

Waiting for the Bus
Paying for Mobility in Our Cities
December 18, 2012



1. Why buses?

Buses will play a crucial role in the mobility transition in the big and medium rung cities. Cities need well managed, well organised modern buses that deliver efficient public transport services at affordable rates. In bigger cities that have dedicated city bus service, – not more than 12 -- buses already provide the bulk of public transport services – as much as 40-60 per cent. Most other cities have very inadequate service largely served by inter-state bus routes. Several cities are in the process of either setting it up or planning expansion.

Cities are also setting ambitious target for improving public transport ridership by 2020. Delhi Master Plan targets 80 per cent; Pune city mobility plan targets 80 per cent; Kolkata targets 90 per cent and so on. Bus ridership is expected to provide the bulk of this increase. In Delhi RITES has estimated that conventional buses along with bus rapid transit system will have to be at least 73 per cent to help meet the target of 80 per cent in 2020.

Cities need buses because these allow greater flexibility, greater geographical coverage, cost effectiveness, and space efficiency. New bus routings can flexibly and easily meet the needs of changes in demography and land use in cities. It can also cover areas with lower travel demand. A bus occupies twice the road space taken by a car but carries 40 times the number of passengers. The Paris based International Energy Agency estimates that bus can displace anywhere between 5 and 50 other vehicles and allow enormous oil and pollution savings.

Poor people are most dependent on affordable and cheap public transport to access jobs and services. Urban poor can use up to 25-30 per cent of their income on transportation.

2. Renewal and modernization of bus fleet

Bus fleet requires massive renewal and modernization to make them attractive and comfortable for users. This will need huge investment. Delhi has already initiated a massive renewal process largely triggered by the CNG programme and the subsequent fleet expansion and modernization plan. Cities like Kolkata have also started the process after the High Court ordered phasing out of old buses. Bangalore and Mumbai and other cities are buying new buses as well.

The bus stimulus scheme of the JNNURM programme has catalysed central government investment in bus rolling stock. City governments are also setting aside money to buy buses. The new public transport buses are now expected to meet the urban bus specifications of the Ministry of Urban Development. The type and the size of the buses will vary according to the size, type and priority of cities. But the bigger cities that want large buses are increasingly finding it difficult to buy the desired low floor buses needed for level boarding and make them disable friendly. These buses are very expensive and make capital investment unaffordable. To minimize the costs cities have now begun to compromise on the decision to buy low floor buses and are opting for semi low floor instead. There are now even talks of going back to high floor buses. In Ahmedabad, the bus station height of the BRT has been raised to adjust to height of the buses. Delhi has decided to induct semi low floor buses as well.

Such decisions are detrimental to the overall objective of introducing user friendly and disable friendly buses. But these decisions are being forced on cities as they are finding it difficult to meet the inflated capital costs especially without any back up plan to mobilise additional revenue. Limited supply of buses and few manufacturers are further escalating costs. Cities have failed to do collective bargaining with bus manufacturers.

3. How many buses?

How many buses do cities need? This will ultimately decide the size of the capital investment in cities. There are no uniform established criteria to decide this. There are different conventions. For allocation of buses under the JNNURM bus stimulus programme the Government of India has followed a norm of 40 buses per lakh population for cities with population of 0.5 to 4.00 million and 50 buses per lakh population for megacities with population of 4 million plus. In case of cities that did not possess a bus transport system earlier a multiplier was used for assessing the bus requirement keeping the demand low in the initial years. For assessing vehicle age buses more than 9 years of age or that had traveled for more than 9.5 kilometers (whichever was more) was considered for scrapping.

In 2010 Ministry of Finance and Asian Development Bank's tool kit for public-private partnerships in urban bus transport for the state of Maharashtra, flagged off a set of criteria for deciding bus numbers for cities. According to this a city needs about 60 buses per 1 lakh of population. This is followed as a benchmark for bus services widely – and especially for PPP projects. But this norm is not followed in isolation. A range of other criteria are included. These numbers assume average waiting time of not less than 10 minutes to ensure reliability, bus productivity to be at least 225-275 km, trip efficiency, km efficiency, punctuality with more than 95 per cent confidence, unreliability to be less than 5 per cent and so on. Thus, numbers are assessed in relation to the overall system efficiency to be guaranteed. Experts also point out that if a city has a wide network of BRT and is able to ensure reliable service with minimum waiting time and speed, then the number of buses needed can be reduced and therefore the capital expenditure.

Each city will have to decide the numbers based on these range of criteria. But it is important to assess this properly to optimize capital investment. The National Capital region will require special focus as it would need to develop a regional integral plan for bus transport.

4. Need credible, reliable and quality bus service

Bus reforms and investments are just not about buying new buses but about efficient deployment of reliable and attractive services. Cities require immediate improvement in service level of bus service in terms of frequency, reliability, coverage, reliable information, ITS enabled passenger information service, improvement in ticketing system, bus priority, signaling, GPS enabled deployment strategy, among others. These service conditions will have to be fulfilled. This will also determine the costs. This is also pushing cities towards plans for service improvement. Illustratively, though the formal document is not available, the contract signed between cluster buses in Delhi and DIMTS show a range of services included to guarantee service improvement in terms of minimum trips, kms etc are to be carried out per day. There is not much information on the status of compliance.

5. City bus sector under-performing

There is enormous backlog of losses and inefficiency built over the years. The bus sector is ailing for lack of reforms and fund crunch. This is leading to plunging passenger volumes and poor public transport services in many cities. Though private sector investment has begun, there is no

strategic planning or set timetables to create a dramatic turnaround. This is largely the problem with the older state transport corporations where the burden of inefficiencies has been accumulating over the years without corrective measures. These corporations in big cities will require surgical interventions to put the house and business in order. The new ones will require a fiscal and operational strategies right upfront. Here is a snapshot of the suboptimal performance of the bus transport corporations and the un-uniform performance across cities.

