



GREEN CAB

Dial-a-Cycle Rickshaw Service

(Integration of BRT with an emission free Non-Motorized Public Transport Feeder Network)

Prepared by



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Executive Summary

In this era of sustainable transportation system there is a need for a paradigm shift for solution which is not only environmentally and socially sustainable but also economically viable. Towards meeting the various aspects of sustainability an attempt has been in the form of a concept called GreenCAB.

GreenCAB concept for Delhi is a public transportation system using a human-powered medium. GreenCAB is a dial-a-cycle-rickshaw service, similar to dial-a-cab service, which will attempt towards balancing demand and supply.

Delhi the city of dreams has attracted a lot of population of last few decades to reach its present figure of 17 million people. With it also faced unprecedented growth in the number of vehicles which would reach 26 million by 2011. With its large area under roads (21%) further increase in this city of flyovers did not seem feasible and made us having a closer look into its modal split. The two most important aspects it indicated were (i) Share of Public Transport has reduced to 46% in 2007-08 as against 60% in 2001; (ii) 7.9 % i.e. 1.13 million trips are made by Cycle Rickshaw. The first point at one end highlighted the need for an efficient transportation system the second one came as solution supplementing as a feeder network. Delhi waited long for its own efficient public transport where Metro Rail and Bus Rapid Transit System (BRTS) came as a respite. In a survey done by RITES in 2007-08 highlighted that cycle rickshaw and walking has a good share as a feeder to Metro System. BRTS survey also highlighted a high volume of non motorized traffic on the corridor.

The cycle rickshaw is a local means of transport and also known as pedicab, cyclo, or trishaw in different part of the world. Cycle rickshaws are human-powered, i.e. are pulled by a person on foot, a type of tricycle designed to carry passengers in addition to the driver. In the case of Delhi the number of cycle rickshaws that ply on its roads are as high as 700,000 whereas of which only 89,429 have licenses. A Cycle Rickshaw in Delhi is not only a mode of transport but also provides instant employment to about 700,000-800,000 with an income ranging from Rs 1200-Rs 4500 per month.

But the plight of Cycle Rickshaws is that Municipal Corporation of Delhi (MCD) has put a ceiling of 52000 on the number of licenses to be issued, leading to a large extortion racket. On the top of this most of the cycle rickshaw pullers are not owners, they pay about 40-50 rupees per day to earn 200-250 rupees per day. Owners of these rickshaws hardly take up any maintenance measures further deteriorating the working conditions of these poor rickshaw pullers. And as if this was not all, the rickshaw pullers have to face a biased legislative framework. Cycle Rickshaw Bye-Laws of 1960, framed under Section 481 of the Delhi Municipal Corporation Act of 1957 requires that the owner and puller must be the same person. Any cycle rickshaw found plying for hire without a license or found driven by a person not having proper license as provided under bye-law 3(1) and (2) shall be liable to be seized by the Commissioner or a person duly authorised by him in his behalf. In 2007 MCD imposed a new "Scheme of Scientific Management of Cycle Rickshaws" and defined entry and no entry zones for cycle rickshaws.

It was only recently Delhi Master Plan 2021 recognized the need for Non Motorized Transport and identified Cycle Rickshaw as an important mode of travel. The new High Court ruling in February 2010 lifted the cap on the number of licences to be given to Cycle Rickshaw owners.

Cycle Rickshaw can be integrated in the multimodal Transportation Network of Delhi with an ease thereby providing a carbon-neutral public transport system where zero emissions from cycle rickshaws reduce the average emission intensity of the public transport fleet, eliminating atmospheric pollutants, minimizing ambient noise and a world class

service of feeder. Hence Cycle Rickshaws are a solution and not a problem and there are live cases of banking upon this fact. SamaaN Foundation a social enterprise working on enhancing lives of Rickshaw pullers and ECO-CAB project of Fazilka which a Dial a Rickshaw Service are two such examples.

GreenCAB is an idea to provide door-to-door mobility service to all class of people along the BRT Corridor. The whole project bases itself on modernization of existing cycle rickshaw services and promotion of cycle rickshaw as feeder network. One primary reason for GreenCAB project is to minimize the impact of motorized mode of transportation by upgrading the existing cycle rickshaw network with some value addition features like IT enabled services using modern tools of Transport planning and engineering. It aims at modernizing the cycle rickshaw sector, raising the socio economic status of rickshaw pullers and owners, uplifting the socio economic profile of city by preserving environment, encouraging use of public transport, provide training to rickshaw pullers, usage of IT enabled services like Dial-A- GreenCAB, and selling organized spaces on rickshaws for advertisement as a source of revenue.

GreenCAB as a system shall be organized under Non Motorized Transport (NMT) Cell of Delhi Integrated Multimodal Transit System Ltd (DIMTS). DIMTS along with other planning and development agencies shall provide necessary infrastructure. The city shall be divided into different zones based on its existing land use and traffic pattern. A control centre and parking space for rickshaws shall be created for the Dial-A- Cycle Rickshaw Service. The implementation plan for the whole city shall be taken up in four phases 1st shall be introduction and stabilization where in the order of priority zones shall be selected. Once the pilots are successful Policy Initiatives and Reforms shall follow creating an institutional set up for GreenCAB. Based on which expansion to the whole city shall happen. And once the whole system is in place value addition and innovation shall come as a contiguous process for the improvement of the whole system.

In terms of its economic viability a block financial model was worked by us which showed a loss for first one and a half year however the system shall start fetching profit after that. As a socially beneficial and environmentally sustainable project this may be taken up as in any case in a long run it is going to fetch good return.

For making GreenCAB successful a marketing strategy of four Ps shall be taken up with *Product* the unique GreenCAB system with its safe and reliable Cycle Rickshaw Service accompanied with regular investments for customer satisfaction. *Price* being same due to high competition with rest of the market. *Place* being the envelope of DIMTS, collaboration with different planning and development agencies, at this stage NGOs working on this sector shall also be involved. And last but not the least its *Promotion* through advertisements and social media.

With all the efforts of our attempt towards a socially beneficial, environmentally sustainable and economically viable the actual planning and execution shall involve its own nuances with the utmost need of convincing the beneficiaries i.e. the Rickshaw Pullers of its benefits. We shall have to make them understand that organization of this highly efficient informal sector shall not only improve the image of the city but also their own lives. As Swami Vivekanand said, “*In a day, when you don't come across any problems, you can be sure that you are travelling in a wrong path*”.

And hence we move ahead with the concept of GreenCAB towards achieving UITPs objectives of helping the PLANET BREATHE, BRINGING EVERYONE EVERYWHERE, and EMPOWERING THE ECONOMY through sustainable public transportation.

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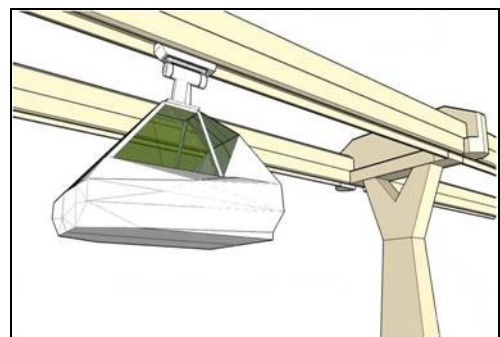
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SECTION-1

Decision Makers of the World are debating over finding the most Sustainable Public Transportation system. Metro Rail, Sky Bus, Light Rails are the latest buzz words in the realm of Public Transport. “Sustainable Transport” is about meeting or helping the mobility needs of the present without compromising the ability of future generations to meet their needs.



1. Introduction

As per World Bank's Definition **Sustainable Transport System** has to be economically, environmentally and socially sustainable in totality. (World Bank Paper on Sustainable Development identifies three criteria for a transport policy to be sustainable)

- **Economic sustainability** means that the transport system and supporting infrastructure should be cost effective and should provide for efficient transport of people and goods/freight.
- **Environmental sustainability** includes the dimension of pollution and efficient use of energy.
- **Social sustainability** in an urban setting would mean that the transport system is equitably provided to all the sections of the society and should also be safe, convenient and comfortable.

Unlike its standard definition often while talking about Sustainable Transportation System we tend to forget the key prerequisite for it, who is going to bear the huge capital, operational and maintenance expenditure for it? In the context of a Developing Nation like India this issue becomes further relevant. ,

Over the period of time, the focus on public transport is increasing around the world, especially in the developing countries. In an era where much talked electric, hybrid cars, biofuels and its technological deployment are already causing worldwide food shortage, the dilemma is what is sustainable transport solution, how can we cater our transportation needs with due consideration towards preserving our natural environment meeting our basic needs for the present and future generations.

This paper in its subsequent sections discusses the concept of GreenCAB which is an attempt towards addressing the above questions. GreenCAB concept for Delhi is a public transportation system using a human-powered medium. GreenCAB is a dial-a-cycle-rickshaw service, similar to dial-a-cab service, which will attempt towards balancing demand and supply. Cycle Rickshaws are the key mode of transportation for short distances in India. However, Government is yet to recognize this highly efficient informal sector of Public Transport, leading to it being viewed as a problem rather than a solution.

2. Delhi – A City of Dreams in India

Delhi is emerging as one of the largest cities of the world and is India's second biggest city after Mumbai in terms of its population, covers an area of 1,483 sq. kms and located at 28.38° North latitude and 77.13° East Latitude. Delhi shares its border on the North, West and South with Haryana and on the East with Uttar Pradesh.

Delhi has 567 authorized/regularized colonies and 1639 unauthorized colonies, 46 resettlement colonies and 27 slums/tenement settlements. According to the Census of India 2001, the population of Delhi was 13.8 million. As per the current estimates (Census of India, Projected Population 2008), it has a population of around 17.0 million, which includes 4-5% migratory population.

