

Quarterly

RESEARCH NOTE

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Organizing intermediate public transport for an urbanising India

Barely a handful of Indian cities offer organized mass public transport. As a result, various intermediate transport solutions have emerged to fill the gap. These vehicles are largely in the informal sector and therefore their service levels, reliability and accountability remain poor. This also means they operate in an uncertain environment. This Quarterly examines three initiatives to organise intermediate public transport (IPT) in a way that benefits passengers, drivers and the environment, and a fourth which is a private venture to provide an eco-friendly feeder service to the metro. After years of government neglect of this vital sector, this Quarterly asks how government might facilitate organised IPT to improve urban mobility and the quality of life in our cities.

Understanding the IPT landscape

The vast majority of urban India does not have any organized mass public transport. Of 78 cities with population over 0.5 million, only 20 had public city buses in 2009, and only 5 cities have rail-based public transit. In addition, some urban areas are partially served by state road transport corporations' bus routes that pass through.

The failure of government to provide organised mass public transport has led to a range of make-shift solutions where a transport 'service' is provided. These may be classified as intermediate public transport (IPT) or 'para transit' and cover the space between private and mass public transport. IPT modes operate mainly in one of two ways. They can be hired by commuters for door-to-door trips or they can operate as informal public transport by carving out fixed routes and fares e.g. share cabs, mini-buses.

In small and medium towns, IPT is the dominant mode of transport. Cycle rickshaws were amongst the earliest forms of IPT in India. Estimates put total cycle rickshaws on Indian roads at between 2-7 million. Over time, motorised modes such as auto rickshaws, battery-operated cycle rickshaws, other 'share taxi-like' vehicles or indigenously-made *jugaad* vehicles, have emerged, which have a longer range. *Jugaad* vehicles are typically cobbled together using a diesel generator and a tricycle or cart, and may hold upwards of 20 people. While motorised modes offer higher speeds and carrying capacity, they are also more polluting (see Table 1).

Table 1: Comparison of IPT vehicles

| | CO ² emissions (g/pkm) | Average trip length (km) | Avg Tariff/ km* (Rs) | Capex (Rs) (excl fees) | Speed (km/hr) |
|------------------|-----------------------------------|--------------------------|----------------------|------------------------|---------------|
| Cycle rickshaw | 0 | 1.7 | 10 [@] | 10,000 | 10-15 |
| Autorickshaw CNG | 0.1 [#] | 4.7 | 9.5/7 | 1.25 lakh | 30 |
| Battery-rickshaw | 8 ^{\$} | 2.5-3 | 6.5 | 1.1-1.4 lakh | 25 |
| Taxi (Petrol) | 146 | 10.5 ^{&} | 15 | 3.6 lakh | 50 |
| Bus (Diesel) | 11 | 8.8 | 1.2 | N.A. | 50 |
| Two wheeler | 37 | 8.7 | N.A. | 40,000 | 30-40 |
| Jugaad vehicle | N.A. | N.A | 5 | 60,000 | 25 |

Notes : g: gram, pkm: passenger km; # Carbon monoxide emissions, less than CNG taxi = 0.7 g/km ; * Tariffs for Delhi ; & For car; @ Est as cycle rickshaws not metered and may charge a minimum for short trips that other IPT will not serve; \$ Well to tank emissions using India's power generation mix (2010) and CEA emission factors for the fuels.

Sources: TERI, Life cycle analysis of transport modes (Volume I) 2012; Transport Demand Forecast Study & Development of an Integrated Road cum Multi-modal Public Transport Network for NCT of Delhi; CNG: An Alternative Fuel for Public Transport, 2006.

Several surveys have shown that IPT typically caters to the low to middle-income demographic that cannot afford

private transport. IPT also provides a critical source of livelihood for the poor. For instance, daily earnings of cycle rickshaw drivers are very low and many are migrants. As IPT operates mainly in the informal sector, it provides poor and variable service for passengers, and is under an uncertain policy environment for drivers.

Lack of planning and recognition of IPT

The National Urban Transport Policy (NUTP 2006) and 12th Plan Working Group on Urban Transport, both envision a more formal role for IPT going forward. This role is similar to that of IPT in developed countries – as a feeder service to mass public transport or for short trips. To date, however, IPT has been largely ignored in transport planning. Government investment has focused on infrastructure that serves personal motor vehicles and even where mass transit projects have been built, little attention has been paid to last mile connectivity. Municipalities rarely provide enabling infrastructure for IPT such as demarcated rickshaw stands and lanes for non-motorised transport (NMT).

