rule, 1989. The inspecting authority shall physically verify the vehicle with the details as specified in technical specifications endorsed by the testing agency that it truly represents the vehicle model approved by the designated testing agency and complies with relevant provisions of Central Motor Vehicles Rule, 1989

(III) **DOCUMENTS REQUIRED FOR ISSUANCE OF PERMIT TO E-rickshaw**

The applicant shall apply to the licensing authority in which he / she resides and shall be accompanied by following documents/forms duly filled in.

(i) Application for grant of Permit in Form- P.C.A. (With photograph).

(ii) Effective Registration Certificate.

(iii) Effective Driving License to drive an E-rickshaw.

(iv) Effective PSV Badge to drive an E-rickshaw.

(v) Details of Bank Account.

(vi) PAN / Voter I-Card

(vii) Proof of residence.

(viii) Appropriate fee as specified in Delhi Motor Vehicles Rules

(ix) An undertaking from the applicant to the effect that he / she is not in possession of any Public Service Vehicle with a permit.

Encl : As above

(ANAND TIWARI)
JOINT COMMISSIONER (OPS)

F.No. DC/OPS/TPT/225/2014/II/ 8461 – 84 Dated : February 23, 2015

Copy To :

1. Special Commissioner (Transport), Delhi
2. Dy. Commissioner (OPS)
3. Dy. Commissioner (ARU)
4. Dy. Commissioner (STA)
5. Dy. Controller of Accounts
6. PS to Secretary-cum-Commissioner
7. System Analyst for uploading on the website of Transport Department
8. All licensing / registering authorities, Transport Department, Delhi
9. MLO (ARU) / (VIU), Burari, Transport Department, Delhi
10. Guard file

(ANAND TIWARI)
JOINT COMMISSIONER (OPS)

A-1.3 Guidelines for processing subsidy cases of e-rickshaw owners

DELHI POLLUTION CONTROL COMMITTEE
AN AUTONOMOUS BODY UNDER ADMINISTRATIVE CONTROL OF
DEPT. OF ENVIRONMENT, GOVT. OF N.C.T. DELHI
6TH FLOOR, ISBT BUILDING, KASHMERE GATE, DELHI-06.

F.No.01/PL/13/Acctts/DPCC/2016/7858-69 Dated 18-07-2016

CIRCULAR

Sub:Guilelines for processing the subsidy cases of E-Rickshaws Owner.

The Govt. of NCT of Delhi had initiated a scheme for granting of subsidy to E-Rickshaws Owners in Delhi with a view to promote the use of such vehicles, so that, in due course, they emerge as competitors of petrol driven vehicles and help in maintain cleaner environment vide order F.No.DPCC/BOV/2012/5129-5145 dated 02.09.2015 & No.DPCC/BOV/2012/2800-2816 dated 14.06.2016.

In this context, a need was being felt to issue comprehensive guidelines to monitor this subsidy which have now been prepared and are as under:-

Guidelines for MLO'S:-

(i) After verification that e-Rickshaw fulfills all the vehicular safety and structural requirements and purchased from the authorized manufacturer/dealer approved by the Transport Department, Transport Department will forward duly certified list of registered e-rickshaw owners with the following relevant details through concerned MLOs:-

a) Name of e-rickshaw owner
b) Father's / Husband's Name
c) Address
d) Registration Number
e) Date of Registration
f) Name of bank of e-rickshaws owners
g) Account No. of e-rickshaws owners
h) IFSC code of bank

(ii) Hardcopy of Registration Certificate and cancelled cheque, duly authenticated by MLO, will be submitted in DPCC office with the certified list of particulars to ensure the correctness of relevant details of e-rickshaw owners.

(iii) Certified list of above particulars in the form of excel sheet shall be submitted by the concerned MLOs on monthly basis by 20th of next month through hard copy and on email-ID i.e. **acodpcc.delhi@nic.in.**

(iv) An individual can claim subsidy only on one e-rickshaw, MLOs must ensure that no person would be recommended for subsidy twice or more.