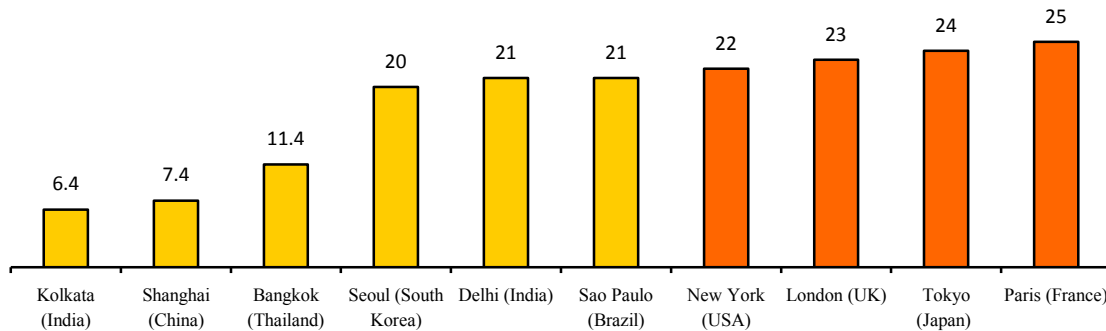
2.1. Vehicular Growth

The enormous increase in population over the past two decades has led to an exponential increase in the number of vehicles and traffic congestion in Delhi. The transportation network in Delhi is predominantly road based with 1,284 km of road per 100 km². There are 48 modes of transport, of which 32 are motorised and 16 are non-motorised. The number of vehicles on Delhi's road has increased from 1.9 million in 1991 to over 6.1

million as on June 2009. It is expected that the number of vehicles would reach 26.0 million in 2011, without MRTS¹. .

Delhi- the Indian city of flyovers encompasses 46 flyovers, 33 ROB (Rail Over Bridge), 17 RUB (Rail Under Bridge) and 7 river bridges² resulting in major roads and its main artery- the Ring Road in becoming signal-free, but not congestion-free.

Road Area as a Percentage of Total Urbanized Area
(Figures in Percent)



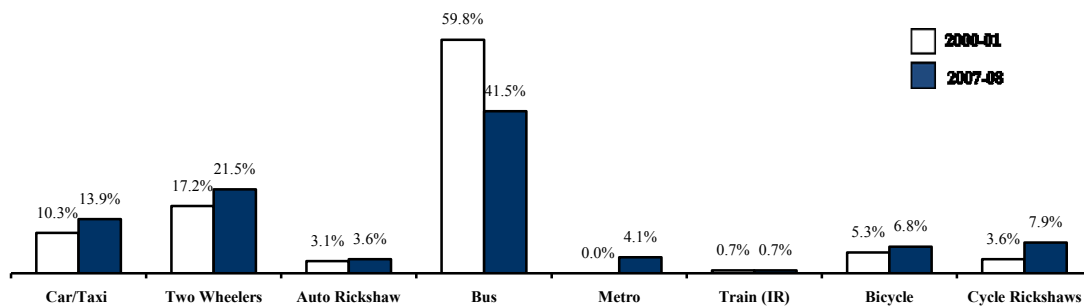
(Source: Victoria Transport Policy Institute, October 2005)

As evident from the figures above Delhi is not left with many options to increase the road space as it already has a large percentage (%) of land area under roads. This phenomenon has rather forced decision makers and planners to look for some innovative solution to reduce the congestion and pollution of the city. road.

2.2. Modal Split

14.4 million person trips² are made in a day in the city of which about 46% were done by using public transport system (Bus and Metro) in 2007-08, whereas around 60% of total personal trips were done by using public transport System (Only Bus) in 2000-01 thereby indicating a decline in the percentage share of trips made by public transport.

Modal Split - % of Person Trips in Delhi*
(Figures in Percent)



(Source: RITES Transport Demand Forecast Study - *without walk Trips, 2007-08)

¹ DPR of Phase-II Delhi Metro, RITES 2004

² RITES TDFS Report (2008)

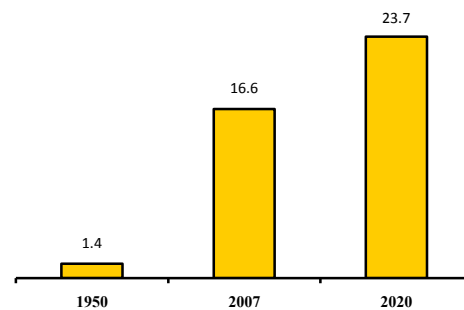
It is obvious that with the economic development, the ownership and person trips through private vehicles will increase. Interestingly, the modal share of person trips done by Cycle Rickshaw has doubled in the period of last 6 years, from 3.6% in year 2000-01 to 7.9% in year 2007-08. The data also indicates that 7.9% i.e. around 1.13 million person trips were completed by using Cycle Rickshaw in 2007-08.

2.3. Need to strengthen to Public Transport System

The need for mobility increases with the economic growth of the city, mainly in the urban areas. Delhi is emerging as a hub for various commercial activities. The urban core of the NCR (National Capital Region) is expanding with each passing year. It is projected that Delhi and its satellite towns would be among the most populous cities in the world by 2020 (Source: Urban Age India conference 2007).



Delhi – Growth in Urban Population
(Figures in millions)



(Source: Urban Age India, 2007)

3. Delhi’s Initiatives in Public Transport

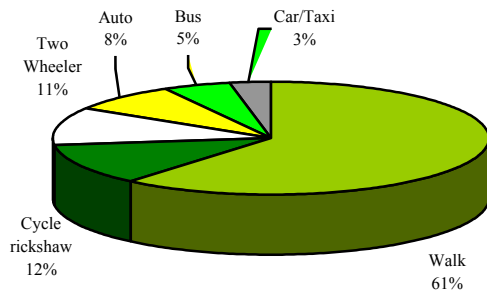
Delhi government (as well as the central government) has fared relatively well than many other million plus Indian cities in tackling this growth by expanding road networks, creating flyovers and underpasses and adding to the bus fleet at constant intervals. The two recent and revolutionary changes in Delhi’s transport landscape are a) the addition of Delhi Metro in December 2002 and; b) the first leg of a 14.5 km long Bus Rapid Transit (BRT) between Ambedkar Nagar and Delhi Gate.

3.1. Delhi’s Metro Rail Service

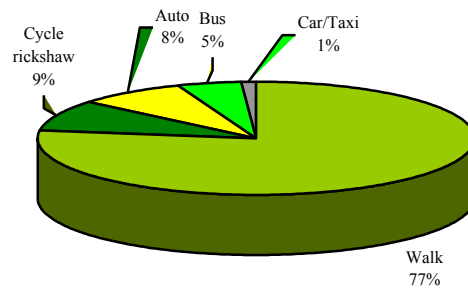
In Delhi, Metro Rail System is being built and is operated by the Delhi Metro Rail Corporation Limited. Phase I of the network comprises 65.11 km of route length and Phase II of the network comprises 128 km of route length. Currently, Delhi Metro carries around 1 million passengers per day. According to RITES TDFS Study (2008), it is interesting to learn the metro passengers’ characteristics:

Mode to Reach Metro Station

From Origin to Metro



From Metro to Destination



(Source: RITES Transport Demand Forecast Study - *without walk Trips, 2007-08)

It is evident that Walk and Cycle Rickshaws are the main modes to reach metro station, indicating the prominence and ease of integration of Cycle Rickshaws as feeder system to the metro network.

3.2. Bus Rapid Transit (BRT) System

BRT means a dedicated lane/s for buses thereby segregating it from the heterogeneous traffic on engineered road spaces linking them to metros and other colony roads for easy access along large and wide corridors . Besides giving priority to buses, the system also provides dedicated lanes for pedestrian and Non-motorized vehicles like cycles and rickshaws etc.

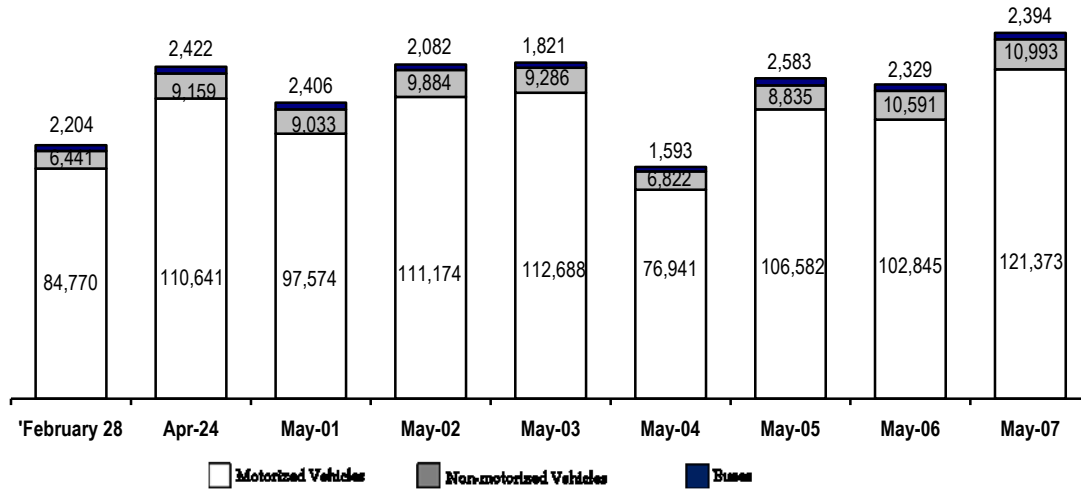


In October 2006, the construction work on the Delhi BRT corridor was started. The first corridor of BRT in Delhi, from Ambedkar Nagar to Delhi Gate, is 14.5 km long with ROW varying from 28 meters to 51.5 meters. Bus Lane is in the middle of Road with a width of 3.3 meters. Motorized vehicle lane is on the side of bus lane with a width of 6.75 meters. Separate tracks are made for non-motorized vehicles and pedestrians. The stretch from Dr. Ambedkar Nagar to Moolchand is under trial run since April 20, 2008.