Regulation of IPT is a grey area as some of the legislation is outdated (too restrictive) or unclear. Motorized IPT modes are regulated by the central government's Motor Vehicles Act, (MVA) 1988 and the concomitant rules set by state governments, while non-motorized modes come under state or local government Acts, e.g. Punjab Rickshaws Act, 1976, Delhi Municipal Cycle Byelaws, 1960. The relevant authority is responsible for formulating rules on permits, tariffs, areas they can ply, uniforms, insurance and so on.

The vast majority of IPT vehicles operate informally with most local governments taking an indifferent, if not hostile, approach to them. Recently, in February 2011, the Supreme Court clarified that even *jugaad* vehicles are under the MVA and must be registered and pay taxes or can be seized.

Local governments often have a cap on issuing permits. This may be due to legacy regulations or on grounds that IPT causes traffic congestion. This encourages informality and creates opportunities for rent-seeking. Recently in Delhi, a long-standing cap of 55,000 on autorickshaw permits was increased by the Supreme Court. This cap had created a black market that increased permit costs by Rs. 4 lakhs. When Delhi city authorities tried to restrict cycle rickshaws the High Court and Supreme Court ruled it unconstitutional. Indeed, there have been several instances of Court intervention to protect cycle rickshaws on livelihood and environmental grounds (see Box 1).

Besides permit issuance, there are other forms of regulatory uncertainty. Many cities disallow renting of rickshaws and

require the owner to be the driver or else they may confiscate or destroy the vehicle. Since many drivers prefer to rent because they cannot afford to buy rickshaws or because they are seasonal migrants or are deterred by high risk of ownership in the informal sector, they are forced to rent in the informal market where they are insecure. Such regulations and complicated registration procedures found in the Punjab Cycle Rickshaw Act 1976 are currently being contested in the High Court by the Ecocabs founder on grounds that they are detrimental to the health of the sector.

Box 1: Court interventions to protect and promote cycle rickshaws

In early 2010, the Delhi High Court ruled that the Municipal Corporation of Delhi (MCD)'s policy of restricting cycle rickshaw licenses was unconstitutional as it violated the right to earn livelihood. The Court argued that since cars were not regulated, cycle rickshaws could not be blamed for causing congestion. The Court ruled that non-motorized transport (NMT) was environmentally friendly and must be encouraged. Since cycle rickshaws continued to be impounded even after the order, in June 2012 the High Court appointed a Special Enquiry Officer to investigate cases of illegal confiscation of vehicles (Manushi). On an appeal filed by MCD, the Supreme Court upheld in April 2012 the Delhi High Court's order.

In 2012, motivated by the success of Ecocabs (see below), the Punjab and Haryana High Court took *suo motu* action to introduce Ecocabs concept in all 22 district headquarters in Punjab, Haryana and Chandigarh with the objective to improve environmental quality in urban areas.

Given IPT's critical role in providing more inclusive mobility, this Quarterly examines the experience of four initiatives to self-regulate and improve conditions for passengers, drivers and the environment. Two initiatives pertain to organising existing cycle rickshaw drivers and the third to autorickshaw drivers. Different from the NGO model of the first three, the fourth is a commercial venture to introduce battery-operated rickshaws as a feeder service for mass transit.

Organising IPT for better transport outcomes

Fazilka Ecocabs "Dial-a-Rickshaw" is a cycle rickshaw scheme started in Fazilka, Punjab, a 10 sq km town with a population of about 1 lakh. Cycle rickshaws had always been the primary mode of transport in Fazilka but service levels were poor: rickshaw drivers frequently overcharged, maintenance was variable, availability was uneven through the city, and the municipal council did not enforce service quality norms. In June 2008, social activist Navdeep Asija introduced Ecocabs as a philanthropy-driven social enterprise dedicated to improving service levels by organising rickshaw drivers in a self-regulated scheme. An additional rationale was to promote non-motorized transport to reduce growth in pollution. The scheme adopted various measures to increase access and guarantee service quality (see Table 2). Complaints of overcharging or misbehaviour are promptly resolved by temporarily suspending or revoking membership to the scheme. Over time, ride quality has been improved with innovative technology design.

To facilitate rickshaw access, Ecocabs mapped typical rickshaw routes and divided the city into nine zones. The Municipal Council built rickshaw stands in five zones for the Fazilka Ecocabs Welfare Association (FEWA) which runs the scheme. These stands can be used by any cycle rickshaw driver, even those not registered under the scheme. Each stand has a toilet and tea stall; larger stands have a repair shop and canteen. In lieu of rent-free space at the stand and a captive market of drivers, the tea vendor often acts as

a coordinator, responsible for answering calls and dispatching rickshaws. A driver may also act as coordinator.