- **Bus users plummet:** Since 2000 there has been a steady decline in bus transport ridership in Delhi. According to RITES bus share has dropped from 60 per cent in 2000 to 40 per cent in 2008. Nationally, public transport share is projected to decline. It is estimated that by 2030, 52 per cent of the total transportation demand in Indian cities will be fulfilled by cars, two-wheelers. This is also reflected in the declining bus load factor -- the number of passengers carried by the buses of the DTC. It has decreased tremendously from 83 per cent in 2001-02 to 71 per cent in 2010-11. Operational inefficiencies, inadequate management, poor reliability, improper NMT facilities have all contributed towards steady erosion.
- **Worsening fleet Utilisation:** Even buses are not fully utilised. The average number of buses that ply on road is less than the average fleet available for plying. The fleet utilisation percentage in Delhi has been less than 80 per cent of the available fleet in any given year. This is declining over the years. According to the performance assessment 2009-10, of the Central Institute of Road Transport, most other cities struggle at an average of 70 per cent. Bangalore, Chennai and Chandigarh ensure over 90 per cent fleet utilization. In Kolkata it is a mere 55 per cent. Quality of service as reflected in the regularity is very good in Bangalore and Chennai; they have high percentages of regularity in their bus service provisions.
- **Not completing scheduled trips:** Passenger volumes plummet if buses do not complete scheduled trips and kilometres per day. There is a difference in the trips scheduled and operated daily. This is just about 80 per cent in Delhi. This largely reflects the congestion on roads. As a result, the buses are not able to complete their scheduled number of trips. In cities like London, the private bus operators are compensated by the city government if they are unable to complete their trips specified in their service contracts due to congestion.
- **Poor maintenance, frequent breakdown and accidents:** Breakdown of buses is a reflection of the state of poor maintenance of buses in cities. Delhi shows high breakdown rate -- 2.3 breakdown per 10,000 effective kms, Pune is higher -- 2.5, Mumbai records 1.3 per 10,000 effective kms. Bangalore and Chennai show better track record. Kolkata has the most number of breakdowns while Chennai has the most number of accidents in both absolute and relative terms showing the poor quality of services while Bangalore is the best in these aspects.
- **Wasted kilometres:** Delhi also records the highest number of wasted kms, of which numbers of cancelled kms dominate. This is largely due to scarcity of crew, inadequate bus numbers on some routes, break downs and accidents. Bangalore on the other hand, has the maximum number of dead kms due to the design of bus depots and stations away from the routes.
- **Bus infrastructure poor:** Availability of good and well designed infrastructure for smooth operation of buses is crucial to attract bus riders. Delhi has the maximum number of bus depots and bus stations. Bangalore and Mumbai have the maximum number of bus stations. Delhi has the advantage of land availability. But its proper utilization for parking, maintenance of buses, workshops and other developments will require aggressive planning. Other agencies in other cities are more land constrained.

6. Staggering costs

The crisis of the bus sector is showing up in the financial performance of the state bus agencies. Almost all state bus companies are incurring huge losses. Overall the total costs that the state bus agencies have to bear is humungous. Amongst the mega cities Delhi's cost burden is the highest. This will require urgent internal rationalisation as well as a well thought out business and financial model to reduce and make the cost bearable, affordable and to improve overall economic efficiency.

The 'per km' operational losses for DTC were Rs.9.96 in 2002-03 which has now increased to Rs. 37.06 in 2010-11 -- almost four times. Per bus cost is the highest in Delhi. Costs per bus are high for Chandigarh and Pune due to the small bus fleet they operate. Mumbai, Bangalore, and Chennai also portray high costs due to the fuel costs and the taxes paid by them. Similar challenges plague the bus Corporations in the NCR as reflected in the data from Haryana cities. Sub-optimal operational efficiency, subsidy burden, and poor financial management undermine revenue generating potential. Most of these agencies have become loss making units. This hampers quality service.

- **Personnel costs:** This weighs down nearly all bus agencies. Internationally, it is accepted that a bus agency should have about 4-5 staff per bus. But this is much higher in Indian bus companies - above 10. Enormous labor cost imbalances the balance sheet of these corporations. If by convention, experts consider four persons per bus as efficient, the DTC employs nearly 40,000 people to manage a total stock of 5892 buses but on road there are normally 5121 buses - a staff ratio of close to 7.8 persons per bus. The salary cost of DTC eats up most of its earnings – This is almost one-thirds of the total costs of DTC. DTC tops the charts due to its excessively high employment of working staff.
- **Staggering fuel cost:** Bus transit agencies are reeling due to high fuel costs which is a very important input of operations. With rising cost of diesel and CNG this cost is substantial and poised to rise further. In Mumbai fuel cost is 18.2 per cent of the total operational costs; in Chennai 29 per cent; in Bangalore 38.6 per cent. Bangalore tops the charts due to the highest fleet of buses. Delhi has a respectably comparable bus fleet but has comparatively lesser fuel costs mainly due to the use of cheaper CNG. But in Delhi the CNG cost has gone up three times since 2002.
- **Poor fuel economy of buses adding to costs:** Another reason why the fuel cost is increasing is the worsening of the fuel economy of the new bus fleet. The Bangalore Metropolitan Transport Corporation has carried out detailed assessment of the trend in fuel economy over time. Their analysis shows fuel economy penalty while moving from Euro II to Euro III technologies. Increase in power, torque, and performance – and without fuel economy norms -- have caused fuel economy penalty. To this is added the problem of idling, frequent acceleration and deceleration on congested roads. This costs huge money to the bus company.