3.2.1. Traffic Movement

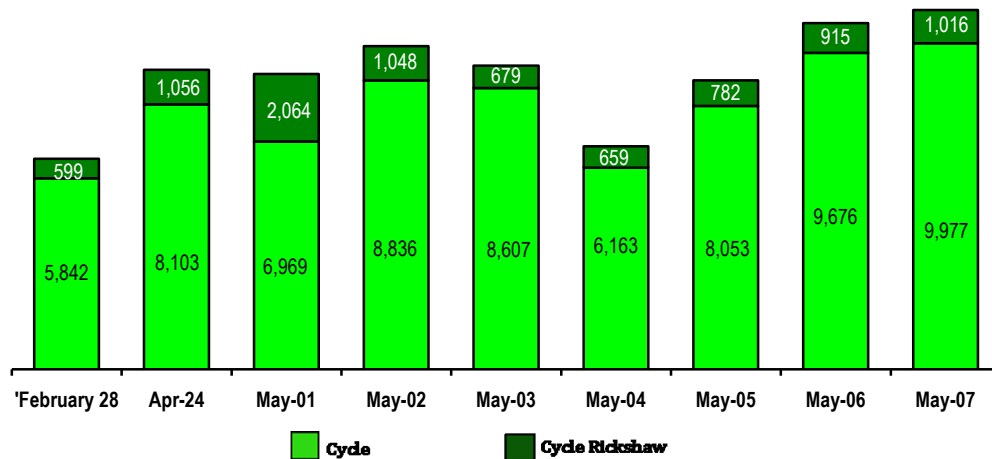
Traffic volume on the BRT corridor is very high. The corridor is situated adjacent to some of the prime colonies in South Delhi and is an important road connecting to the large commercial development in Gurgaon. On the stretch from Dr. Ambedkar Nagar to Moolchand, there are 6 key intersections, of which Chirag Delhi and Moolchand are the busiest ones. According to a DIMTS Survey, Chirag Delhi is one of the busiest junctions in Delhi.

Total Number of Vehicles, February 28, April 24 & May 01-07, 2008
(Figures in '000)



More than 135,000 vehicles cross the junction in a day (16 hours). Motorised vehicles consisting of cars, two wheelers and auto rickshaws constitute more than 90% of vehicle traffic. On the other hand, buses account for 2.0-2.5% of total vehicles.

Total Number of Non-motorized Vehicles, February 28, April 24 & May 01-07, 2008
(Figures in Number)



The data clearly indicates that large numbers of passengers use cycle-rickshaw service from home to bus stop and bus stop to home. According to RITES TDFS Study (2008), the average trip length of walk, Cycle Rickshaw and cycle is 1.1 km, 1.7 km and 4.0 km, respectively. This indicates people's preference on usage of Cycle Rickshaw.

4. Cycle Rickshaw- India and Elsewhere

The cycle rickshaw is a local means of transport and also known as pedicab, cyclo, or trishaw in different part of the world. Cycle rickshaws are human-powered, i.e. are pulled by a person on foot, a type of tricycle designed to carry passengers in addition to the driver.

The advantage of the cycle rickshaw is that they take up less physical space thereby permitting more choice in the use of public space. A car can be used by 4 to 5 people, however most of the time, only one or two people use a car at one time. By contrast, a rickshaw carries at least 60 people for commutes within a single day, representing economic use of road space in comparison to cars. Cycle rickshaws are one of the less expensive and convenient form of public transport especially for short distance commuters.

Finally, the use of cycle rickshaws offers the possibility of generating and maintaining employment for thousands of rickshaw pullers and mechanics. This project will address to the simultaneous challenges that co-exist in cities like Delhi, the provision of transport and employment.

4.1. Overview of Cycle Rickshaws in India











Cycle rickshaw was introduced in India in the early 1920s from the far-east (rickshaw is derived from the Japanese word jinriksha, which means hand-drawn cart).

It is estimated that close to 2 million cycle rickshaws ply on Indian roads, carrying about 6–8 billion passenger km/year (Rajvanshi, Winter 1999-2000). The exact number could be even greater, since there are no reliable records available. In some cities and small towns, they are the major means of transport. They provide employment to more than two million rickshaw pullers, are manoeuvrable, completely non-polluting and hence an environment-friendly means of transport. In the narrow lanes of towns and cities, probably they are the only transport system to provide point-to-point travel. For short distance trips, a cycle rickshaw is a popular mode of transport in Indian cities

4.2. Rickshaws – A Global Vehicle

Cycle rickshaws are widely used in major cities around the world, but most commonly in cities of South, Southeast and East Asia. Cycle rickshaws are known with different name around the world.

Country	Photograph	Popular Name
Cambodia and Vietnam		Cyclo
India and Bangladesh		Cycle Rickshaw
Malaysia and Singapore		Trishaw / Tricycle Rickshaw
Indonesia		Becak
Mexico		Bicitaxi / Taxi Ecologico
Philippines		Tricycle / Traysikel / Traysikad Pedicab / Padyak
Myanmar		Saika
United Kingdom and United States		Pedicabs / Bike Taxi

Rickshaws are making a comeback in more than 50 cities in the US, Canada, France, Germany, England, Ireland, Denmark, Finland, Italy, Holland, Spain, Australia, among others. In Asia, Japan, Singapore and Indonesia are making some efforts to revive them. These are fast becoming popular among tourists as well as environmentally conscious locals. (Source: Air pollution bulletin – October 2006).

5. Cycle Rickshaws and their state in Delhi

5.1. History

In the city of Delhi, cycle rickshaws were introduced in 1940 as a less exploitative form of transport and an improvement over hand-pulled rickshaws. It is stated that from 1960 onwards the demand for and the number of plying rickshaws grew manifold. Rickshaws are prime, environment friendly, pollution free as well as cheaper and instant means of livelihood for the poorest section of the society.

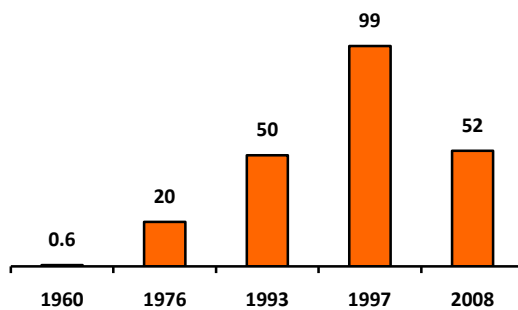
5.2. The Volume

The number of cycle rickshaws plying on the roads of Delhi city was 20,000 in 1975, which increased to 450,000 lakhs in 1993 and had grown to 700,000 in 2010. On the other hand, the total number of cycle rickshaws for which licenses can be granted by the MCD is 99,000 out of which 89,429 licenses have been granted in 12 zones against different colour schemes.

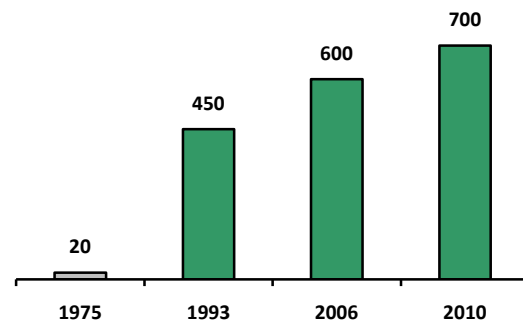


It is estimated that cycle rickshaw saves more than 10 million trips in Delhi alone (Source: ITDP). Each rickshaw covers a distance of 20-25 kms per day amounting to a total of 120-150 lakh kms for Delhi's 600,000 rickshaws. If cycle rickshaws are eliminated from Delhi roads it will contribute to much higher levels of air pollution.

Number of Licenses Available in Delhi, 1960-2008
(Figures in Thousands)



Number of Cycle Rickshaws in Delhi, 1975-2010
(Figures in Thousands)



5.3. Social benefit of Cycle Rickshaw

Cycle rickshaws are an instant source of employment for about 700,000 to 800,000 people and involve low capital investment typically ranging from Rs. 1,200/- to Rs. 4,500/- (US\$26 – US\$100). They are availed of by the least skilled and those with the least employment opportunity i.e. seasonal migrant workers. Hence Cycle Rickshaw should not be only viewed just as a means of transport. It has a social perspective too in reducing unemployment, pollution, fuel consumption, it provides access to all and achieves sustainable transportation system

5.4. Plight of Cycle Rickshaws in Delhi

5.4.1. Ceiling on Number of Cycle Rickshaws

It is ironical that cars, trucks and other motorized vehicles plying in urban centres and causing deadly air and noise pollution do not have ceiling on their numbers. But cycle rickshaw ownership is subject to severe

controls and pitiful ceiling. In 1997, the numbers were fixed at 99,000. In 2008, the numbers were further reduced to 52,000 at a time when there were more than 600,000 rickshaws plying on the road, including trolley rickshaws for carrying goods and garbage.



At present no Government agency, including Municipal Corporation of Delhi (MCD), have an accurate count of rickshaws plying in the streets of Delhi, since most of the rickshaws operate illegally and therefore do not show up in the record books. However it is clear that the policy of restrictive licensing has failed to keep a check on the number of rickshaws because of growing public demand for their services.

In reality, there are more than 700,000 rickshaws ply in Delhi, most without a license. This has created a vast extortion racket run by the police and municipal authorities. According to Manushi (an NGO) estimates, Govt. officials extract a staggering sum of more than Rs. 100 million a month.

5.4.2. Exploitative Owners of Rickshaw

Most rickshaw pullers do not own the vehicle they ply. One reason is that a number of rickshaw pullers are seasonal migrants who periodically return to their villages during the peak agricultural season. They rent it on a daily basis from small or big contractors who own large fleets ranging from 25 to more than 500 rickshaws.

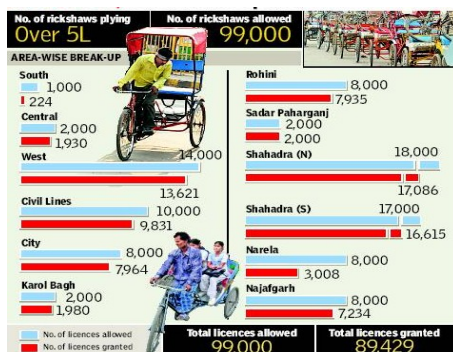


According to research done by Manushi (an NGO), most of the cycle rickshaw are migrant labour in the city and ply rickshaws on rental basis. In 2009, pullers are paying a rent of Rs. 40- 50 per day and rent free hire on Sundays. This rental appears exorbitant considering that the cost of a new vehicle is about Rs 7,000.