(v) DPCC after receiving certified details and documents of registered e-rickshaw owners from concerned MLOs on monthly basis shall process the case for the approval of competent authority for sanctioning of subsidy. If certified list and documents are found in order, DPCC shall remit the subsidy amount directly in the bank account given by the e-rickshaw owner or otherwise intimate the discrepancies to the concerned MLO's for rectification.

(vi) Subsidy shall be remitted in the name of registered e-rickshaw owner as the name mentioned in the R/C and as per bank details forwarded by the concerned MLOs.

(vii) A proper data base shall be maintained in DPCC so as to ensure proper record of e-rickshaw subsidy.

This is issue with the prior approval of Chairman, DPCC.

(S. M. Ali)
Member Secretary:DPCC

Copy to:-
1.Secretary to Hon'ble Minister (Environment & Forest), GNCTD.
2.Secretary to Hon'ble Minster(Transport)GNCTD.
3.P.S. to Secretary, Environment-cum-Chairman,DPCC,GNCTD.
4.P.S. to Secretary-cum-Commissioner, Transport, GNCTD.
5.Special Secretary(Environment).
6.Dirctor(Environment),GNCTD.
7.Joint Commissioner, Transport(Operation),GNCTD.
8.Dy.Commisioner, Transport(Operation), GNCTD
8.Accounts Officer, DPCC
9.Sr.Environment Engineer(IT),DPCC for uploading on DPCC Website.
10.Admnistative Officer(HR),DPCC
11. Accounts Officer, DPCC
12.Concernd MLOs of all authorities.
13.Gaurd File.

(S. M. Ali)
Member Secretary:DPCC

A-1.4 Request for expression of interest: first & last mile connectivity to and fro the metro stations by e-rickshaw

REQUEST FOR EXPRESSION OF INTEREST : FIRST & LAST MILE CONNECTIVITY TO AND FRO THE METRO STATIONS BY E-RICKSHAW

Delhi Metro Rail Corporation Limited invites Expression of Interest (EoI) from the interested Operators / Agencies to Procure, Operate and Maintain e-rickshaw and / or to provide / install e-charging infrastructure at the selected metro stations duly following the General Terms and Conditions attached with this EoI.

Proposal of the participants will be evaluated based on the functional requirements (at Serial No.2.0) and pre-requisites (at Serial No.3.0), given in the attached General Terms and Conditions, of the interested operators / agencies.

Subject to other terms given in the General Terms and Conditions, interested Operators / Agencies who are operating fleet of at least 100 e-rickshaws with working experience of at least 12 months may submit their proposals with the Office of the Sr. DGM/Operations/Coord., 4th Floor, Metro Bhawan, Fire Brigade Lane, Barakhamba Road, New Delhi-110001 on or before 31.01.2017 between 10:00 AM and 05:00 PM with all supporting documents and demand draft of Rs.5,250/- (non-refundable) drawn in favour of Delhi Metro Rail Corporation Ltd. payable at New Delhi.

DMRC reserves the right to accept or reject any or all proposals without assigning any reasons. No bidder shall have any cause of action or claim against DMRC for rejection of his proposal.

GENERAL TERMS & CONDITIONS FOR OPERATION OF FIRST & LAST MILE CONNECTIVITY TO AND FRO THE METRO STATIONS BY E-RICKSHAWS

1.0 OBJECTIVES

There is a mushroom growth of 3-Wheelers and unorganized transport mediums like e-rickshaw and Gramin Sewa in Delhi / NCR, which not only blocks the entry-exit points of metro stations but also creates pollution and imparts ugly look at metro stations. To mitigate this issue to some extent, need is felt to facilitate e-rickshaws at the metro stations for provision of first & last mile connectivity. The objectives are outlined hereunder: -

1.1 To provide convenience to the passengers by way of first & last mile connectivity with availability of eco-friendly feeder services at the metro stations.