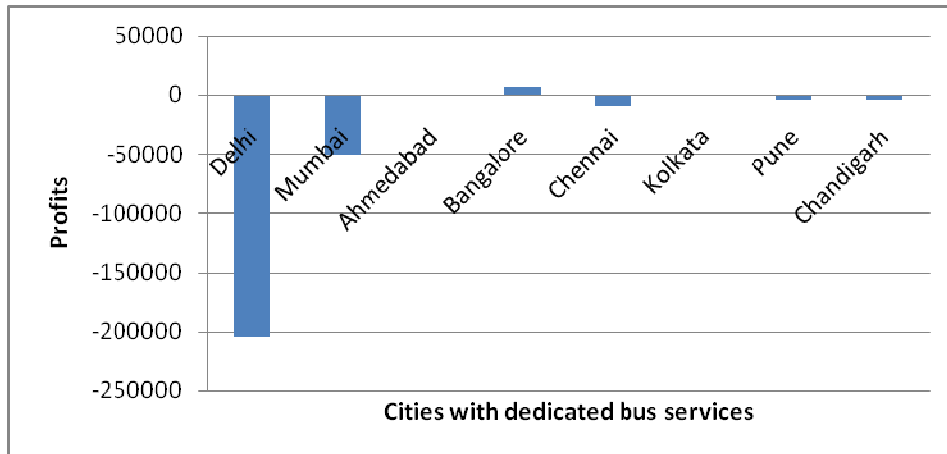
Also within a span of six years, the mileage of DTC buses in Delhi has fallen from 2.88 kms per kg of CNG to 2.63 kms per kg of CNG. New buses are heavier and of higher power and torque. With growing number of vehicles and hence congestion on Delhi roads, the fuel use takes further beating.

- **Material costs:** There is a whole range of other material costs that get added to the overall financial burden. These costs include the costs for spare parts, tyres, tubes, batteries, lubricants etc.
- **Interest payments:** Due to the excessively high loans and contributions taken from the Central and State governments, over time, these agencies like the DTC have to make huge interest payments. To repay these humongous interest payments, they take more loans over time that continues to inflate the interest burden. Delhi has to pay Rs 1679 crores as interest payment. Recently, Government of Delhi has suggested to DTC not to take any more loans but opt for direct transfers from it for its functioning. At present, DTC has also requested interest waiver from the Governments. Earlier, the loans were advanced to DTC at a very high interest rate of 14 per cent which is the reason why it is reeling under huge interest debts at present.

Delhi's costs are being spiked by the excessively high interest payments and personnel costs that is more than 70 per cent of its total costs.

7. What is their earning capacity?

Mostly unprofitable: A broad sweep comparison of earnings shows massive losses. DTC tops the chart followed by Mumbai. The only corporation that shows profit is BMTC.

Figure 1: Profit of state owned bus agencies (in lakhs)

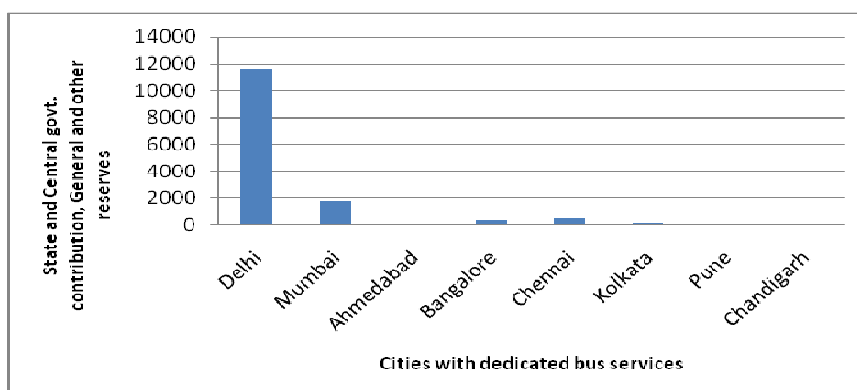
Source: CSE computation based on data from state transport undertakings, profile and performance, 2009-10, central institute of road transport, Pune

Level of earnings varies: There is a wide variation in the quantum of earnings from buses across cities. Bangalore clearly is at the top in terms of total earnings, followed by Mumbai and Chennai. Delhi is fourth and much lower than Bangalore benchmark. This is clearly a reflection of volume of passengers carried and number of buses operated.

The annual numbers of passengers carried are double for Bangalore's BMTTC than Delhi's DTC. During 2009-10 DTC carried 8817.43 lakh passengers as opposed to 15056 lakhs by BMTTC. Bangalore's minimum fares are lower than Delhi -- at Rs 4 as opposed to Rs 5 in Delhi. The maximum in Bangalore at Rs 33 which is higher than that of Delhi at Rs 25. But broadly the range is comparable. Passenger volumes are critical to the business model of public transport.

Government cushion: As state bus agencies falter and make losses government contribution and grants to bail them out. Huge capital investments/contributions are being made by the State and Central government, and from other reserves. DTC survives on a lot of such contributions showing its excessive dependence on exogenous funds and help. Government support is maximum to DTC.

Delhi is certainly an outlier. This city has incurred highest costs in bus sector reforms but has one of the most skewed balance sheets in terms of its earnings. The gap is huge and much higher than any other city of its genre.

Figure 3: Government contribution to bus state agencies (in lakhs)

Heavy reliance on fare box: The only agency that makes profit is BMTC which is primarily due to the most impressive fare box collection that it manages almost every year. About 95 per cent of their earnings are from fare box. And also the way it has started to exploit revenue from other sources. Fare box earning of DTC is 85 per cent of their total earnings. Delhi incurs maximum losses owing to the excessively high costs it incurs and also the poor fare box collection and limited revenue from other sources.

8. There is good news too

Even though the overall scenario is dismal, the revamp and renewal process that has started in some cities show a turn around. The most exemplary is the BMTC that has truly demonstrated the improvement in operations, revenue and earnings and ridership. Delhi, despite challenges, has been able to see the turn around as well.