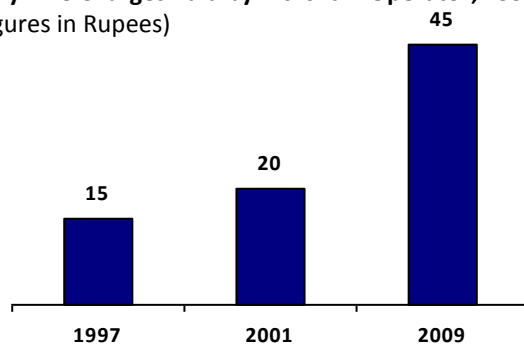
On this basis, it just takes 180 days for the rickshaw owners to recover their cost. But given the high risks, high bribes, routine losses and other costs incurred in owning a rickshaw for hire, the vast majority of pullers prefer to rent the vehicle rather than own it.

Other key characteristics include:

- A rickshaw puller in Delhi earns Rs 200 to 250 per day depending on the number of hours and distances he pulls the rickshaw as well as the area in which he plies.
- A rickshaw puller earns at least 4 to 7 times of what he pays by way of rent.



Daily Hire Charges Paid by Rickshaw Operator, 1997-2009 (Figures in Rupees)



It is ironic that for rickshaw owners, the difficult conditions faced by rickshaw pullers driving a poorly-designed existing rickshaw are of no concern. They want a cheap vehicle and want to earn whatever they can from the daily hiring charges collected from the rickshaw puller. Thus there is a dichotomy in the approaches of rickshaw pullers and rickshaw owners. Secondly, it is difficult to organize rickshaw pullers as most of them are migrants.

5.5. The Legislative Framework



In Delhi, cycle rickshaws are governed by the Article 3 (1) of the Cycle Rickshaw Bye-Laws of 1960, framed under Section 481 of the Delhi Municipal Corporation Act of 1957. The law requires that the owner and puller must be the same person. Ironically, a person can own as many taxis or buses or trucks as he chooses; he cannot own more than one cycle rickshaw. Moreover, if the owner is unable to ply the rickshaw, falls sick for example, no one in his family can ply it. The rickshaw must sit idle.

5.5.1. Cycle-Rickshaw Bye-Laws 1960 (Section 17A)

Any cycle rickshaw found plying for hire without a license or found driven by a person not having proper license as provided under bye-law 3(1) and (2) shall be liable to be seized by the Commissioner or a person duly authorised by him in his behalf. The cycle rickshaw, so seized shall be disposed off by public auction after dismantling, deformation of such process including smashing it into a scrap after a reasonable time as may be decided by the Commissioner from time to time.

5.5.2. Delhi Municipal Corporation Cycle-Rickshaw Bye-Laws, 1960

According to the bye-laws of MCD, licences are issued to 5 categories of people: owner-puller, joint owner-cum-puller, widows, physically handicapped and puller-not-an-owner. No person shall keep or ply for hire a cycle rickshaw in Delhi unless he himself is the owner. No person will be granted more than one such license, except widows can own 5 rickshaws. The detailed Rules and Regulations Governing the City Permits for Cycle Rickshaw in Delhi is placed at Annexure 1.

As per the rule, Cycle Rickshaw operator need to wear a khaki uniform, a cap and a metal badge bearing the name of license.

5.5.3. Scheme of Scientific Management of Cycle Rickshaws



Following the PMO's directions (Annexure 2), MCD drafted a new policy in 2001, which divided the city into 12 zones and further sub-categorized them into Green, Yellow and Red zones. Rickshaws had free access to the green zone, they could enter the yellow zone with a fee, and were completely prohibited from plying within the red zone. MCD issues a restricted number of licenses in each zone and the cycle rickshaws holding such licenses are entitled to operate only in the concerned zone.

After High Court direction, MCD imposed a new "Scheme of Scientific Management of Cycle Rickshaws" in 2007. This involved installing sensor chips to monitor rickshaws, issuing of photo ID cards and number plates. Besides maintaining past flawed restrictions, such as the "owner must be puller" policy, nearly 80% of city

roads were declared, “No Entry Zones” i.e. out of bounds for cycle rickshaws by this resolution. Without entering these “No Entry Zones” rickshaws could not ply even in permitted zones. Moreover, MCD added more absurdities added to qualifying criteria for issue of licenses like rickshaw owner must own private parking space, need to procure medical fitness certificate and should possess residence proof of Delhi.

5.6. Delhi Master Plan 2021- An Encouraging Step



Delhi Master Plan 2021 (formulated by Delhi Development Authority) mandates encouragement and pervasive use of non-motorized transport. Master Plan 2021 highlighted that despite measures by way of increasing the length of the road network and road surface space through widening, construction of a large number of flyovers/ grade separators, and launching of the Metro, the traffic congestion has continued to increase unabated. This has its inevitable consequences in terms of accidents, pollution, commuting time, and wasteful energy/ fuel consumption.

Delhi will need to find innovative solutions and encourage the use of Non-motorised transport. Master Plan 2021 stated that:

Bicycle/cycle rickshaw could be an important mode of travel, particularly with reference to short and medium trip lengths. To the extent that it meets individual or public transport requirements, it is a non-energy consuming and non-polluting mode of transport. In so far as rickshaws are concerned, this mode also provided employment to a very large number of unskilled workers residing in the city.

Master Plan 2021 also highlighted that on all arterial roads fully segregated cycle tracks should be provided with provisions for safe parking in park and ride lots. It argued that, cycle tracks should be provided at the sub-arterial and local level roads and streets in urban extensions.

5.7. New High Court Ruling – A Boon for Rickshaw Operators



In February 2010, Delhi High Court lifted the cap on the total number of cycle rickshaws allowed in the city. This order is in continuation of earlier court ruling in July 2009, where the Delhi High Court has restrained the Municipal Corporation of Delhi from taking any punitive action against unlicensed rickshaw pullers driving licensed cycle rickshaws in the Capital.

These rulings are small victories for the rickshaw operators because the state of rickshaw operators is very bad.

6. Integration of Cycle Rickshaws into a Multimodal Transport System for Delhi

The Master plan 2021 and the NUTP 2006 have emphasized the promotion of non-motorized modes (cycles and cycle rickshaws) of transportation in cities. Cycle rickshaws form an effective feeder system for public transport users and those accessing public transport services to other modes of travel like Delhi Metro, buses and even autos.

BRT and Metro must be complemented by world class non-motorized transport options to provide ‘door-to-stop or station’ connectivity. An optimal mix of public transport investment encourages non-motorized transport too otherwise pollution will increase as cyclists and pedestrians are encouraged to use bus and Metro (Wright

and Fulton, 2005). Creating 'car-free' streets leading to public transport nodes can increase the public's propensity to walk or cycle to a bus or tram stop by 70% (Vienna Institute of Technology, 2009).

Cities as diverse as Berlin, Delhi, New York, Amsterdam and Dhaka have different types of hiring systems to make collective public transit more flexible and attractive through the use of cycle rickshaws. Some cities like London are modernizing cycle rickshaws to provide 21st Century travel services to the consumer that meet the highest standards of comfort and security. Whilst Western nations are now discovering the value of the cycle rickshaw, Asian countries have long recognized the value of this affordable, noiseless, environmentally benign type of transport.

6.1. Rationale

The logic behind incorporating cycle rickshaws into Delhi's transport network revolves around the following key benefits:

- i. India could lead the world to provide a carbon-neutral public transport system where zero emissions from cycle rickshaws reduce the average emission intensity of the public transport fleet. This would support the Indian government's commitment to reduce carbon intensity and give the economy 'carbon space' in subsequent years whatever the outcome of protracted international negotiations.
- ii. The elimination of atmospheric pollutants, particularly a reduction in harmful levels of particulate matter that emanate from private vehicles..
- iii. The minimization of ambient noise that exceeds safe levels in Delhi due to excessive use of the horn while driving.
- iv. The opportunity for public transport to offer a 'gold plated' service – a chauffeur driven vehicle to carry people and goods directly to and from the Metro or BRT station from their workplace or home.

6.2. Rickshaws are part of the solution, not the problem

Rickshaws are often viewed as cause for congestion and as vehicle which violates traffic regulations and cause chaos on the road. The decision makers feel that rickshaw driving is not a dignified profession. They ignore rickshaw pullers/operators while evolving grandiose transport policy for the nation. The public transportation plan for the city should integrate and encourage cycle rickshaws as intermediate mode of transport for short distance commuting and as feeders to other forms of transport. Policies should encourage commercialization of improved technologies, proper management of their routes and parking to integrate them with other modes of transport in the city. Solutions exist in making these vehicles a viable mode of transport. All it needs is political will and public support. (Source: Air pollution bulletin – October 2006)

7. Converting Problems into Opportunities

Youth Team at Delhi Integrated Multi-Modal Transit System Limited (DIMTS) contemplated on this issue and tried to figure out the solution for this problem. Each rickshaw-puller's income supports a family of six to seven. Coupled with this, there are around 20,000 mechanics who service the rickshaws, and thousands of small-scale industrial units that manufacture rickshaw parts. Roughly 500,000-600,000 people depend on the rickshaws as a mode of regular transport. And this figure does not include the people who regularly use their services, like the children who go to school by rickshaw every day. (Gurung, 2006)

We studied this sector extensively and tried to identify some of key initiatives took place in past. Two of the main innovation in this sector includes:

SamaaN Foundation: SamaaN Foundation is a social enterprise setup in the city of Patna (Bihar) with an aim to protect and enhance the lives of rickshaw pullers. The organization has modernized the rickshaw sector in

the city by bringing several operators under one roof and making innovative changes to how we work. Besides, hire charges, SamaaN looks for other sources to increase the revenue like, by carrying advertising on our vehicles, selling products like bottled mineral water, fruit juices, mobile phone top-ups, newspapers and magazines on a certain commission basis. Every rickshaw also has a FM radio set, which is played on the client's request and a first aid box for emergencies.

Occasionally, the rickshaw operators are also asked to courier items around the city and earn extra income. The organisation has insured the rickshaw operators and provides vocational training – stitching, tailoring, computer training – to the ladies of the rickshaw operators' families to supplement their family income. After this initiative, the rickshaw operator income has gone up manifold – from Rs. 100 rupees to about Rs. 250 a day.

