PPP ARRANGEMENTS IN URBAN TRANSPORT

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• Key models for Road based Public Transport in Urban Areas
• Experience with NCC – Indian Cities, Singapore
• Gross Cost Model – Experience of Ahmedabad, Indore, NCR, Bogota
• Key issues and Challenges of GCC in India
• What do we essentially conclude?
Indian Urban Transport Landscape

- India has 3000 small cities / towns of which about 300-400 need some form of organized public transport
  - Bus based Public Transport traditionally operated by State Road Transport Undertakings in India, with para transit filling in the gaps in high frequency demand and in last mile connectivity.
  - Rail Systems have emerged only over the last couple of decades
  - There is an increasing trend of involving the private sector in provision of these services, ranging from outsourcing of specific services to full transit role.

The key Question is what model of delivery is better, public, or private, under what circumstances and through what models?
Rail Based Systems – Experience with Delivery Models

• Initial Metro systems mostly established thorough Government owned companies, financed through Govt. Equity and Multilateral Debt
  • Kolkata and Delhi Metros
  • Chennai and Bangalore Metros

• Later years have seen emergence of PPP based structures in rail
  • Mumbai Metro (VGF)
  • Delhi Airport Line (Tech components by Pvt Sector, Civil by DMRC)
  • Hyderabad Metro (VGF)

• The large public sector and multilateral presence owing to huge capital intensiveness and limited ability to recover investments

• Later attempts to involve private sector that passed on demand risk has met with limited success

• However rail systems have practice of outsourcing specific services

The public sector delivery model seems to be witnessing a better success rate, primarily owing to well known transit systems limitations of viability, but the search for workable models seems will not end.
Bus Based Transit Systems – Experience with Delivery Systems

- Bus based transit systems primary delivered by STUs, but involvement of urban locals bodies through SPVs an increasing trend
  - Financing and support centered in the urban ministries rather than with transport ministries
- Strong tradition of Public Sector expertise serving certain cities successfully
  - Bangalore
  - Mumbai
  - Ahmedabad
- Later years have seen emergence of PPP based structures in with limited success
  - BRT Systems in Ahmedabad, Indore, Bhopal
  - City Bus Systems in Ujjain, NCR, Surat, Vadodara,
- PPP arrangements have focused particularly in operations and maintenance, but have tended to include rolling stock as well in many cases.
- Public Sector continues to provide large coverage, majority of the investments in buses stops, terminals and depots in most cities

Question marks have been raised on the public sector’s sustained ability to keep delivering and keep investing in system improvements.
Is the Public Sector based transit often unable to deliver?

Bangalore Metropolitan Transport Corporation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Ptrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Vehicles</td>
<td>6686</td>
</tr>
<tr>
<td>Daily Service kms.(Lakhs)</td>
<td>13.30 Lakhs</td>
</tr>
<tr>
<td>No. of Bus trips</td>
<td>79643</td>
</tr>
<tr>
<td>Every Day Traffic Revenue (Rs.Crores)</td>
<td>5.60 Crores</td>
</tr>
<tr>
<td>Daily Passengers Carried Around</td>
<td>4.95 million</td>
</tr>
<tr>
<td>Depots</td>
<td>40</td>
</tr>
<tr>
<td>Staff Employed</td>
<td>36146</td>
</tr>
<tr>
<td>Bus Staff Ratio</td>
<td>5.4</td>
</tr>
<tr>
<td>Fleet Utilization</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>Earnings per Km (2014-15 upto June)</td>
<td>Rs 48.0</td>
</tr>
<tr>
<td>Cost Per Km (2014-15 upto June)</td>
<td>Rs 46.5</td>
</tr>
</tbody>
</table>

BMTC is one of the finest examples of coverage, continued investments, financial sustainability and customer commitment. There are many other examples of public sector entities doing fairly well.
Reasons for involving Private Sector in Urban Transport

• To create capacities
  - Many urban transport authorities do not wish to create legacy systems which create direct and indirect liabilities that generally turned out to be costlier.

• To bring in efficiencies, cost effectiveness, and productivity
  - In the hope of borrowing on private sector’s better record in these areas based on their focus on viability and presence of incentives.

• Given the right set of incentives, private players could respond effectively to the passenger demand and towards high system efficiency.
  - The efficient transportation system would attract higher ridership.
  - Subsequently the operations might generate surplus funds.
  - Assures sustainability of the urban transportation system.

• In general, a sustainable project with Private Sector Partnership would allow the implementing agencies, especially Urban Local Bodies, to spare funds for other developmental works.

Give these hopes, has the involvement of the private Sector been successful?
Many issues regarding inability of PPP models to sustain seem to relate to the model, but merely tweaking with the model too may not be enough, as there are other fundamental issues.
Is it the choice of the model, or something deeper? .......