1.2 To ensure dedicated, safe & secure, punctual and reliable first & last mile feeder services to the metro Passengers.

1.3 Short loop services covering 3-4 kms route (not parallel to metro stations) to be provided by e-rickshaws. The services may act as Hop-on-Hop off service connecting metro stations with neighbouring areas.

1.4 **Hub-and-Spoke concept**: There are places where feeder buses / buses cannot have access because of narrow roads & streets. Feeder services with e-vehicles will facilitate hub-and-spoke concept.

1.5 DMRC may like to partner with interested operators / aggregators with a view to compete with e-rickshaws running in the unorganized sector without any defined / dedicated model.

1.6 To provide space at the metro stations, limited to 50 SQM for e-charging of the vehicles & related parking facility, subject to availability & feasibility, on technical & commercial terms to be framed by DMRC.

With these objectives, Delhi Metro will be able to contribute to environment with the ultimate objective to emulate our Vision, Mission and Culture statements.

2.0 E-RICKSHAWS - FUNCTIONAL REQUIREMENTS

e-rickshaws are powered exclusively by electric motors whose traction energy is supplied by batteries. A typical e-rickshaw for the purpose shall have the following features:-

2.1 e-rickshaw Type and Seating Capacity

3-Wheeler aesthetically designed electric vehicle (eco-friendly) that have seating capacity of max 4-pax (excl. driver) per e-rickshaw with maximum luggage of 40 kg in total as defined in the notification by Ministry of Road Transport & Highways, Govt. of India. The model of the e-rickshaw must be duly approved as per the statutory provisions and the e-rickshaw shall be registered with the appropriate authority.

2.2 Security Features of e-rickshaw

In-built CCTV and GPS tracking system to be available / installed to ensure added safety for passengers especially ladies / women commuters. The vehicle should be equipped with First Aid box and Fire Extinguisher.

2.3 Make in India

The e-rickshaw shall be fully compliant with the Government's Make in India campaign.

2.4 Environmental benefits

Zero Carbon emissions as vehicle being electric.

2.5 Design

Aesthetic, safe, stable and aesthetic design.

3.0 REQUIREMENTS FROM THE OPERATORS : PRE-REQUISITES

For provision of first & last mile connectivity feeder services to & fro the metro stations, the Operators shall have the following pre-requisites: -

3.1 To provide co-ordinated & dedicated services, fleet operators of e-rickshaws shall have a minimum fleet size of 100 e-rickshaws operating in NCR region.

3.2 The fleet operator must have at least 12 months experience of running fleet of e-rickshaws.

3.3 Preference shall be given to fleet operators who have 'MADE IN INDIA' e-rickshaws.

3.4 In case of multiples requests for provision of first & last mile connectivity feeder services at the metro stations through e-rickshaws, preference will be given to fleet operators who are registered under the Companies Act, 1956 / 2013, to ensure professionalism in their services.

3.5 Preference shall be given to Operators whose e-rickshaws have fully covered passenger cabin and a full front windscreen to ensure driver and passenger safety and comfort.

4.0 OPERATIONAL REQUIREMENTS

The Operator shall meet following requirements and indemnify DMRC on all counts related with procurement and running of e-rickshaw services to & fro the metro stations: -

4.2.1 All e-rickshaws, to be operated to & fro the metro stations, to be registered with the appropriate authority with valid fitness certificate. The model of the e-rickshaw must be duly approved as per the statutory provisions.

4.2.2 The drivers of the e-rickshaws shall have a valid license issued by the appropriate authority.

4.2.3 The Operator is required to obtain Police verification of all the drivers with particulars / antecedents duly verified from the police and the same shall be kept with the vehicle at all times.