ECOCAB: Fazilka is a 160 year old planned city which accommodates and promotes the uses of Cycle rickshaw as a preferred mode of transportation within the city. ECOCAB project has tried to bring cycle



rickshaws much closer to the people and is available on phone call away. ECOCAB is an organization setup by youth in the city, who are living outside the city. The city is being divided into five zones, mainly North, South, East, West and Central and started Rickshaw Call centre in each Zone. This zoning was based upon the number of household served. All these locations are near to residential areas of Fazilka city. Call Centre is being managed by the tea-stall owner, who gets Rs 0.50 per trip from each rickshaw operator. Now with a phone call, rickshaw is available at your doorstep within five minutes.

ECOCAB project is not only supporting the livelihood of 500 families who are depended on cycle rickshaw but with this pedal power, the city is saving an estimated 900 liter of fuel and 14,000 kg fresh air on daily basis. It's first of its kind citizen effort to control the oil consumption and minimize the effect of global warming on this planet.



SamaaN Foundation

फैजिल्का रिकशा युनियन
गैजुटेस वैल्फेयर एसोसिएशन फाजिल्का (GWAF)
के सहकार में एक नई कादम्

फाजिल्का पुष्पक सेवा
Fazilka
ECOCAB
CALL CENTRE

एक शहर हमारे सपनों का
एक शहर हमारे अपनों का

शहर में पाने के लिए घूमां रहिए
सादाकार के सपनों का प्रयोग करें।

इन प्रतिदिन लगभग 900 लीटर ईंधन बचाया | 4000 किलोग्राम धुँस कम की बचाव करके फाजिल्का के वातावरण को प्रदूषण रहित बनाकर
आने वाले ग्लोबल वार्मिंग के खतरे से बचाने का प्रयास कर रहे हैं। आईये हमारे इस प्रयास में आप भी शामिल करें।

फाजिल्का उत्तर (मुख्य बस अड्डा) 510041
फाजिल्का मध्य (गौशाला रोड) 510081 फाजिल्का दक्षिण (मुल्तानी चुंगी) 510051
फाजिल्का पूर्व (संजीव सिनेमा चौक) 510061 फाजिल्का पश्चिम (वान बाजार) 510071

SUPPORTED BY:
Amrit Thakral THAKRAL INFO SYSTEMS Behind Balmiki Mandir, Gausshalla Road, Fazilka-152 123

267779 (O)
260016 (R)
98766-22880

ECOCAB Call Centre

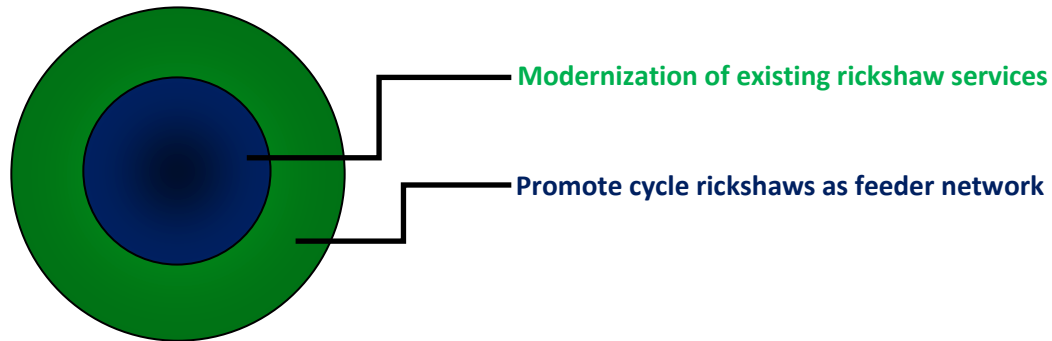
SECTION-2

What is more important in today's world – is it 'Invention' or 'Innovation'? Inventions always require a huge amount of investment and efforts but create something substantial. On the other hand, Innovations are part of our daily life and tries to add little more value in our efforts. Thus, instead of looking to create something new, we emphasized to modernized existing modes of transport, which require no fuel and emit no gases. We desire to change the Cycle Rickshaw sector in Delhi. On the basis of this, we have conceptualized the idea of GreenCAB...



8. GreenCAB – A Dial-a-Rickshaw Service

Young Team at DIMTS proposes to design a public transport system using a human-powered transport with human muscle power. GreenCAB is an idea to provide door-to-door mobility service to all class of people along the BRT Corridor. The whole project is based on two essences:



With the advancement of technology and increase in the size of the city, the trend has been visualized where this proven non-polluting mode of transport is partially being replaced by motorized three wheelers or other new vehicles. There is a need to upgrade the system and modernize this sector. ***One primary reason for GreenCAB project is to minimize the impact of motorized mode of transportation by upgrading the existing cycle rickshaw network with some value addition features like IT enabled services using modern tools of Transport planning and engineering.***



The service will work as a feeder link between the pickup points to public transit point like BRT corridor. It will encourage people to use more public transport system and discourage the use of private vehicles. Initially, GreenCAB will organize all rickshaw operators, who are currently plying their rickshaws in the nearby area between Dr. Ambedkar Nagar to Delhi Gate. Later, with government support, we will try to rollout this concept city-wide. GreenCAB will also make efforts to create a centralized database of rickshaw operators and issuing photo ID after verifying their credentials. Besides, serving as the means of transportation it:

- Will have newspaper, magazines etc.
- Will sell soft drinks and water bottles, sell small value recharge (top-up) coupons of different telecom operators
- Will collect utilities bills and submit them at designated points like JEEVAN³
- Will offer courier services within the area during non-peak time

³ The Jeevan initiative is started by Government of Delhi, which envisages the creation of over 500 citizen service centers/kiosks throughout Delhi.

The commuters will get a safe, reliable and comfortable service. This will certainly encourage people to use cycle rickshaws as a mode to visit nearby markets or places.

8.1. Key Objectives

As described above that key essence of the concept is **Modernization and Integration**. However, GreenCAB is looking to achieve other key objectives through its project:

- Modernizing the cycle rickshaw sector in the city and also redesign cycle rickshaw with the help of other organizations like ITDP, Lokyaan etc.
- Raising Socio-economic status of rickshaw pullers and rickshaw owners.
- Uplifting the overall Socio-economic profile of the city by preserving its environment for present and future generations. Promoting Sustainable transport (environmentally-friendly, inexpensive modes of transportation) along the BRT Corridor and its nearby localities.
- Initially, creating an effective feeder network along the BRT corridor (From Ambedkar Nagar to Moolchand). Later on tried to integrated cycle rickshaws as feeder service with all metro lines and bus network
- Encouraging people to use Public Transport System. Currently, it will connect the pickup point to BRT corridor, which will be later also connected with Delhi Metro.
- Encouraging students/professionals/politicians/bureaucrats to do their part in creating a better world with some value addition and design modification in the existing Cycle rickshaw design to meet up the future challenges.
- Providing training to rickshaw operators related to traffic signs, traffic rules, road safety and communication.
- Use of latest IT enabled tools like Dial-A-GreenCAB and setting up GreenCAB control centre.
- Designing special vocational courses for the family members of rickshaw operators
- Selling advertising rights on cycle rickshaws on their behalf to get good revenue.



8.2. Modeling Public Transport - NMT Integration

We tried to look out for scientific evaluation of our concept. Theoretically, it seems appropriate to integrate bus system with cycle rickshaw. The extensive research in this field is done by Prof. Stephen Krygsman and has developed a model to evaluate the multimodal transport system.

The quality of public transport is determined not only by the quality of the main transport mode, but also by the before (access) and after (egress) modes. Access and egress are the weakest links in a public transport chain. The interconnectivity of the different modes also becomes important in order to realize a trip and determine the availability and convenience of public transport (Krygsman, 2004). Initiatives aimed at improving

access and egress hold potential to significantly reduce public transport trip time and are inexpensive options compared to the expensive infrastructure and vehicle enhancement alternatives frequently considered.

According to research, access and egress times are a function of access and egress modes and trip orientation rather than of socio-demographic characteristics. Land-use has a different impact on access and egress and in both cases the relationship seems non-linear (Krygsman, July 2004).

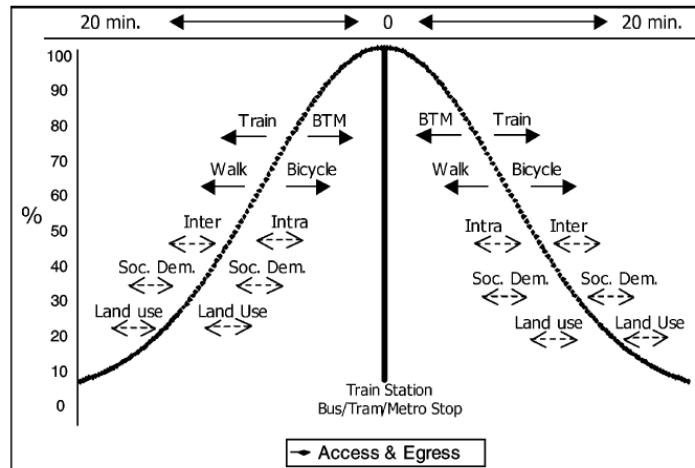


Figure: Probability curves for access and egress trips in The Netherlands (Krygsman et al. (2004)).

Access and egress times increase with increasing trip time, however, the increase is not as strong as line-haul time and as a result the interconnectivity ratio (access and egress time as proportion of total trip time) declines as trip time increases. For most multimodal trips, the ratio falls within a modest range of 0.2–0.5. The results can be used, amongst other, in planning the catchment area of public transport and predicting choice sets of realistic multimodal trips.