Improvement in Delhi:

- **Revival of bus numbers:** The average number of buses on road had fallen to all time low of 3444 (but only 2,814 on road) in the year 2006-7. But now this has been augmented to 5892 in 2011-12. Of these 5121 buses are on road.
- **Revival of ridership:** Within a span of one year -- 2010 -2011, the ridership of DTC has increased by 25 per cent. The ridership was falling from 3.1 million in 2005-06 consistently and reached as low as 2.2 million in 2008-09. The turn around happened when it increased to 2.4 million in 2009-10 and reached to 3.0 million in 2010-11.
- **Revival of earnings:** DTC earnings show major gains. During 2005-06 this was Rs 279 crores. This has increased three times to Rs794 Crore in 2010-11.

This gives confidence that if constructive interventions are made to improve bus fleet and operations and infrastructure it will have impact on bus transport ridership which is the ultimate objective.

9. Bus reforms to cost a lot of money

The costs associated with bus reforms are huge. The transport department of Delhi had estimated in 2009 that the desired requirement for bus transport alone would be about Rs.5,444 crores. This includes Rs.1713 crores, for 1500 A.C/Non-AC (excluding 35 per cent assistance under JNNURM) low floor buses; Rs.660 crores for constructing depots; Rs.2666 crores for depots for private operators; Rs 105 crores for improvement of bus terminal and 15 new terminals; Rs.50 crores for Control Room for monitoring of private and DTC bus fleet; etc among others.

This amount is much more than the total transport budget of the Delhi government for the year 2011-12 which is Rs 3348 crore (about 25 per cent of the total plan outlay). This means the investment requirement in the bus sector is 1.6 times the total transport department's budget for one year.

Even bringing private sector is not going to ease matters much for the Delhi government. As the upfront capital investment of rapid purchase of buses to meet the target of 11000 is so huge that it is jacking up overall cost of investments needing enormous gap financing. Private sector is expected to operate 40 per cent of buses in Delhi. In the private cluster bus operations while per km costs are as high as Rs 50-60/km the operating revenue is expected to be Rs 20-25/km. In some of the clusters this could be lowered a bit only after compromising on the requirement of low floor buses that cost more and opting for semi low floor buses. The gap between their earning and costs will have to be filled by the Delhi government. This gap financing can snow ball to Rs 600-1000 crore annually for the Delhi government. In addition to this there is other demand of infrastructure that the government will have to provide.

This therefore demands a well designed fiscal strategy and urban transport fund. But very little thinking has gone into the ways and means of funding bus transport in cities. It is time to set a whole new term of policy debate and seek solutions.

As of now Indian cities do not have clear strategy to mobilise funds for the bus sector. The information on requirement of annual investments and projected investment for bus transport improvement are rarely found. This makes forecast of public transport finances for the bus sector difficult. .

10. How the central government is estimating investment requirement and funding strategy?

The 12th five-year plan of the Union Ministry of Urban Development estimates that the projected investment in public transport that includes all i.e. buses, BRT, rail/guided transit, bus infrastructure (i.e. depots, terminals and workshops), other associated features such as Intelligent Transport System, and Area Traffic Control, parking, institutional development and capacity building can be as high as Rs. 2, 02,628 Crores.

Funding scheme for metro system: The 12th plan document has also proposed a detailed fund mobilisation scheme for the capital intensive metro system. Funding strategy for the metro system has been detailed out in length that includes a wide range of strategy. These include about 20 per cent projects on PPP with 20 per cent viability gap funding from government of India and 20 per cent viability gap funding from state government. For the remaining 80 per cent of projects, the government of India will put in 20 -30 per cent as equity/subordinate debt/grant, 20 per cent from State Govt./Parastatal, 5 per cent from property development, 5 per cent from Developmental Agencies, and 50 per cent as loan from international and domestic financial institutions.

Funding scheme for bus system: For the conventional bus system it has proposed that the Union government will provide the 20 per cent of the fund and the state government and the urban local body will share 80 per cent of the costs. Additionally, for bus rapid transit system, Union government and the state government will share the cost equally. The basic premise here is that bus is a low cost investment and both the state and national government can find the money to support them.

The one big instance in which the central government has picked up the capital costs of bus fleet renewal so far is under the stimulus package under the Jawaharlal Nehru National Urban renewal Mission (JNNURM). But this is a one time grant and there is no medium and longer term plan to design funding strategies for buses on an ongoing basis. One lesson from the JNNURM is that the funding of bus sector must also address financial, regulatory and operational preparedness at the city level. It has therefore become necessary to plan for a public transport funding strategy.

11. Issues for bus funding strategy

Bus fares and fare box collection: As the bus fares must stay within the affordable limit of the urban majority, it is not desirable to recoup the cost of investments mainly from the fare box collection or increased fares. India has an added challenge. Increase in bus fares can trigger immediate exodus to personal vehicles like two-wheelers. The operational cost of a two-wheeler is cheaper than the minimum bus fares – Re1 per km for two-wheelers as opposed to Rs 5 per km in a bus. Cities therefore need to find ways to mobilise resources for bus fleet augmentation and operational reforms and also disincentivise personal transport. At the same time keep bus fares at the affordable levels.

However, DTC would still need to improve the efficiency of the fare box collection based on the existing fares. As of now there are many leakages that will have to be plugged.

12. Buses pay more taxes: reduce this burden:

Bus pays more tax than cars: In Indian cities buses are made to pay more taxes than cars. The World Bank study of 2002 confirms that the total tax burden per vehicle km is 2.6 times higher for public transport buses than cars in India. This trend will have to be reversed to stimulate investment in bus transport sector and also discourage usage of personal vehicles. Limited information available from the cities shows that as per the prevailing tax rates, cars and two-wheelers pay a miniscule amount as lifetime tax whereas bus pays hefty annual taxes.