4.2.4 The Operator is required to display the photographs of the authorized driver(s).

4.2.5 All the Drivers / Other staff deployed for running the e-rickshaws shall be required to possess valid licenses, wherever required, from appropriate authorities, display valid ID Card, wear uniform in prescribed colour with identification name badges.

4.2.6 The Time Schedule for the operation of first & last mile connectivity on the earmarked route(s) shall be 10 minutes prior & post departure of first & last metro train respectively from the respective stations.

4.2.7 As far as practicable, the fleet operator shall arrange to run the e-rickshaws as per the defined / agreed frequency.

4.2.8 Relevant helpline numbers should be displayed on the e-rickshaw. This shall include Operator's helpline number to address the grievance / complaint of general public / metro commuters. DMRC Ltd. shall not be liable to handle any such complaint. However, the

Operator is required to inform DMRC, in the agreed performa, about the complaints / suggestions received from general public / commuters on monthly basis.

4.2.9 The name, address and telephone number of e-rickshaw owner shall be displayed on the e-rickshaw at an appropriate place.

4.2.10 The Operator is required to display the first & last mile connectivity route and applicable ticket charges for the journey undertaken.

4.2.11 Reports pertaining to no. of tickets sold & revenue generated, etc. shall be generated on daily basis by the Operator preferably through electronic media. The Operator shall be required to share the same with DMRC whenever asked.

4.2.12 The Operator is required to follow all statutory provisions and directions applicable from time to time towards traffic regulation.

4.2.13 The Operator is required to comply with all the statutory and other stipulations including but not limited to Labour Laws / Legal / Police / Taxation / Excise / STA / Transport Policy and that issued by DMRC from time to time.

4.2.14 The Operator is required to appoint a Manager for the project for day to day management of the activities including timely receipt and dispatch of first & last mile connectivity services.

4.2.15 The Operator shall ensure proper cleanliness of the e-rickshaws during their operation.

4.2.16 The Operator shall ensure that the drivers and other personnel engaged for the purpose do not involve in any subversive activities, disruption in normal services and inconvenience and / or harassment to the commuters / general public.

4.2.17 DMRC will not be held liable for any accidents / claims / liabilities / or any criminal proceedings or statutory requirements at any time arising out of operation of e-rickshaws or on account of any act / omission / default on the part of the Operator or its non-compliance with the statutory requirements. The Operator shall INDEMNIFY DMRC in this regard. As a safeguard measure to any possible litigation arising out of accidents / acts / omissions imploding DMRC, the Operator shall be required to take adequate passenger liability insurance at its own cost.

4.2.18 The Operator shall be required to maintain all fittings and accessories in excellent working condition with specific attention to ensure provision of 1 Fire extinguisher of applicable type.

4.2.19 The Operator is required to deal with other similar services providers at the station for Operation of first & last mile connectivity.

4.2.20 All applicable rules & regulations on various aspects of Operation of e-rickshaws for first & last mile connectivity services and associated activities shall be followed by the Operator.

4.2.21 The e-rickshaw driver shall charge pre-defined fares fixed from time to time by the concerned State Transport Authority. In case no such notification is there from the concerned State Transport Authority or any other appropriate authority, the fares as earmarked in Annexure-A shall be applicable.

4.2.22 The ownership of vehicle shall not be transferable except under the provisions of the Motor Vehicles Act and that too with prior approval of DMRC.

4.2.23 Operator should be able to offer payment integration with DMRC through Delhi Metro Smart Card.

4.2.24 In case of breach of any of the terms by the Operator, DMRC may withdraw the permissions at any point of time without assigning any reasons.

5.0 FACILITIES TO BE PROVIDED BY DMRC

5.1 To begin with, DMRC may provide space, subject to availability, on rental basis on agreed commercial terms, for movement / stabling of e-rickshaws to a select few with whom DMRC may decide to partner. List of sections wherein e-rickshaw can be operated is available in Annexure-B.