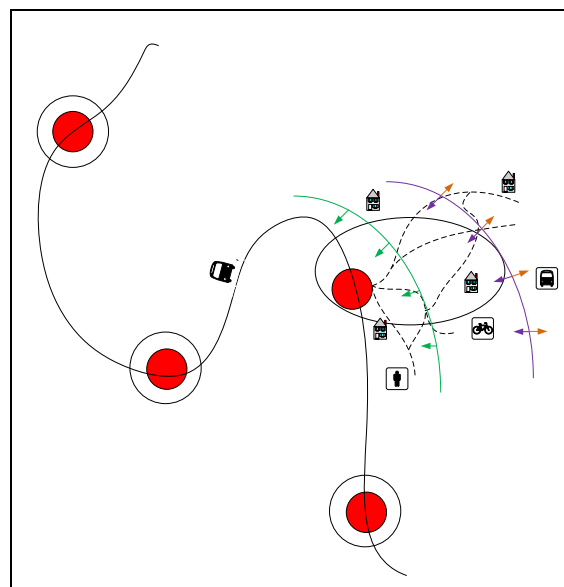


Figure: Catchment area of Public Transport

Passenger catchment areas for integrated bus-bike trips are influenced by the distance of the origin to the main haul line based on hypothetical distribution curve:

- **Green:** bus-walking catchment
- **Purple:** bus-bicycle/cycle rickshaw catchment
- **Orange:** bus-feeder bus catchment

Based on above finding, it is observed that:

- Bicycles and Cycle Rickshaws can be efficient and cost-effective means of transport to access the BRT system in Delhi.
- While acting as efficient feeder for public transport vehicles, using cycle rickshaws as muscle-powered taxis can help generate livelihoods for many.
- These modes are zero polluting that will help reduce carbon emissions and if implemented with proper planning, could help the public transport system become carbon-neutral.

8.3. GreenCAB – The System



DIMTS will organize the cycle-rickshaw owner under one banner, i.e. GreenCAB and will provide training to ply rickshaw in NMV lane. DIMTS is already operating Non-Motorized Transport (NMT) Cell under the chairmanship of Additional Commissioner (Transport). GreenCAB project will be executed under the aegis of NMT Cell in DIMTS. All development agencies like MCD, PWD, DDA, NDMC, CBOs, TRIPP – IIT Delhi and Transport department are part of this cell.

GreenCAB will overlook the planning and implementation plan. The company in collaboration with other municipal agencies will create infrastructure and other necessary support to provide a dial-a-rickshaw service. DIMTS will also provide or facilitate the easy loan for rickshaw owners to buy new and low-floor rickshaws. On behalf of cycle rickshaw operators, DIMTS can make a case for claiming carbon credits based upon the number of trips and users. To burn 1 litre of fuel, one need 15.2 kg of fresh air. Average one rickshaw can save 3-4 litre of petrol daily. With this, we will not only save fuel but fresh air as well.

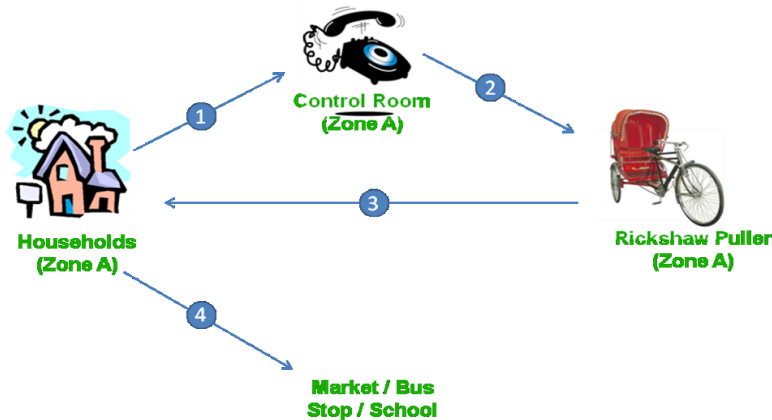
After ensuring the initial success, we may desire to implement other innovative concepts, like:

- **The Rickshaw Bank** (as Microfinance institution): This will ensure that rickshaw operators can deposit their small saving at
- **Rickshaw Cooperatives:** These cooperatives will help to address issues of seasonal migration of rickshaw pullers

8.4. Business plan

8.4.1. Operational Plan

System will be designed based upon the land-use pattern of the particular area and will be divided into different zones. A Control Centre cum parking space will be established in each zone. Initially, each zone will be assigned with separate GreenCAB Control Centre, where commuter can call and rickshaw will be available to them within 5-10 minutes of the waiting time.



In second phase, all GreenCAB Control Centre will be interconnected to manage the resources in better manner.

- GreenCAB will try to provide economical mobile set with connection to coordinate with these rickshaw operators.
- It is always observed that rickshaw operators perform trips in one way. They used to take passengers from Point A to Point B and return to Point A without passengers. Through, our integrated control centre, we can assign the next duty to rickshaw operators on the go.

In later phases, GreenCAB will add better financing followed by health insurance facilities for the rickshaw operators. Other important innovations like improved design, like low floor rickshaw for elder and kids, more luggage space and light weight ergonomically designed model for the comfort of rickshaw operators will be added.

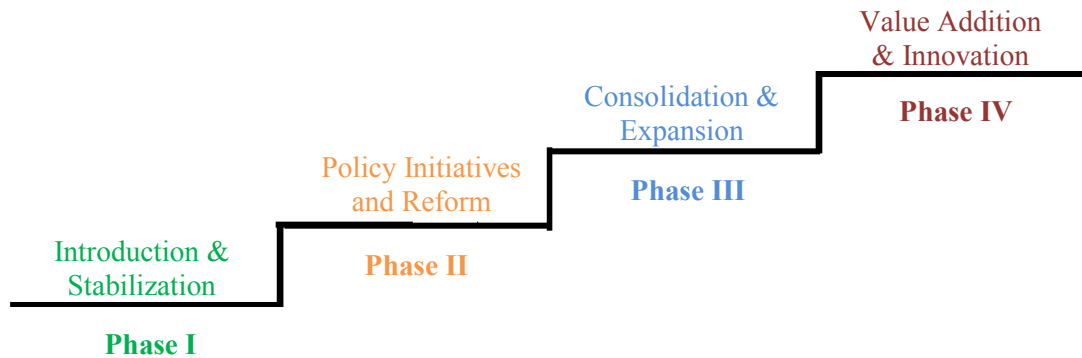
8.4.2. Implementation Plan

DIMTS will try to design better parking and traffic management plan. Currently, the existing infrastructure facilities will be utilized, like parking space earmarked along the BRT Corridor for para-transit. However, GreenCAB will try to demand for more funds from the local administration to upgrade the existing infrastructure facilities like sheds reserved parking space at selected locations.

Owing to the nature of the project, it is planned to introduce GreenCAB project in the phased manner. After the Delhi High Court Ruling (Initiative for Transportation and Development Programmes, 2010), there is no ceiling on the number of cycle rickshaws in Delhi and no restriction of driver license for rickshaw operators. However, still cycle rickshaw is a bone of contention for the government agencies like MCD and Delhi Traffic

Police. Ironically, unlike all other modes of transport including cycles, comes under the purview of Transport Department. The control of rickshaws remained with the civic agency like MCD. The need of the hour is a policy on rickshaw operation and design to ensure that this mode of transport is available in all colonies in the city.

The project will be implemented in four phases:



Phase I – Introduction & Stabilization

This phase will span from 6 to 8 months. In this phase, the idea will be introduced in the smaller stretch of 5.8 kms (From Dr. Ambedkar Nagar to Moolchand) at Delhi BRT Corridor. It will cover the catchment area of this stretch. The key idea of introducing GreenCAB at BRT Corridor is because Delhi BRT Corridor has a separate Non-motorized vehicle lane. Thus, rickshaws can ply on the arterial road without any obstruction to other traffic. The following activities will be executed:

- a) DIMTS will bring rickshaw pullers, living in nearby BRT Corridor, under single banner with the help of a NGO, i.e. Institute of Democracy & Sustainability (IDS).
- b) It will conduct surveys to find out travelling pattern of the commuters using the BRT Corridor (Bus commuters).
- c) It will try to identify center location to design a rickshaw stand (parking space) for easy accessibility and create necessary infrastructures required at those places. It will identify and utilize existing infrastructure facilities.
- d) DIMTS will use the existing 5 kiosks at cycle stations on the BRT Corridor as GreenCAB Control Centre.
- e) It will prepare better parking and traffic management plan for GreenCAB and other vehicles.
- f) It will conduct training session to operationalize the process and to ply rickshaws in Non-motorized Vehicle (NMV) lane and traffic rules.
- g) It will provide supply of consumables items like water bottles and juices and other merchandise like top-up cards, newspaper and magazines on the cycle rickshaws for passengers.



**GreenCAB
Control Centre**

- h) It will conduct marketing activities to bring this idea among the people. DIMTS also will sell the advertising space on these rickshaws to corporate, to create alternative revenue source for rickshaw pullers.

Phase II – Policy Initiatives and Reform

This phase will span from 4 to 6 months. In this phase, the efforts will be made to ensure bring policy level reform. The key activities will include:

- a) NMT cell design a Delhi Cycle Master Plan and will identify more location or transit point to introduce GreenCAB service. This will help to ensure that cycle rickshaws do not cause any threat to the safety of general public.
- b) GreenCAB will approach different civic agencies to enact suitable policies to ensure that cycle rickshaw sector can be modernized.
- c) DIMTS will try to form the cooperative societies or rickshaw operators' Self-help Group (SHG) to established bonding and motivate them to save small-small amounts for meeting the emergencies.
- d) The company will try to eliminate the 'Owner-cum-Driver' policy and will introduce the concept of 'Group Ownership', so that rickshaw will not be remained idle if one operator will fall ill or go back to his village. This initiative will also ensure that rickshaw operators get free from the hold of rickshaw mafia (who holds 100-500 rickshaws).
- e) The company will try to facilitate finance from different financial institution - State Bank of India, Punjab National Bank, Bank of Baroda or any other nationalized Bank.
- f) Delhi High Court earlier sanctioned 406 rickshaw stands for parking cycle rickshaws. However, the sanctioned parking stands exist mostly on paper. In February 2010, Delhi High Court again suggested that the government should consider proper rickshaw stands in colonies, near Metro stations and bus stops. DIMTS will follow-up with the government and different civic agencies to identify and sanction an appropriate parking space for cycle rickshaws in the city.



Phase III – Consolidation & Expansion

This phase will span from 8 to 12 months. In this phase, the concept will be further extended to remaining BRT stretch of 8.7 kms (From Moolchand to Delhi Gate) at Delhi BRT Corridor, along with other part of the city. The other key activities will include:

- a) Firstly, a Central Control Station will be setup and all the zonal GreenCAB control centre will be interconnected with each other to maximize the utilization.
- b) GreenCAB concept will be introduced in the other part of the city like metro stations, city colonies and suitable locations.
- c) All rickshaws operators will be covered through health insurance and accidental insurance policy.