- Public Sector is not always non productive
- Private Sector involvement has not always delivered.
- Is the issue with the model? (or something more?)
- Let us look at some models in vogue for PPP in Bus Operations
Key models for Road based Public Transport in Urban Areas

The concessions for bus services are generally awarded through variants of 1) Net Cost Contract (NCC) or 2) Gross Cost Contract (GCC). Hence these two arrangement are discussed further.
Key models for Road based Public Transport in Urban Areas

**Service Contracts**

- **Gross Cost**
  - **Route Based**
  - **Area Based**
- **Net Cost**
  - **Route Based**
  - **Area Based**

**Kilometerage Cost**
Operator states the unit costs of the service (cost per km, per hour or per vehicle day)
- Ex. Helsinki (Finland)
- Ex. Goteborg (Sweden)
- AMTS
- JANMARG
- SITILINK
- BOGOTA
- Delhi – DIMTS

**Minimum Cost**
Operator states the whole cost of operating the contract
- Ex. London (before 1993)
- Ex. Santiago (Chile)

**Cost per Passenger**
Operators are repaid based on the cost per passenger

**Min. Subsidy/Max. Premium**
Operators states minimum subsidy required or maximum premium offered to the authority
- Ex. London (after 1993)
- Surat, Rajkot, Amritsar, Vadodara, Jodhpur, Delhi-Blue Line, and many others
# Experience of Indian Cities with NCC

## Few Cities

<table>
<thead>
<tr>
<th>Cities of Madhya Pradesh</th>
<th>Cities of Rajasthan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ujjain</td>
<td>1. Kota</td>
</tr>
<tr>
<td>2. Indore</td>
<td>2. Jodhpur</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cities of Gujarat</th>
<th>Cities of Punjab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rajkot</td>
<td>1. Jalandhar</td>
</tr>
<tr>
<td>2. Vadodara</td>
<td>2. Ludhiana</td>
</tr>
<tr>
<td>3. Surat</td>
<td>3. Amritsar</td>
</tr>
</tbody>
</table>

## Status

- Most of the cities had Single bidder hence competitive selection was not possible
  - Cities like Ludhiana and Amritsar didn’t receive any proposal in the first attempt. Ludhiana moved to GCC while Amritsar got only two proposals in second attempt after many relaxations in RFP.
  - Many of the NCC projects are either closed or early terminated OR
  - The systems are not expanded since start of commercial operation

## Possible Reasons

- Non viability of the operation due to low fares and inadequate fare revision
  - Lack of effective monitoring therefore schedules and routes were not followed properly
  - The unviable routes were surrendered hence urban transportation was not available in developing and peripheral areas
  - Owing to low operational viability systems were not expanded nor buses were maintained led to poor passenger demand
Singapore’s Transit companies operator on Net Cost, and fares are revised according to a fixed formula that includes fuel and consumer inflation.

Slow response in the improvement of service standards:
- Operators losing money
- Operators were hesitant to add new buses and invest in capacity improvements
- Unprofitable services did not receive improvements

Operating Licenses for SBS Transit & SMRT expire on 31 Aug 2016

The Government has decided to move to a new “Government Contracting Model”
Singapore’s New Government Contracting Model

• Land Transport Authority (LTA) to own all bus assets: Buses, bus depots, bus interchanges and fleet management systems

• LTA decides on bus services to be provided, and the service standards which operators have to meet (Similar to Gross Cost)

• Bus operators will bid for bus route packages through a competitive tendering process, and be paid a fixed fee to operate the bus services. Running costs are separately considered and will be paid fully by the Government.

• All fare revenue will be retained by the Government and to ensure the affordability of public transport fares

• Operators role will be to solely to provide bus services in accordance with LTA service standards

• Operators will have to fulfill service standards as determined by LTA:
  – Performance as measured by Excess Wait Time (EWT)
  – Quality of Service (QoS) Standards
Successful examples:

- London - Bogotá - Ahmedabad – New Delhi - Indore
Ahmedabad BRTS – GCC model

• Total Fleet of around 105 buses in operation. Contracting done under two different models for two lots of buses (70 buses and 35 buses)

• 70 specially designed diesel buses (+10% standby) under Gross Cost Contract for 7 years

  • Bus designed for the BRTS and Specifications detailed in the bid.
  • Buses owned and financed by the operator
  • Bus provider paid on per km basis with minimum assured kilometres of 72000 km per year (200 km per day) per bus.
  • Fare Collection done by Janmarg directly. No fare collection responsibility by operator
  • Penalties for non performance in terms of availability, punctuality, cleanliness of buses, and maintenance
  • Per km Rate revision effected based on formula *
  • Payment @65% of Km rate for non used km and @85% of Km rate for Km operated in excess of 200 km.
  • Depots Provision and its maintenance part of the contract.
  • Contract extended for another 50 AC buses to meet the need created by newly extended corridors
Indore BRTS AICTSL – GCC model

- **Operation and Maintenance of 50 AC buses** on GCC basis for a contract period of 5 years renewable for additional 3 years.
- Buses to be procured and provided by the AICTSL.
- At the end of the Contract period, Buses to be auctioned and sale proceeds to be divided between the AICTSL and operator in the ratio of 60:40.
- Fare Collection responsibility is with AICTSL.
- Guaranteed Km – 6000 km per month
- Payment on per KM operated basis.
- Payments above guaranteed km @ 75% of rate
- Payments for non operated km @ 65% of rate.