BSNL sponsors all Ecocabs phone connections under a closed user group (CUG) scheme where calls within the group are free. This is the first time in India that CUG has been implemented on pre-paid connections. In return, BSNL is guaranteed minimum annual usage of Rs. 400 per connection. There is an android application for bookings but very few avail of this, given low smart phone use in Fazilka.

Table 2: Comparison of scheme benefits

| | Fazilka Ecocabs | Rickshaw Bank | G-Auto |
|---------------------------------------|-----------------|---------------|--------------|
| Passenger benefits | | | |
| Dial-a-rickshaw | ✓ | | ✓ |
| Other booking | Smartphone App | | Online |
| Complaints hotline | ✓ | | ✓ |
| Transparency & enforcement of tariffs | ✓ | | ✓ |
| Design improvements | ✓ * | ✓ * | |
| Driver benefits | | | |
| Medical & Accident insurance | ✓ | ✓ | ✓ |
| Discounted medical facilities | ✓ | ✓ | ✓ |
| Children's education allowance | ✓ | ✓ | ✓ |
| Driver training/ Orientation | ✓ | ✓ | ✓ |
| Loan facility | ✓ * | ✓ * | Loan Intro |
| Other benefits | ✓ * | ✓ * | |
| Promote sustainability | Car-free zone* | Soleckshaw* | Prefers CNG* |

* See text for more details

Approximately 300 of the 450 cycle rickshaws in Fazilka are members of the scheme. Those not participating are either seasonal drivers who also work as agricultural labour, or drivers expelled due to discipline issues.

The **"rent-to-own" Rickshaw Bank** cycle rickshaw initiative, was started by social activist Dr. Pradip Sarmah in 2004 in Guwahati with the primary motivation of helping rickshaw drivers break free of daily renting of rickshaws in the informal market, and to preserve an environmentally-friendly transit option. For example, in Guwahati, 90 percent of rickshaws were rented from fleet owners. The Rickshaw Bank, operating through Dr. Sarmah's Center for Rural Development, provides an asset-based micro-finance package of the rickshaw, insurance, municipal license and uniform with the aim of handing over ownership in around 15 months. To repay the package, drivers pay an equal daily instalment (EDI) equivalent to the daily rental of about Rs. 40 per day. Rickshaw Bank also offers flexibility to drivers who may wish to pay back over 18 months due to financial constraints. The package includes an ID card that facilitates access to mobile phones and gas connections.

Under the Rickshaw Bank scheme, five rickshaw drivers voluntarily form a group and five groups operate from one meeting point. These groups, in different parts of the city, manage their savings, repair the rickshaws, and collect repayment daily. About 3,500 of an estimated 30-70,000 cycle rickshaws in Guwahati participate, with an additional 2,000 members in nearby towns.

Rickshaw Bank also runs a small rickshaw manufacturing unit. Although this is currently constrained by a lack of funds, the purpose is to upgrade the fleet of rickshaws in the city and generate additional revenue for the scheme. In 2008, Rickshaw Bank and the Council of Scientific and Industrial Research designed a solar-powered rickshaw 'Soleckshaw'. A pilot was launched in Delhi but for numerous reasons, particularly high maintenance and capital costs and long charging time, has largely stopped.

G-Auto, a commercially-oriented attempt to organise autorickshaws was started by Ahmedabad-based social entrepreneur Nirmal Kumar, in response to poor autorickshaw service, particularly charging of ad hoc fares. Autorickshaw drivers were offered free medical insurance in exchange for the assurance that they would charge the state Transport Commissioner set tariff. Within months, about 6,500 drivers of a total of over 1 lakh autorickshaws in the city had joined this scheme. Encouraged by this response, G-Auto launched a subsequent, more limited, “dial-a-rickshaw” scheme in which the registered drivers provide service on-call for the entire city of Ahmedabad. At present, 350 drivers are registered. To qualify, drivers must have basic English literacy (to read text messages). They then receive behavioural and road safety training. Passengers may book rickshaws online or call the G-Auto call centre to request a pick-up. To provide shorter response time drivers informally organised themselves into four zones. A computerised system at the call centre sends a text message to all the drivers in the relevant zone and the first to respond is assigned the ride. This system also tracks booking fees and follows up on complaints. Misbehaving drivers can be blacklisted for 15 days and their misdemeanours are publicised amongst their peers.