- d) The company will try to replace all old or traditional cycle rickshaws with atleast with new modern rickshaws if not solar/battery powered rickshaws. This initiative will ensure that the average trip length by cycle rickshaws can be increased from 2 kms to atleast 4 kms.

Phase IV – Value Addition & Innovation

This phase is important to continuously improve the condition of cycle rickshaw operators and for the society at large. In this phase, the focus will be put on the continuous improvement and adding new features to this old sector. The key activities will include:

- a) Improved design GreenCAB will be introduced, like better pedal cycle rickshaw or low floor rickshaw for elder and kids, more luggage space and light weight ergonomically designed model for the comfort of pedal soldiers.
- e) DIMTS will also try to introduce electric and improved cycle rickshaw - Soleckshaw (Solar Rickshaw) developed by Council of Scientific and Industrial Research (CSIR). See Annexure 3 for more details.
- f) Special training will be provided to rickshaw operators to also work as City Guide for the tourist from outside.

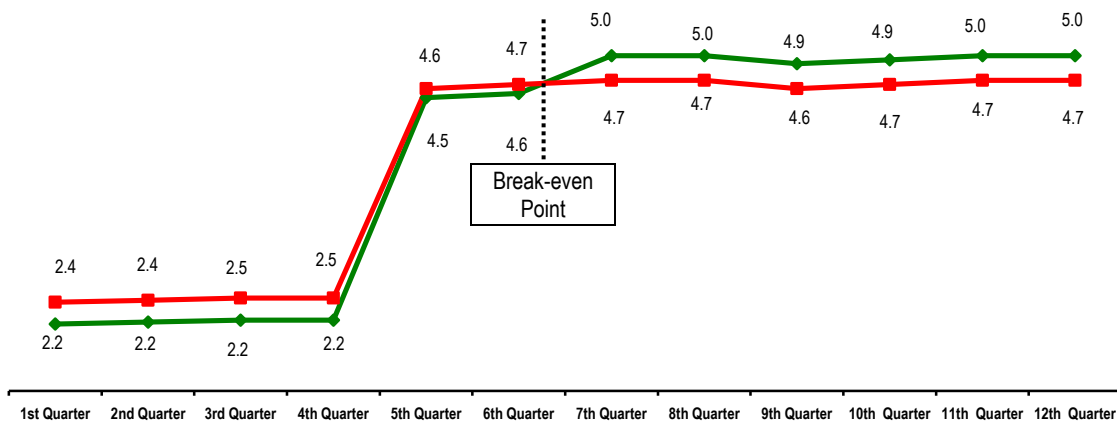


8.4.3. Financial Plan

A combined Financial Plan is prepared. However, in reality, there will be two financial plan – GreenCAB and individual rickshaw operators. In order to expand the concept to city-wide or nation-wide level, it is important to ensure that the project should be financial sustainable. Same as other mass transit project, it is not important to recover initial capital cost but to meet the operational expenditure over the period of time.

The concept will be initially start with a fleet size of 100 cycle rickshaws and will add 100 more cycle rickshaws in the 6th Quarter, i.e. in the second year. The project will reach break-even level

GreenCAB – Quarterly Operational Revenue & Expenditure
(Figures in Rs. millions)



The revenue of each rickshaw operator will increase from Rs. 200 per day to Rs. 230 per day, assuming no increase in number of trips, i.e. 20 trips per day. Besides, improvement in the financial revenue, the overall working condition and personal condition of each rickshaw operators will improve drastically.

Detailed Financial Sheet

Particulars	First Year				Second Year				Third Year			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Number of Rickshaws	100	100	100	100	200	200	200	200	200	200	200	200
Revenue												
- Capital Investment (Fund Raising)	1,000,000	0	0	0	1,000,000	0	0	0	0	0	0	0
- Hire Charges	1,800,000	1,820,000	1,840,000	1,840,000	3,600,000	3,640,000	3,680,000	3,680,000	3,600,000	3,640,000	3,680,000	3,680,000
- Revenue from Advertisement	300,000	300,000	300,000	300,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
- Revenue from other resources	90,000	91,000	92,000	92,000	180,000	182,000	184,000	184,000	180,000	182,000	184,000	184,000
- Support from the Government	0	0	0	0	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
- Support from other agencies	0	0	0	0	0	0	0	0	0	0	0	0
- Carbon Finance	0	0	0	0	0	0	350,000	350,000	350,000	350,000	350,000	350,000
Total Revenue (in Rs.)	3,190,000	2,211,000	2,232,000	2,232,000	4,530,000	4,572,000	4,964,000	4,964,000	5,880,000	4,922,000	4,964,000	4,964,000
Expenditure												
- Capital Expenditure	520,000	0	0	0	1,000,000	0	0	0	0	0	0	0
- Rickshaw operators income	2,080,500	2,100,450	2,120,400	2,120,400	4,161,000	42,00,900	42,40,800	4,240,800	4,161,000	4,200,900	4,240,800	4,240,800
- O&M expenses	18,000	18,200	18,400	18,400	36,000	36,400	36,800	36,800	36,000	36,400	36,800	36,800
- Administrative expenses	18,000	18,200	18,400	18,400	36,000	36,400	36,800	36,800	36,000	36,400	36,800	36,800
- Manpower cost (Call Centre)	90,000	91,000	92,000	92,000	180,000	182,000	184,000	184,000	180,000	182,000	184,000	184,000
- Manpower cost (Others)	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
- Marketing expenditures	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Total Expenditure (in Rs.)	2,936,500	2,437,850	2,459,200	2,459,200	5,623,000	4,665,700	4,708,400	4,708,400	4,623,000	4,665,700	4,708,400	4,708,400
Profit / Loss including Capital (in Rs.)	253,500	-226,850	-227,200	-227,200	-93,000	-93,700	255,600	255,600	257,000	256,300	255,600	255,600
Operational Profit / Loss (in Rs.)	-226,500	-226,850	-227,200	-227,200	-93,000	-93,700	255,600	255,600	257,000	256,300	255,600	255,600

Assumptions:

- A rickshaw will complete 20 trips in a day with a length of 2 kms.
- The hire charges will be Rs. 5 per km.
- Advertisement revenue will be Rs. 1,000 per rickshaw per month, of which 50% will be go to rickshaw operator.
- Each rickshaw operators will be able to sell goods worth Rs. 200 per day and will get commission of 5%.
- Capital expenditure include cost of setting up new cycle rickshaws (20 Nos in first year and 50 Nos in second year), the infrastructure at Control Centre and maintenance facilities.
- Call Centre will charge Rs. 1 per trip from Rickshaw Operators.
- Rickshaw Operators will get 95% of total hire charges, advertising charges, and commission on good sold.
- In the 7th quarter, we expect to earn 500 tons of carbon credit, which can be sold at EUR10 (€1 = Rs. 70).
- In order to keep the model simple, we assumed no revenue growth as well as no inflation for this analysis purposes.

8.4.4. Marketing Plan

Marketing of the concept is very important to get positive support from the society. The general perception of cycle rickshaw in the society is a slow moving vehicle which causes congestion. However, most of the people are themselves regular rickshaw users. Before implementing the project, there is a need to reach to rickshaw operators first and then to the public and explain the basic concept of GreenCAB, its key advantages and importance. Marketing strategy plays a key role in the successful implementation of the new system. It is always said that change is never easy and likely will be resisted regardless of the benefits of the intended change. Thus, an effective marketing strategy needs to enforce the change and it has two key components:

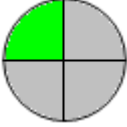
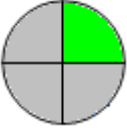
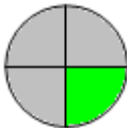
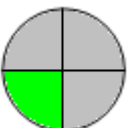
- The Stakeholders (Rickshaw Operators, Rickshaw Owners, Govt. agencies – MCD & Delhi Traffic Police etc.)
- General Public (Rickshaw users, motorists, bus commuters, media etc.)

The purpose of the public communication strategy is to:

- Educate the public about the benefits of the new system
- Win ridership for the system when it will be started.
- Isolate critics and strengthen the hand of the proponents in the implementation pr
- Develop a mechanism for ongoing consumer input.



The 4Ps concept of market is applied to GreenCAB project.

<p>Product</p> 	<ul style="list-style-type: none"> • Unique service in the city for the short distances. • Service will be more safe and reliable as all rickshaw operators are registered with GreenCAB • Will invest in value addition & innovation for better experience for the customer.
<p>Price</p> 	<ul style="list-style-type: none"> • Hire charges will remain the same as the competition is very high. • Pricing of other merchandise on the rickshaw will be same as per market prices. However, GreenCAB will try to get some additional discount from the suppliers. • After the initial success, GreenCAB may think to charge extra amount.
<p>Place</p> 	<ul style="list-style-type: none"> • GreenCAB will have the first mover advantages, as well as, the strategic role of DIMTS in Delhi will give advantage. • GreenCAB will try to make agreement with other NGOs working in this area and will work in them in collaboration.
<p>Promotion</p> 	<ul style="list-style-type: none"> • Advertising space at BRT corridor will be used to display the Control Centre information and brochures will be printed for general public. • Social Media will be used to promote the concept in Delhi. It has been observed that any project which can gain public acceptance will automatically clear all the hurdles in the political arena.

9. Conclusion & Way Forward

The idea seems very noble and simple, but actual execution of the project will require a lot of planning and hard work. First of all, we will need to convince the actual beneficiaries of the project. However, we don't perceive any resistance from the rickshaw operators, but we may face strong resistance from the rickshaw owners. The concept will in a way organize their role in the sector. However, we will also require the support of rickshaw owners, given the requirement of rolling stock. In the initial phase, our idea is not to completely change the rule of business but add value to the current operation. GreenCAB want that the operator should be the owner. GreenCAB concept will be introduced to the rickshaw operators in the area along Delhi BRT Corridor, with the help of CBOs.