5.2 Use of DMRC name and DMRC logo will not be permitted on the e-rickshaws.

5.3 Besides above, space may be provided to agencies (other than e-rickshaw operators as well) for provision of e-charging facility at the metro stations. The space shall be @ 50 SQM per station subject to availability & feasibility w.r.t. related requirements. The provision of space shall be with the following stipulations: -

5.3.1 The space shall be provided on rental based at the rate applicable for nearest parking lot and shall be revised as & when any change occurs.

5.3.2 The space shall be utilized only for installing e-charging infrastructure.

5.3.3 e-vehicles of 3rd parties may be charged on fixed fees basis by the agency.

5.3.4 Electricity load of up to 25 KVA, subject to feasibility / availability, shall be provided on chargeable basis for which the Operator is required to install DMRC approved pre-paid meter at the site.

5.3.5 For provision of space, the agency shall be required to deposit interest free security deposit to DMRC as per mutual agreement.

5.3.6 All safety & security measures related to charging infrastructure and that of e-vehicles shall be undertaken by the Agency and DMRC shall remain indemnified at all times for any possible liability arising out of any mis-happening.

5.3.7 Other terms & conditions shall be as per mutual agreement.

List of stations wherein space can be spared, subject to technical feasibility, for the purpose is attached as Annexure-C.

6.0 SPECIAL DISPENSATION

6.1 DMRC may facilitate the e-rickshaw Operator in obtaining clearances from concerned authorities.

6.2 No subsidy shall be provided by DMRC for procuring e-rickshaws / charging infrastructure.

7.0 PROCEDURE FOR APPLICATION

7.1 For running e-Vehicles to and fro metro stations as per the terms mentioned at 4.0 above and / or for provision of space for placing e-Charging infrastructure as per the terms mentioned at 5.0 above, interested operators / agencies may apply at the following address: -

Sr. Dy. General Manager/Operaitons/Coordination
4th Floor, Metro Bhawan,
Fire Brigade Lane, Barakhamba Road,
New Delhi-110001

7.2 The finalization of e-rickshaw Operator(s) to run feeder services to and fro metro stations or agencies for provision of space for installing e-Charging infrastructure at the metro stations shall be made at the sole discretion of DMRC.

A-1.5 Fares of e-rickshaw operated around metro station

S/N	DISTANCE	FARE *	REMARKS / EXAMPLE
1.	0-2 KMS	Rs.10/-	Rs.10/- up to 2 KMS
2.	Every subsequent KM	Rs.5/- per KM	Rs.15/- for distance > 2 KMS and up to 3 KMS Rs.20/- for distance > 3 KMS and up to 4 KMS and so on .....

* The above fares shall prevail in case no such notification is there from concerned State Transport Authority. In other cases, notified fares from the concerned State Transport authority shall prevail.

A-1.6 List of metro stations wherein charging space can be provided

S/N	LINE	NAME OF STATIONS*
1.	Line-1	Pratap Nagar, Kanhaiya Nagar, Keshav Puram,
2.	Line-2	Vishwavidyalaya, Ghitorni, Guru Dronacharaya
3.	Line-3	Indraprastha, Pragati Maidan, Tagore Garden, Subhash Nagar, Dwarka, Botanical Garden
4.	Line-4	Kaushambi
5.	Line-5	Punjabi Bagh, Madipur, Paschim Vihar East, Udyog Nagar, Nangloi, Mundka
6.	Line-6	Kalikaji Mandir, Mohan Estate, Tughlakabad, Badarpur Border, NHPC Chowk, Old Faridabad, Neelam Chowk Ajronda, Bata Chowk
7.	Any other station wherever such services can be operated and mutually agreed to.	

* subject to availability and feasibility of space.