Bus operations are treated as a mere commercial enterprise and are made to pay heavy taxes. All cities impose motor vehicle tax on vehicles as road tax on vehicles and road/passenger tax on buses. Bangalore pays the maximum taxes due to a very high motor vehicle tax which it pays as

compared to any other city. BEST of Mumbai on the other hand pays a very high passenger tax as compared to any other city. The 12th Five Year Plan estimates that taxation on buses can be as much as quarter of the total costs of bus operations.

In the case of personal vehicles these taxes are imposed on the vehicle at the time of purchase for the lifetime (15 years from the date of registration). In public transport buses these taxes are calculated annually on the basis of the number of passenger carried. Currently, buses are actually penalized for carrying more passengers than cars. This will have to be reversed. Cars that occupy more road space but carry fewer passengers should be made to pay more. In Delhi for instance cars and two-wheelers pay a small life-time road tax, while public transport is taxed every year. Cars pay a tax of Rs 533 annually in Delhi, as compared to Rs 13,765 that buses pay as annual tax. This needs to be corrected and reversed.

- **Bus pays more tax than metro:** Despite being a public transport service buses are made to pay more taxes than Delhi Metro Rail Corporation (DMRC). DMRC is exempted from many of these taxes. Buses pay tax according to ridership which is a very perverse disincentive. Bus agencies pay property, excise, customs, road tax, VAT, motor vehicle tax, advertisement tax among others. If such tax obligations are reduced and waived off, it will certainly help to improve the overall economic efficiency of the operations.

While the DTC pays a lot of taxes both at the centre and the state level, DMRC enjoys a range of exemptions. DMRC enjoys subsidised rates of electricity which are almost half of the commercial rates. The excess of tax exemptions of DMRC over DTC shows the project preferences of the concerned authorities. Substantial amount of the DTC costs can be cut down if the DTC is exempted from all the taxes like the DMRC. This percentage reduction in costs is although nominal in relative costs' terms but substantial in absolute amounts.

- **DTC has narrower revenue base than DMRC.** This undermines self-sustainability of DTC. DTC has only two sources of revenue – fare box and advertisement revenue. Fare box, the major component, is witnessing a marginal increase as bus ridership has reduced by nearly 17 per cent over the last decade till 2007-08 post which a marginal increase in bus ridership has occurred.

Metro can earn from fare box, feeder bus service, consultancy, real estate and commercial development, carbon credit etc. Unless other sources of revenue is explored and enhanced reliance on government subsidies for recouping the net losses every year will continue to increase.

- **Interest rate inequity again in favour of DMRC vis-à-vis DTC:** Until recently, the Delhi Government was providing the loans to DTC at rates as high as 10-14 per cent while at a meagre 1-2 per cent to DMRC. Now the government is buying buses upfront for DTC thereby reducing DTC's capital costs and hence removing any possibility which might lead to a loan requirement by DTC. Even then, the interest liabilities of DTC have compounded manifold over the previous several years to the extent that today the interest debt of DTC forms half of its total cost. Hence, although fresh loans have stopped pouring in, the debt compounded over these years due to such huge interest differentiation that existed until recently against DTC never lets DTC recoup the losses it bears every year. What is even more interesting is the fact that interest liabilities of DTC as of 2010-11 are more than the total working expenditure/operating costs of DTC.

13. Even privatisation needs support in Delhi

Delhi and few other cities have already initiated private sector reforms. Private sector participation helps to secure funding for construction of infrastructure, modernisation, operation and maintenance, delivery of services. This model also helps to share risk and rewards.

Delhi has adopted PPP framework wherein it has classified all bus routes into 17 clusters tendering them to corporate groups. It has also assigned Delhi Integrated Multi-modal Transit Limited (DIMTS) to monitor these cluster buses. As of now, close to 320 buses have been procured under the cluster bus system. Overall 6000 buses are planned to be added in Delhi to achieve a target of 11,000 buses. Overall 60 per cent of all will be operated by the DTC and the rest under cluster system. But this has turned out to a very slow process mainly because of delays in bus procurement by the cluster

bus operators. In fact parking space and depots space for buses is a major cause of hold up. Currently, the cluster buses are plying carrying approximately 2 lakh passengers on a daily basis.

Pressure of government reimbursement: A capital reimbursement of Rs. 55 (for cluster 1) and Rs. 40 (for clusters 2, 3, 4 and 5) per kilometre of operation is given to the concessionaires. This differentiation in reimbursements is due to the cheaper semi-low floor buses that the concessionaire is required to induct on city roads for clusters 3, 4, and 5 as per the PPP contracts as opposed to the dearer low floor buses existing in clusters 1 and 2. These semi low floor buses are not appropriate for the elderly, kids and the handicapped. But the government is trying to bring down its reimbursement costs at the expense of the service comfort of the commuters.

Operational profits and government support: At present, the cluster buses are making operational profits of Rs. 11/km in addition to the capital reimbursements they receive. Unless the profitability of the initial clusters is ensured, it would be tough finding private players who would be interested in such PPP tie ups for the remainder of the clusters. Conditions will have to be created for increased ridership.

Operational performance of DTC vs. cluster buses: The cluster buses are making operational profits while the DTC is running into operational losses. In Vivek Vihar Depot DTC's expenses are 3.5 times the earnings; in Sukhdev Vihar 6.6 times, in Tehkhand depot nearly seven times. But in the case of cluster 1 it is just the opposite. Its earnings are 5.8 times the expenses.