There are three types of services offered – Any Time Rickshaw (standard dial-a-rickshaw service), Airport Express (airport-city connectivity), and Heritage Rickshaw (which takes passengers on guided day-tours of the city). Eighty percent of G-Auto’s rides come from the first two services. G-Auto also hopes to introduce two more services – Rail Connect (railway station-city trips) and Campus Connect. There is a Rs. 15 fee for standard bookings. For Airport Express service, G-Auto operates a booking stand outside the airport and bookings are charged at Rs. 20. This fee is shared equally by G-Auto and the Airports Authority. Crucially, the majority of G-Auto’s income comes from advertising revenue, supplemented by booking fees.

G-Auto received government assistance in the form of initial advertising contracts, and enforcement of law and order to counter the rickshaw mafia-police nexus that would have impeded their operations. G-Auto is now expanding to other cities. While they have environmental motivations and prefer use of CNG, they are constrained by CNG availability. All their rickshaws in Rajkot and Ahmedabad are CNG.

G.Riks, another IPT initiative by a private company M/S Argentum Motors, was launched to provide an eco-friendly feeder service to the metro in Delhi. Their aims are to modernize cycle rickshaws and integrate them as a feeder service. Introduced this year as a 6-month pilot, G.Riks started to ferry passengers between Malviya Nagar Metro Station and Select Citywalk Mall in a battery-operated rickshaw. The 3km ride cost Rs. 20 for 2 passengers.

G.Riks has a “controlled service” (own, operate and maintain) model in which G.Riks owns the vehicles, pays drivers a monthly salary, and meets rickshaw capital and operating costs through advertising and tariff revenue respectively. Drivers receive a small monetary incentive for completing more trips than a certain threshold and are also given technical, behavioural and driver training.

Under the agreement between the mall and G.Riks, the mall provided overnight parking space, space for a charging station, assistance with securing advertising contracts and a kiosk with three parking spots on the mall premises. G.Riks pays for the cost of the charging station and electricity.

G.Riks faced numerous challenges. Their business model implied that they took all the market, revenue and capital risk. Since revenue is highly sensitive to battery life, proper maintenance is critical. However driver behaviour was hard to monitor; drivers often did not maintain the vehicle properly or deviated from the route or took on additional passengers. In order to create greater incentives for drivers to increase rides and maintain the vehicles, G.Riks is considering a “franchisee” model where drivers pay 60-70 percent of the capital cost and total maintenance cost. Drivers would retain fare revenue and a share of the advertising revenue. This model would have its own challenges e.g. inability to control driver behaviour.

G.Riks was also operating under regulatory uncertainty. This is because although their vehicles, being under both 250 watts and 25 km/hour are classified non-motorized, the municipality was unwilling to register them as NMT as they were not ‘pedal-operated’. Without registration, G.Riks could not officially carry advertisements, although Delhi is one of few cities with a defined outdoor advertising policy. Since advertising is crucial to its commercial viability, G.Riks has been unable to scale up its pilot

Results

The success of Fazilka prompted the High Court to order that the scheme be replicated in other cities (see Box 1). Indeed, all the schemes have provided greater access, accountability, comfort, safety (especially for women and children), transparency and reliability for passengers while also improving working conditions for drivers. Both Rickshaw Bank and Ecocabs worked closely with rickshaw manufacturers or research institutes such as IITs and MIT (USA) to produce more spacious, ergonomically-designed and safer rickshaws. All the schemes have directly or indirectly increased drivers’ incomes e.g. given that medical costs can, on average, account for 30 percent of monthly earnings, discounted medical access has improved living standards. They have also contributed to road safety and traffic calming by providing driver training and, in the case of Fazilka, rickshaw stands and car free zones. Rickshaw Bank, Fazilka Ecocabs, and G.Riks have a clear environmental motivation in encouraging use of an eco-friendly mode of transport.

Economic viability

The schemes have similar financial models with slight variations; although Fazilka Ecocabs is purely philanthropic, its expansion to other cities is proposed to be commercially viable like Rickshaw Bank and G-Auto.

Economic viability hinges on a few revenue streams. Advertising is the key revenue source for all of them. However, this stream is uncertain due to unclear or non-existent policies on outdoor advertising in most cities.

Booking fees are also an important income stream for G-Auto, but in Fazilka the attempt to charge a fee of Rs. 5 did not work because it implies a significant increase over the tariff for short local trips. Nor did Fazilka have a system to enforce fee payment as it would require a GPS or printed receipts (as G-Auto) to track payments.

Rickshaw Bank charges a profit margin on manufacture and sale of regular rickshaws as well as momo and vegetable cycle carts. The latter two constitute the majority of its sales. Other revenue sources include commissions. For instance, a Patna-based cycle rickshaw initiative by the Samaan Foundation negotiates lower fees from doctors and

discounts from pharmaceutical companies and receives a commission for providing them with a captive market.