References

- Apoorva, 2014. Delhi high court refuses to lift ban on e-rickshaws. Livemint, 10 september, pp. http://www.livemint.com/Politics/RVNbJcyIU4H20bWQvt0PsJ/Delhi-high-court-says-erickshaws-are-illegal-ban-to-contin.html.
- Arunima Bhattacharya, 2017. Delhi HC Issues Directions To Regulate E-Rickshaws. Live law, 14 January, pp. http://www.livelaw.in/delhi-hc-issues-directions-regulate-e-rickshaws/.
- BS Reporter, 2014. New modified e-rickshaw launched. 11 November.
- Business Standard, 2014. Ban e-rickshaws, high court orders Delhi government. Business Standard, 31 July.
- Clean Energy Ministerial, 2017. Clean Energy Ministerial- Accelarating the global clean energy transition. [Online]
- Available at: http://www.cleanenergyministerial.org/
- [Accessed 11 September 2017].
- Clean Energy Ministerial, n.d. Electric Vehicles Initiative (EVI). [Online]
- Available at: http://www.cleanenergyministerial.org/Our-Work/Initiatives/Electric-Vehicles
- [Accessed 12 September 2017].
- Debi Prasad Dash, 2015. Indian Electric Vehicle (& Hybrid Vehicle) Market in India, s.l.: India Energy Storage Alliance(IESA).
- Delhi government(Transport Department), 2016. Delhi.gov.in. [Online]
- Available at: http://www.delhi.gov.in/wps/wcm/connect/7aaeb20040954623adeafd0d0d3667b7/Vehicle+Registration+details+catg+upto+31-12-2016+.pdf?MOD=AJPERES&lmod=426738658&CACHEID=7aaeb20040954623adeafd0d0d3667b7
- [Accessed 10 september 2017].
- Delhi Government, 2016-17. Economic survey of India (Chapter 2: TRANSPORT), http://delhi.gov.in/wps/wcm/connect/6f2ff080486859d58728c7e83e6e4488/Chapter2.pdf?MOD=AJPERES&lmod=288106174&CACHEID=6f2ff080486859d58728c7e83e6e4488: Delhi Government.
- Delhi Traffic Police, 2015. Delhi Traffic Police. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2015/10/E-RICKSHAWS-Compatibility-Mode.pdf
- [Accessed 1 september 2017].
- Delhi Traffic Police, 2015. Delhi traffic police: APPROVED VEHICLE LIST FOR NEP (RENEWAL) : 2015. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2015/01/NEP-RENEWAL-2015.pdf
- [Accessed 5 September 2017].
- Delhi Traffic Police, 2016. Delhi Traffic Police. [Online]
- Available at: https://delhitrafficpolice.nic.in/about-us/statistics/
- [Accessed 14 September 2017].
- Delhi Traffic Police, 2016. List of Vehicles granted "No entry permisiion" (Fresh)- 2016. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2016/03/NEP-FRESH-LIST-2016.pdf
- [Accessed 29 August 2017].
- Delhi Traffic Police, 2016. LIST OF VEHICLES GRANTED “NO ENTRY PERMISSION” (RENEWAL)-2016. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2016/02/LIST-NEP-20161.pdf
- [Accessed 29 August 2017].
- Delhi Traffic police, 2016. VEHICLE REGISTRATION AND ACCIDENT STATISTICS. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2016/12/CHAPTER-2-VEHICLE-REGISTRATION-AND-ACCIDENT-STATISTICS.pdf
- [Accessed 11 September 2017].
- Delhi Traffic Police, 2016. Victims of road accidents (Chapter 3). [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2016/12/CHAPTER-3-VICTIMS-OF-ROAD-ACCIDENTS.pdf
- [Accessed 12 September 2017].
- Delhi Traffic Police, 2017. LIST OF VEHICLES GRANTED NO ENTRY PERMISSION IN FRESH 2017. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2017/01/LIST-NEP-FRESH-2017.pdf
- [Accessed 8 September 2017].