Even in the same bus route clusters are making higher profits than the DTC buses. CSE has compared the revenue of the two in prominent bus routes of clusters and DTC – route number 411, 419, 469, and 522. In all these routes the cluster bus revenues are higher. The cluster bus operations are making operational profits and offering better efficiency at lower costs.

Obligations of DTC affect earnings as well: DTC runs more on unprofitable routes to achieve its social obligations. Out of a total of 657 routes in the city, DTC plies on 400 routes which include many non-profitable routes. The officials say that 'most profitable' routes have been given to the cluster buses. The man power ratio is also higher in DTC. The wages of the DTC personnel are at par with the Central Government. It is claimed that the cluster bus conductors and drivers are outsourced and comparative wage benefits are lower compared to the DTC.

Dead run in DTC is higher which is masked as they portray those dead kilometres as shuttle service. Cluster buses have the flexibility of route changes after the completion of a service on one route so as to save on the dead run. The cluster buses are also parked on roads. Fare revenue collection losses in DTC are much higher than in cluster buses

14. Fiscal strategy

There is no one single bullet to fix the funding strategy for buses. A wide variety of methods will have to be employed for optimal mobilisation of resources. It is now quite clear that in large and old operations the public transport fares will have to be supported by other revenue streams. But a quick review of the revenue of the bus corporations shows other sources of revenue including subsidy/reimbursements or non-traffic revenue like advertisement; commercial development etc is minimal in each city. This goes to show that bus agencies have done little to diversify their revenue base and still mostly dependent on fare box collection. Though earnings are flowing in from these sources its potential has not been optimally exploited. The dependence on fare revenue is very high. About 90-95 per cent of the earnings still come from fare box. But fare box collection can recover much less of their costs.

Fare box is the major share of total earnings: Improve collection efficiency: It is however important to note that while increasing fares is not the answer for reasons of affordability and relative pricing of other modes, it is possible to improve the efficiency of collection of the fares which right now is very poor in many cities.

In some cities like Ahmedabad, cities of Karnataka like Guntur etc have adopted automatic fare adjustment policy. The corporations have adopted a formula that automatically adjusts the fare based

on any change in input cost like fuel costs. This will have to be assessed for the impact on the affordability of the fares, ridership pattern and changes.

14.1. Rationalize and reduce the internal costs

- **Allow DTC to be exempted from all the taxes like the DMRC:** This is a substantial amount in absolute amounts. Removal of dead weight taxes would create financial incentives to invest more into the sector. In order to bring about a fiscal equity among DTC and DMRC, DTC must be exempted from the taxes which are currently exempted for DMRC. This will further cut down losses of DTC. Subsidies to Metro work out to the extent of Rs. 95 per passenger per day
- **Phase out interest payment:** The interest payments constitute half of the current costs of DTC. A gradual phasing out of the DTC interest payments must be initiated as soon as possible. It can target paying a certain amount of interest payment on part of DTC every year and aim at a year till when the interest payments would nullify as no fresh loans are being taken by the DTC. However, the interest burden which keeps compounding every year needs to be nullified. Calculations reveal that with 2030 as the target year, a transfer of fund to DTC/waiver of Rs. 100 crore p.a. would be required by the government till 2030 for a complete phasing out of DTC interest debt. This would reduce the losses of DTC by 72 per cent as stated earlier too. If taxes are also equated over DTC and DMRC, substantial losses can be cut. The Government is also providing DTC with a variable p.a. sum of money (Rs. 600 crore for the financial year 2011-12) for the operational losses that DTC incurs every year.
- **Personnel cost curtailment:** Gradual removal of the over employed staff and adopting measures of outsourcing can act as potential cost cut measures for DTC. With around three-fourths of the losses recouped by merely cutting down on excess costs, the remaining one-fourth of the losses can be recouped by revenue reforms.
- **Improve bus mileage to curb CNG, and hence material costs:** Mileage of buses can be increased by reducing congestion on roads for buses by giving them a priority lane in the traffic throughout the city like the BRT corridor.
- **Administrative and Operational reforms:** Financial reforms, per se, would be inadequate and ineffective if not amalgamated with administrative and operational reforms. Time tables of plying of the buses would be accurate and a success only if there were a mechanism to control the lag or advancement of buses' schedule. One way could be the priority signalling mechanism as already proposed controlling the movement of buses from a central control room which is already in place at Kashmere Gate. Another tool could be city wide BRT lanes. Creation of a control room for an effective time table controlling tool.

14.2. Rationalize the current budgetary allocation to the transportation sector

In Delhi over a period of time budgetary allocation to transport has increased and this sector today hogs close to a quarter of the budget. But for a long time the allocation to public transport was declining. This changed only after the Commonwealth Games and the infusion of JNNURM funds when money came to buy buses.

But it is also clear that spending priorities need to change. If the total JNNURM transport sector fund allocation is considered then close to 80 per cent of the total fund was earmarked for roads and flyovers. This month too Delhi government has sanctioned Rs 2000 crore for road widening and signal free corridors. If the basic approach to road building is changed a lot of money can be released for public transport. .

15. Increase revenue from sources under bus corporations' control

The bus corporations themselves can earn a lot of money from revenue streams that are under their control. The key ones include advertisement and commercial development in their depots and terminals. In fact, in other parts of the world station naming in which people pay to get the bus stops named after their preference – is an important source of income. The potential of each of these strategies should be assessed and realised.

Advertisement revenue: All bus corporations have some space in their infrastructure and their buses to use for advertisement. This essentially involves advertisement as a wrapper on buses, inside buses, on bus stands, depots and terminals and so on. The potential of this has been amply proven by the Bangalore Metropolitan and Transport Corporation.

BMTC charges Rs.3000 per bus per month for advertising with a minimum advertisement period of 3 months. Removal charges of Rs.1, 000/- per bus for every removal. 3 months charges are supposed to be paid as security deposit and up to 3-months charges in advance till end of the current month. Next month's charges are to be paid before expiry of current month. Any delay shall lead to interest @ 2 per cent pm or part thereof. Besides, it may lead to forfeiture of security deposit.