Overall it appears that while there are returns to be made in organising IPT, they are not lucrative enough to attract investors given current regulatory uncertainty and the accompanying risk and effort involved.

Issues and challenges in organizing IPT

(i) Potential to replicate, scale up and sustain

Scaling up is a major challenge for an NGO-based model. The attempt to replicate Ecocabs across Punjab is facing difficulties in finding an established, trustworthy NGO partner in each of the cities.

Finance is the key constraint in scaling up, especially for an NGO. Therefore most of the initiatives are contemplating other models. For instance, G-Auto is considering changing its status to be a Section 25 Company so that it can invite equity. Ecocabs is trying to use advertising revenue to sustain operations in other cities. Private equity could also be a possibility for a company like G.Riks.

Sustaining driver participation is another challenge and schemes are considering ways to increase drivers' stake. For example, Rickshaw Bank is contemplating a co-operative model where drivers can sell their rickshaws to others in the scheme. G.Riks' alternate model entails drivers assuming more revenue and capital risk.

(ii) Local institutional support

A prerequisite for success of the first 3 initiatives has been political and institutional support ranging from basic recognition to countering the police-mafia nexus. In addition, the President of the Fazilka Municipal Council was instrumental in building rickshaw stands and designating a car-free zone. G-Auto and Rickshaw Bank received financial support from the municipality or state government. In contrast, Rickshaw Bank could not scale operations in Surat and Noida because local authorities were uninterested.

Where there are multiple bodies to work with such as the transport department, municipality or other authorities, the challenge increases. For example, although G-Auto had municipal support and were able to reach an agreement with the Airports Authority, they have not been able to do so with Railways so far. Similarly with G.Riks, metro authorities were unwilling to provide parking or a ticket counter, so a person had to be posted outside to sell tickets.

(iii) Regulatory and registration issues

In many cities, permit caps force drivers to operate outside the system. In addition, rigid categories for licensing discourage new technology such as electric vehicles, as they fall between the cracks. Often, advertising – a potential source of revenue – is banned or regulations unclear.

Recommendations

Most Indian cities are mixed use, either by design or most often, de facto informal development. This results in shorter trip distances. Going forward, land use and urban planning must embrace mixed use development in order to preserve an urban form that reduces trip lengths and is conducive to public transit. IPT is important for serving short trips and also for making public transport more accessible. Therefore IPT must be included in all land use and transport planning with an emphasis on making it inclusive and eco-friendly. Funds to facilitate IPT integration could come from transport funds allocated to the states under JNNURM.

A number of actions might be taken. To begin with, IPT should be 'recognized' so that all vehicles may be registered and licensed. As cycle rickshaws may increasingly be replaced by faster battery or solar powered non-pedal modes, existing legislation on NMT or MVA should be amended to make them more flexible to allow for new technological developments. Doing so can encourage research and private sector entry in this area. Uncertainty with regards to rental and advertising must be addressed in order to improve conditions for organised transport.

Organizing IPT initiatives across the country cannot rely on NGOs alone. For this reason, government and transport authorities need to create an enabling environment for private players. This may take the form of providing space for parking, ticketing facilities or charging stations for electric vehicles at major transport nodes or petrol pumps in order to integrate them into a public transport network. In the future this could include integrating transit modes through smart cards. Subsidies available to four-wheeler electric vehicles could also be extended to electric rickshaws. There could be different PPP models that allow private organised IPT services to operate in conjunction with public transport and facilities. Government could do this through tendering, outsourcing, renting their space, sharing booking fees and revenue and so on.

Policy Group – News & Events

- New assignments:
 - Member of study group on **Implementation strategies, management structure and resource mobilization for Regional Plan-2021 for National Capital Region Planning Board**
- Events organized:
 - First annual conference of IDFC Foundation on May 29 on the theme **Are PPPs working?**
- Presentations and participation:
 - **MoUD workshop on Improving services in urban water supply and sanitation** in Delhi
 - Panel discussion on **How can carbon credits benefit agriculture and allied sectors** at the ACIAR workshop in Delhi
 - Panel discussion on **Challenges of urbanization in India** televised on NDTV Profit in Mumbai

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Policy Group : Ritu Anand, Sambit Basu, Kaushik Deb, Ranesh Nair, Pritika Hingorani, Protiva Kundu, Lavi D'Costa & Bharati Sawant

IDFC FOUNDATION

Registered Office: The Capital Court, 2nd Floor, Olof Palme Marg, Munirka, New Delhi 110 067. Tel: +91 11 4331 1000

Corporate Office: Naman Chambers, C-32, G-Block, Bandra-Kurla Complex, Bandra (E), Mumbai 400 051. Tel: +91 22 4222 2000 / 6147 8383

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