The other important task is arrange the initial funding and support from other agencies. After the availability of the funding, mobilisation work will be started. Necessary infrastructure for the control centre will be setup and training will be given to the control centre executives. The common dress will be distributed with label of GreenCAB. A close monitoring unit will be setup to evaluate the performance and public response on day to day basis.

We hope this idea will not only change the living conditions of the poor cycle rickshaw operators, but also the mindset of the general public. Currently, rickshaw is viewed as a dis-respectful profession and rickshaw pullers (as they are called in the city) are viewed as a marginalised person. GreenCAB envisages to turnaround this sector in India as a respectful profession and commercially profitable.

GreenCAB fulfill the key objectives of UITP Public Transport Strategy which says:

- Sustainable / Public Transport Help Planet Breathe
- Sustainable / Public Transport Bring Everyone Everywhere
- Sustainable / Public Transport Bring Empower the Economy

Annexure 1: Rules and Regulations Governing the City Permits for Cycle Rickshaw in Delhi

1. Details of licensing procedures are as follows

As per the Cycle Rickshaw bye laws, 1960, amended from time to time, one person is granted one Cycle Rickshaw license, except widows and handicapped, who can be granted up to a maximum of five licenses each pursuant to directives of the Honorable Supreme Court of India in order to earn their livelihood. As per the Cycle Rickshaw bye laws, 1960, no person shall keep or ply for hire a cycle rickshaw in Delhi Unless he himself is the owner thereof and holds a license granted in that behalf by the commissioner on the payment of the fine that may from time to time be fixed. Provided no person will be granted more than one license. Provided further the commissioner may grant more than one more licenses to a widow or handicapped subject to the maximum of five licenses.

As per the bye law, the plying of rickshaw without license can be seized and disposed of through public auction after getting the same dismantled, deformation of such process including smashing it into a scrap after a reasonable time as decided from se of exceptions.

2. Licensing Procedure

Every year in the month of October-November, MCD issued notification in the newspapers inviting application for licences. The applications are to be submitted in the zonal offices with the required documents. Cycle Rickshaw licenses are granted through Citizen Services Bureau (s) in every Municipal Zones of MCD.

An application for a trade license can be made either at a Citizen's service Bureaus (CSB) or through the internet. The application can be submitted in any of the 12 MCD zonal offices also. In the case of the submission through internet, the applicant can submit the necessary documents at any of the CSB's after marking the document with the unique acknowledgement number allotted to his application on the internet.

3. Departments Involved

Cycle rickshaw licenses are granted through the citizen service Bureau (s) in every Municipal zones of the MCD. Hackney Carriage wings of the department deals with the issue of granting Cycle rickshaw licenses under the supervision and the control of the zonal Authorities.

4. License processing

As per the bye law, licensing starts from November and ends on 31st December of the next year.

5. License Fees

At present the license fees is RS.50 /- per license.

6. License Renewal

As per the byelaw, the license granted to the pullers shall be valid for a period of three years and the license for rickshaw shall expire on 31st October next following the date of issue. Every Cycle Rickshaw licensee is supposed to be renewed the license on expiry. The fees and procedures are same as the new one.

7. Regulations

Cycle Rickshaw licenses are granted subject to the fulfillment of laid-down terms and conditions at the time of seeking licenses at the Zonal level of the MCD.

8. Conditions

As per the byelaw, No license shall be issued unless the following conditions are observed:

- a. The width of the rickshaw must be overall 3 feet 9 inches
- b. The length must be 8 feet
- c. The height of the rickshaw on wheels excluding the overhead shade must be 36 inches
- d. The width of the seat must not be less than 29 inches. This is applicable to new rickshaws after the commencement of bye law.
- e. The legroom for passengers is 1 feet 9 inches
- f. The Cycle rickshaw shall be in good order and repair in all parts
- g. The cycle rickshaw shall be brought to inspection as required by the commissioner
- h. Serial number must be painted on the payment of fees. The number shall not be removed, altered defaced or obliterated
- i. The license shall expire on 31st October next following the date of issue.
- j. The driver of rickshaw shall attend in person when so ordered by the commissioner
- k. Driver shall produce the license and list of fares as requested by the commissioner, Municipal Magistrate, police officer or any person hiring or intending to hire the rickshaw
- l. Photographs must be affixed in the license and the expenses must be borne by the licensee

9. Conditions for Driver License

- a. The person must be well trained in driving the rickshaw
- b. Acquainted with principal streets of Delhi
- c. Must be well aware of traffic rules and regulations
- d. Must be in good Physique (good Health and not less than 21 years of age) and been convicted of an offence involving moral degradation
- e. While propelling, he shall not pass a terminal tax barrier without stopping and reporting himself on the clerk in charge there and shall not move the rickshaw unless the clerk completed the assessment and collected the terminal tax on goods if any carried by it.
- f. Must not disobey the directions of police officer for the regulation of traffic and control of rickshaw in the stand
- g. Keep the lamp properly lighted during the lighting time
- h. Must not propel rickshaw in an intoxicated state and not use any insulting, obscene or abusive language. He must not make obstruction to any vehicle or propeller
- i. He is supposed to wear kaki uniform and it must be clean
- j. Photograph and left thumb mark of the driver must be affixed in license
- k. The driver must also follow the rules for the obligation of hiring, parking fares and the number of persons to be carried as provided in the byelaw
- l. He is supposed to wear the badge inscribed with the number in license. This shall be returned on suspension, cancellation and termination of license
- m. The license shall not be transferable
- n. Commissioner or authorized officers have power to remove the rickshaw found plying on suspension, revocation, cancellation etc.

10. Penalty

As per the Cycle Rickshaw Bye laws, no person can ply on hire any cycle rickshaw within the municipal limit without a valid from the respective zonal authority. As per the provisions of Byelaws, the plying of rickshaw without license can be seized and disposed of through public auction after getting the same dismantled, deformation of such process including smashing it into a scrap after a reasonable time as decided from the corporation from time to time. Fine is also being levied. It can extend to Rs.50/- and Rs.50 per day will be charged for continuity.

Annexure 2: The Prime Minister's Policy of 2001

In response to a series of Public Hearings of rickshaw pullers and owners and street vendors organized by Manushi Prime Minister Vajpayee announced a new policy for cycle rickshaws and street vendors in Delhi in August 2001. Key features of this policy are as follows:

- Let the **laws of market** demand and supply determine the number of vendors and rickshaws in the city rather than bureaucratic quotas.
- The metropolis may be divided into “green”, “amber” and “red” zones, free access, fee based access and prohibited access, respectively.
- There must be an **absolute prohibition** on municipal and police authorities from impounding, or destruction, or seizure, of goods and equipment, except when permitted under other laws.
- Any person who wishes to be a rickshaw puller/owner or street vendor may do so by a **simple act of registration** involving two steps: (a) reliable identification by any means and (b) payment of a nominal fee to cover costs for issue of a photo identification card.
- **Purpose of the registration** is to provide reliable identification for the purposes noted above. It is not a permit to ply the trade. No such permit is needed.
- A registered rickshaw puller/ street hawker who wishes to operate in “amber” zone, may do so by paying a fee, upon which a sticker to the effect may be affixed on the registration id.
- Numbers of street hawkers/cycle rickshaws in the “amber” zones may be regulated by adjustment of the amount of fee periodically. Penalties for plying in an “amber” zone without payment of fee may involve a financial penalty, in addition to the fee but in any case there must be an absolute prohibition on municipal and police authorities from impounding, or destruction, or seizure of goods and equipment.
- Non-government organizations with a record of working for the welfare of these groups may be authorized to interface between them and the concerned authorities.

Annexure 3: Solar Rickshaw (*Soleckshaw*)

1. Genesis

Soleckshaw, a Pedicab, is an optimally designed, pedal-operated and motor-assisted, zero-carbon emission, urban transport vehicle. It is the flagship programme of the recently launched initiative of CSIR, CSIR-800—a sustained effort to utilize the fruits of cutting-edge science to improve the quality of life of 800 million Indians, who are at the bottom of the 'pyramid of quality of life'.

The dual-powered *Soleckshaw* is the CSIR's solution for the dual problem of *decent employment generation for the masses* and *mitigation of global warming*. More than 60% of the increase in the green house gas (GHG) emission is from the transport sector. Currently, no powered vehicle or transport system is free from carbon dioxide emission. *Soleckshaw*, with its zero carbon foot print and the trend of widespread use, is expected to reverse global warming and protect the planet from the perils of the climate change. Its worldwide use would also enhance energy security by reducing the world's dependence on limited fossil fuel. Equipped with novel features, this pedicab is easy to drive, both on plain as well as uphill road, without any strain of imbalance, which all of the current cycle rickshaws suffer from. The speed of *Soleckshaw* matches a powered vehicle in downtown traffic ecosystem (~ 10-15 km/hr)

2. Low cost motorized rickshaw (~ Rs 16,000/-)

India need to spend Rs. 10 billion to convert 8 million traditional rickshaws into petrol-driven vehicle, it will not be sustainable. Each Soleckshaw is thus capable of saving CO₂ emission to the tune of Rs. 4,000/- per annum and total savings countrywide approximating Rs. 2 billion.

The Soleckshaw is launched in New Delhi, is a motorised version with FM radios and power points for charging mobile phones. The 36-volt solar battery can power the rickshaw for 50-70 kms. Soleckshaw may be a solution to traffic woes, pollution and fossil fuel dependence and it will also save the rickshaw pullers from backbreaking toil.



In Union Budget 2010, the Finance Minister has proposed to provide a concessional excise duty of 4% to Soleckshaw. Its key parts and components are also being exempted from customs duty. This stimulus for 'Soleckshaw' would help promote its commercialization. The CSIR has so far given license for manufacture of soleckshaws to small scale units and the duty concessions would make it possible to rope in medium and large scale industry.

The solar battery, weighing around 15 kg, is placed under the passenger seat. One battery takes 5-6 hours to charge using solar power. It can also be charged from a domestic 15 Amp power socket. At present, Soleckshaw costs between Rs 30,000 and Rs 35,000. The CMERI team is working on ways to reduce the manufacturing cost. When the vehicle is mass produced the price is expected to come down to Rs 20,000 to Rs 25,000.

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