DTC should certainly look at similar opportunity. For aesthetic reasons advertising is allowed only on the rear wind screen glass panel of buses in Delhi. The estimated potential from this source is Rs. 100 crores. However, only Rs. 3 crore has been generated so far, which means that potential of Rs. 97 crore is not being realised¹.

Advertisement at present exists only on bus shelters where the revenue is shared between DTC and MCD on a 50:50 basis. Buses should be added to the cohort of advertising as well wherein the entire revenue would accrue to DTC only.

If JC Decaux that is responsible for advertisement on infrastructure were to provide the total number of bus shelters in Delhi i.e. 350 and considering that the advertising rate on these is Rs. 1, 50, 000 per month. It would generate revenue of Rs 52.5 crore per month from advertising on these bus shelters. From 3200 public rest rooms and advertising rate of Rs. 33,000 per month, the total amount would be Rs 10.56 crore per month. This makes total revenue of Rs 63.06 crore per month. Out of this 15 per cent goes to the MCD. Therefore, the MCD will earn Rs 9.459 crore per month i.e. approximately Rs 113.508 crore per year. If this can be further rationalized to increase the value of the advertising as well as the share of the government this has a higher potential.

Real estate development model of bus depots: The existing bus depots could be developed under a PPP model into a multi level parking for buses along with commercial establishments. The rent from these commercial establishments and also the parking revenue could form essential components of revenue for the DTC. It is not yet clear how the revenue from such ventures would be shared. Often it 20:80 revenue share between the public and the private party is suggested.

Moreover, this measure would induce the people to commute in buses to such depots for shopping thereby promoting public transport use. However, it could also negatively generate a demand for parking space for the private vehicles, in which case in which case private vehicle parking revenue could also form as a potential source of revenue for the DTC. Thus, a separate study altogether is required for such a measure before it can be implemented. This is very strong potential source for the bus corporations.

Allowing commercial development in the land owned by the bus companies in the form of depot or terminals is seen as a big bang buck to fund bus transport. DTC has not shown an aggressive strategy yet for this kind of development. But BMTC has made strides already and there is a learning curve already.

The BMTC has developed Traffic and Transit Management Centers (TTMC) on a PPP basis. TTMCs are developments on BMTC land that include bus service support infrastructure and commercial complexes. Building only terminals and depots on land holding is not optimal – the commercial potential of this land must also be exploited. A private party builds the TTMCs on the land provided by

the government. The commercial revenue helps pay for the support infrastructure itself and can also serve as an ongoing alternate revenue source

Concessionaire in the model agrees to Minimum Development Obligation (MDO) for BMTC (Terminal, Depot, Workshop etc). He provides fixed upfront premium for developing land – 5 yearly installments, dependant on Land Size. After first 5 years, Concessionaire provides annual payments to BMTC. All the remaining commercial revenue goes to the concessionaire. Concession period is 30 years and there is potential for renewal of contract after 30 years.

Potential in Delhi: Applying the same model to the city of Delhi can generate additional revenue for the Urban Transport Fund. We need to find the revenue the DTC will collect if 46 Bus Terminals like the Yelahanka, Bangalore were to be built in Delhi on a PPP Basis. Yelahanka TTMC in Bangalore has an estimated project cost of 375 crore. The bid parameter for Yelahanka TTMC, Bangalore is as follows- Highest quoted Annual concession fee over and above the reserve initial fee is Rs. 2 crores and upfront premium Rs.18 crores.

In building one bus terminal, the government will earn a total of 68 crore minimum over a period of 30 years. This amounts to 2.27 crore annually. So, if 46 bus terminals are built 104.27 crore will go to DTC on an annual basis. Therefore, the TTMCs can go a long way in improving the Bus Services in Delhi. Also, the commercial space can be leased out to shop-owners which will generate additional revenue. The DTC must think of improving upon the design of the TTMCs rather than merely copying them.

16. Mandate for public transport fund

The JNNURM reform agenda has included in its possible reform list a dedicated urban transport fund. It is essentially based on the principle that a wide gamut of transport related revenue sources that already exist in the city including parking and advertisement revenue, motor vehicle taxation, and earnings from other commercial development in the transportation infrastructure like the terminals, bus stands etc should be tapped to create a dedicated fund. This will ensure a steady annual flow of funds to take care of the costs of reforms. To this a fraction of the property taxes from land uses that will benefit from the up scaled public transport system can also be added.

Very few cities have initiated this process so far.

Karnataka State level and Bengaluru and Mysore - City level:

Government of Karnataka approved the creation of such a fund for the cities of Bengaluru and Mysore in 2010. The fund was originally created with an amount of Rs. 10 crores and Rs. 5 crores were sanctioned for the UTFs from State Finance Corporation (SFC) allocations. The Government of Karnataka also approved the setting up of the State Level Urban Transport Fund and sanctioned Rs. 10 crores. The Directorate of Urban Land Transport is the secretariat to administer these funds.

This fund was created with some conditions. DULT, in consultation with other stakeholders such as BBMP, BDA, MUDA, and MCC etcetera shall work to find channels for pumping funds into the UTF. The fund shall be used for the improvement of public transport, non motorised transport, pedestrian facilities, parking infrastructure, etc.

DULT would formulate modalities for funding the State Urban Transport Fund through three sources to start with -- Cess on Motor Vehicle Tax; Cess on taxes collected by Urban Local Bodies; annual amount of Rs. 20 crores would be sanctioned from SFC grants.