- Delhi Traffic police, 2017. LIST OF VEHICLES GRANTED NO ENTRY PERMISSION IN RENEWAL CATEGORY 2017. [Online]
- Available at: https://delhitrafficpolice.nic.in/wp-content/uploads/2017/01/LIST-NEP-RENEWAL-2017.pdf
- [Accessed 29 August 2017].
- Directorate of Economics and statistics, 2016. Statistical Abstract of Delhi 2016, http://www.delhi.gov.in/wps/wcm/connect/f508bc8046667b0e9cf6bcf5a4ed47e7/Stattistical+Abstract+of+Delhi+2014.pdf?MOD=AJPERES&lmod=66436406&CACHEID=f508bc8046667b0e9cf6bcf5a4ed47e7: GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI.
- Directorate of Economics and Statistics, 2016. Statistical Abstract of Delhi 2016, http://www.delhi.gov.in/wps/wcm/connect/f508bc8046667b0e9cf6bcf5a4ed47e7/Stattistical+Abstract+of+Delhi+2014.pdf?MOD=AJPERES&lmod=66436406&CACHEID=f508bc8046667b0e9cf6bcf5a4ed47e7: GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI.
- Government of India, 2015. Building National Highways Developing Nation (First year progress report-2015), New Delhi: Ministry of Road Transport & Highways, Government of India.
- Hindustan Times, 2017. Delhi govt makes Aadhaar mandatory for granting subsidy on e-rickshaws. Hindustan Times, 29 June, pp. http://www.hindustantimes.com/delhi-news/delhi-govt-makes-aadhar-mandatory-for-granting-subsidy-on-e-rickshaws/story-fId3H1hB0oVVVjGXdrtK4M.html.
- IEA, CEM and Electric Vehicles Initiative, 2017. Global EV Outlook 2017 Two million and counting, https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf: International Energy Agency.
- JoydeepThakur , 2017. E-rickshaws causing snarls, worsen Delhi's air quality: SC panel. Hindustan times, 3 April.
- KPMG and CII, March 2017. Urbanisation in the National Capital Region: Overcoming challenges to improve live-ability, https://assets.kpmg.com/content/dam/kpmg/in/pdf/2017/03/Urbanisation-in-the-National-Capital-Region.pdf: KPMG.
- Krishna Prasanth and Kumar Mukund, 2014. A POLICY RECOMMENDATION REGARDING DEVELOPMENT OF CHARGING INFRASTRUCTURE AND REGISTRATION OF E--RICKS IN DELHI, Delhi: India Smart Frid Forum and Great Lakes Institute of Management, Gurgaon.
- Krishna Prasanth and Kumar Mukund, 2014. A policy recommendation regarding development of charging infrastructure and registration of E-rickshaws in Delhi. New Delhi: India Smart Grid Forum and Great Lakes Institute of Management, Gurgaon.
- M. AbsarAlam, 2015. SUSTAINABLE AND EQUITABLE TRANSPORT SYSTEM IN DELHI: ISSUES AND POLICY DIRECTION , http://www.unescap.org/sites/default/files/Article%202_Sustainable%20and%20equitable%20transport%20system%20in%20Delhi.pdf: s.n.
- Micro units Development and Refiance Agency Limited, 2015. Pradhan Mantri Mudra Flyer. Mumbai: Micro units Development and Refiance Agency Limited.
- Ministry of Law and JUstice, 2015. Delhi Government. [Online]
- Available at: http://www.delhi.gov.in/wps/wcm/connect/d5dc6980475e85f49ce5fc825d7a2a20/THE+MOTOR+VEHICLES+%28AMENDMENT%29+ORDINANCE%2C+2015+NO.+2+OF+2015+dt+07th+Jan+2015%28e-Rickshaw%29.pdf?MOD=AJPERES&lmod=-1541721035&CACHEID=d5dc6980475e85f49ce5fc825d7a2a20&THE%20MO
- [Accessed 11 september 22017].
- Press Information Bureau , 10 March 2015. National Electric Mobility Mission Plan, New Delhi: Ministry of Heavy Industries & Public Enterprises, Government of India.
- Press trust of India, 2014. Govt relaxes norms for licenses for e-rickshaw drivers. Business standard, 5 December.
- PTI, 2014. E-rickshaws to be back in Delhi. Press Trust of India, 31 December.
- PTI, 2015. Govt starts registration process for e-rickshaws. The Indian Express, 24 February, pp. http://indianexpress.com/article/cities/delhi/govt-starts-registration-process-for-e-rickshaws/.
- PTI, 2017. Arvind Kejriwal to disburse subsidy money to e-rickshaw owners on Satuarday. Indian Express, 13 July, pp. http://indianexpress.com/article/cities/delhi/arvind-kejriwal-to-disburse-subsidy-money-to-e-rickshaw-owners-on-saturday-4749079/.
- Research, C. f. P. P., 2014. E-Rickshaws:- The Road ahead, s.l.: Centre for Public Policy Research.