In case of other projects, 50 per cent will be borne out of UTF and 50% has to be contributed by the stakeholders. Traffic engineering cell: 50 per cent of the cost will be borne out of UTF. The stakeholders (ULBs, UDFS, Public transport undertakings etc) shall together contribute the remaining 50 per cent. The funds will be released in three installments; the stakeholders will be required to submit utilization certificate and progress reports in the prescribed format to DULT.

Urban Transport Fund - Jaipur

Rajasthan Transport Infrastructure Development Fund (RTIDF) has been created to improve the transport infrastructure. This is also in accordance with the requirements of the JnNURM reforms. The

Government of Rajasthan, Jaipur and Jodhpur development organisations will manage this fund. This fund among others will do viability gap funding. In the initial package it has been decided that financial assistance worth Rs. 10 crores will be given to Rajasthan State Road Transport Corporation, Jaipur City Transport Services Ltd., Ajmer City Transport Services Ltd, to recoup their operational losses. A range of revenue heads has been identified for the RTIDF. These include revenue from an additional tax of 10 per cent on the onetime conventional Rajasthan State Motor Vehicle Tax, 1951 and of 5 per cent on the other taxes; Revenue from green tax on old and new vehicles; Revenue from additional stamp duty; Donations/Contributions from the accumulated fund of the Rajasthan Government; Revenue from Government agencies and NGO's; CSR revenue from industries; Other sources to be identified in due course of time. The Local Self Government will be responsible for implementation and regulation of RTIDF to be done by 75per cent of the fund to be used from the local self government and 25 per cent from transport department.

17. New systems in smaller cities are an opportunity

New city bus transport systems are emerging in other smaller cities. These have an opportunity to stay solvent and economically efficient if planned well from the beginning. In Karnataka for instance, new bus services have been started by the Karnataka State Transport Corporation has started new services in Tumkur, Mysore, Kolar etc.

Experience of these systems is different. Being new and also well managed they do not have a legacy of poor performance and losses. For instance, in Tumkur, a city, city bus service was started in February, 2011. It has set up one depot with 51 buses to do 36 km scheduled km. It is supported by electronic ticketing machine. The cost of this works out to Rs 28.62/km. But their earnings is also Rs 28.82/km. They have low floor buses with destination board and with GPS system.

KSRTC reports 20 per cent modal shift – mainly from para transit. In fact, the major competitor to bus is the 4000 autos. As bus has to compete with the autos they have to ensure reliable frequency and time table compliance. It had cost Rs 18.77lakh/bus

Initially KSRTC had introduced promotional fares of Rs 1 for a year. Thereafter it was increased. They have also adopted automatic fare revision. About 10 minutes frequency is maintained and entire city is covered. They have adopted bus branding – wide doors, with more standing area etc.

They challenge here is not to let losses build up. If input costs go up they have to rationalise their budgetary allocation, fare revisions and find new funds to keep fares affordable.

18. What other countries doing

The global cities are using variety of methods to mobilise resources for funding of public transport.

London:

- **Advertisement revenue:** Advertising contracts have been outsourced. In 2005 Transport for London, the bus company in London, negotiated 10 year contract with advertisement company to advertise on bus shelter in London. The company could sell media space in exchange of maintenance. This led to treble increase in revenue that goes to transport network improvement
- **Congestion tax:** The revenue from congestion tax is invested in improvement in public transport network
- **Prudential borrowing mechanism in UK** – Bus companies have the option of borrowing from the Public Works Loan Board at low interest rates. This has government support.
- **Land value taxation: London Jubilee Line** – In 2005 estimated value of land with 1000 yards radius. The value of this land increased USD 18.8 billion. Had land value tax applied the cost of the scheme would have been covered which is USD 5 billion. Challenges are uncertainty in valuing the increase in value because of transport intervention and separating other influences. .

Mexico:

One US cent per litre of fuel of surcharge to generate revenue for Environment Trust Funds

European countries --

Revenue from vehicle taxes that are imposed on the engine size.

France:

- Bonus and penalty based on CO2 emissions of cars
- Income tax on wage bill of employers to pay for public transport

Hong Kong:

- Earns 3.5 billion from commercial exploitation
- Launched the one-year pilot Transport Support Scheme (TSS) in June 2007 and introduced a series of relaxation measures on 2 July 2008 to provide time-limited transport allowances to eligible job-seekers and low-income employees living in the four remote districts. Provides incentives to people to use bus transport. On the job transport allowance was 600 \$ per month, up to 12 months. This has been replaced by the Work Incentive Transport Subsidy Scheme to help all eligible low-income employees meet part of their travelling expenses. Proving work incentive transport subsidy encourages the employees to use more public transport.

Columbia: Impose betterment levy on the enhanced value

Copenhagen: National government handed over a 600 meter wide and 5 km long of underdeveloped stretch to the city to finance metro construction. After the metro value of land increased, the city sold the real estate at increased prices. This revenue contributed towards 45 per cent of the cost of construction.

19. Way forward for Delhi and lessons for others

- Reduce tax burden on buses
 - Waive off interest payment that is weighing down DTC
 - Rationalise budgetary allocation in the transport sector. A lot of money tied to signal free roads and flyovers that impede bus routes can be ploughed into bus transport. This will release enormous amount of money.
 - Reforms rates and policy of some key revenue heads like advertisement, parking, and vehicle taxation to be able to tap substantial amount of earnings from them.
 - Mandate DTC and bus companies to undertake commercial development in their depots and terminals
 - Apply travel demand management measures to increase taxes on personal vehicles. Use the additional revenue for public transport.
 - The financial instruments that are being thought of for metro financing should also be tapped for buses as well These include land value capture, property taxes and so forth
 - There are many models globally that can be explored like tax on wage bill, station naming, fuel surcharge, congestion tax etc, TDM measures can generate revenue and also ensure increase in bus ridership
 - All future bus agreement and contracts must be based on high quality service level guarantee
-