- Saurabh Trivedi, 2017. Delhi HC: Release e-rickshaws only after registration. THE ASIAN AGE, 31 May, pp. http://www.asianage.com/metros/delhi/310517/delhi-hc-release-e-rickshaws-only-after-registration.html.
- Shahnawaz Khan versus Municipal Corporation of Delhi and Others (9 september 2014) HON'BLE MR JUSTICE BADAR DURREZ AHMED and HON'BLE MR JUSTICE SIDDHARTH MRIDUL (http://www.indiaenvironmentportal.org.in/files/e-rickshaws%20Delhi.pdf).
- Shashank Singh, 2014. A Study of the Battery Operated E-Rickshaws in the state of Delhi| Centre for Civil Society, Delhi: s.n.
- ShobhaMathur, 2017. Autolite enters e-rickshaw space; to grow lithium ion battery business. Economic Times, 25 April, pp. http://auto.economictimes.indiatimes.com/news/commercial-vehicle/lcv/autolite-enters-e-rickshaw-space-to-grow-lithium-ion-battery-business/58360355.
- SiddharthPandit and Dinesh Kapur, 2015. Electric Vehicles in India: Policies, Opportunities and Current Scenario, s.l.: National Institute of Urban Affairs.
- The Indian Express, 2016 . Impound e-rickshaws without registration: Delhi High Court to traffic police. The Indian Express, 25 October.
- The Times of India, 2014. Ban on e-rickshaws will continue, Delhi high court says. The Times of India, 9 September, pp. http://timesofindia.indiatimes.com/city/delhi/Ban-on-e-rickshaws-will-continue-Delhi-high-court-says/articleshow/42097835.cms.
- Transport department (GNCT), 2015. Delhi.gov.in. [Online]
- Available at: http://www.delhi.gov.in/wps/wcm/connect/814eab80484253f68849e8ae1ccb7dea/9776_90.pdf?MOD=AJPERES&lmod=575462028&CACHEID=814eab80484253f68849e8ae1ccb7dea
- [Accessed 11 september 2017].
- Transport Department, GNCT of Delhi, 3 February 2015. Procedural guidelines for licencing/ registration/fitness/grant of permit of e-rickshaw. [Online]
- Available at: http://www.delhi.gov.in/wps/wcm/connect/f4f78100475b6c7b90cff0825d7a2a20/Procedural%2BGuidline%2Bfor%2BLicencing.pdf?MOD=AJPERES&lmod=-1628964222&CACHEID=f4f78100475b6c7b90cff0825d7a2a20&Procedural%20Guidline%20for%20Licencing
- [Accessed 11 september 2017].
- Transport Department; GNCT, 29 December 2014. E-Rickshaw Sewa Scheme, Delhi: Transport Department; GNCT, Delhi.
- WHO, 2016. WHO's Urban Ambient Air Pollution database - Update 2016, Switzerland: World Health Organization.
- World Health Organisation, 2014. WHO's Ambient Air Pollution database-Update 2014, Switzerland: WHO.