Mechanism for revision of hiring cost through the contract period

<table>
<thead>
<tr>
<th></th>
<th>Regular Buses</th>
<th>AC Buses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Charges</td>
<td>35%</td>
<td>50%</td>
</tr>
<tr>
<td>Other Variable O&amp;M Charges</td>
<td>65%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Changes linked to fuel price change in same proportion (effected monthly)

Changes linked to changes in Wholesale Price Index (effected annually)
Private Stage Carriage Operation (Cluster), Delhi – GCC model

- Transport Dept, GNCTD followed a cluster based approach for provision of city transport in Delhi by hiring in buses from a concessionaire on Gross Cost Contract Basis.
- Total 9 cluster tendered out. Each cluster represented on an average around 250-300 buses. Total Buses 2465 with ratio of Non AC to AC buses of 80:20.
- GCC Model
  - Procurement, Operation and Maintenance of Euro 4 CNG buses for ten years in one cluster against payment at fixed rates.
  - Qualified bidder submitting quoting lowest “Consolidated One Year Fee “ (CYOF) to be preferred bidder.

<table>
<thead>
<tr>
<th>Charges on Annual Basis</th>
<th>Multiple (A)</th>
<th>Rate quotes (B)</th>
<th>Amt .(Ax B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Charge</td>
<td>No. of buses (231)</td>
<td>Rs/bus</td>
<td>C</td>
</tr>
<tr>
<td>Consumables</td>
<td>Service Km&lt;br&gt;(approx 230 km pbpd, 340 days pa)</td>
<td>Rs/km</td>
<td>D</td>
</tr>
<tr>
<td>Manpower/Overheads</td>
<td>Service Hours per year (approx 16 hrs pdpb,)</td>
<td>Rs/hr</td>
<td>E</td>
</tr>
<tr>
<td>Total CYOF</td>
<td></td>
<td></td>
<td>C+D+E</td>
</tr>
</tbody>
</table>
Private Stage Carriage Operation (Cluster), Delhi – GCC model

Payment on Monthly basis
Mechanism for revision of hiring cost through the contract period

- **Capital Charge**: Remains Unchanged
- **Consumable**: Weightage of CNG to Other Cost in the ratio of 70:30. Changes linked to fuel price (i.e., CNG) change in same proportion AND other Consumable linked to changes in CPI
- **Manpower**: Changes linked to changes in CPI – IW in Delhi area
Bagota Model is Higher Version of GCC. The entire revenue generated from the system is distributed among the vendors in proportion to their operational costs through an Escrow arrangement.

The Payment System in Bogotá is broadly as follows;

- **Determination of Technical Fare**: Total System Cost per km / Estimated passengers per km.

  *Total System Cost would include bus operation cost (Trunk + Feeder lines), ITMS cost and Fare Collection Cost.*

- Technical Fare is paid to operator on per km basis and is revised every six months

- Actual Fare = Technical Fare to start with

- Revision to Technical fare is based on two components

  - Change in Inflation of fuel, consumables and Minimum wages decreed by the Govt. from time to time

  - Change in ridership levels for which, for losses in ridership upto a point, actual fares are revised to recoup the loss in system revenue

- The risk of change in ridership levels up to a point is thus shared by the operator.
The Bogotá Model is highly dependent on accuracy of the estimation of levels of ridership which is sometimes not possible in the Indian Context.
Incentives as per the contract

**Reliability Performance Payment**
- Increase or Decrease of payment on scale of
  - Every 0.10 min. change in the Excess Waiting time on High Frequency Routes and
  - 2% change in Percentage on time on Low Frequency routes
- Bonus 1.5% of contract price for above standard
- Deduction 1% for below standard
- Cap of 15% and 10% of Bonus and Deduction

**Contract Extension**
- Operator is entitled to an automatic two year extension of the contract if it meets or exceeds the reliability “Extension Threshold” criteria set in the tender documentation for that route.

**Quality Performance Payment**
- Second Generation of payment scheme based on
  - Driving Quality (Including Customer Service)
  - Presentation of Vehicle
  - Secret bus travels
  - Vehicle inspection
- Score for each parameter leads to payment and deduction
There are issues with GCC also!!

Financial Constrains of the Implementing Authority

• Make timely payment to Bus Manufacturers and to the Bus Operator. The issue can be mitigated through
  • Frequent and systematic fare revision
  • Creation of Escrow Accounts
  • Creation of Urban Transport fund at State Level and City Level and..
  • Operational Viability Gap Funding through Land Value Capture and other instruments

Service Tax

• Almost the full amount of Km charge would attract Service Tax, increasing the load.
  • Fuel Supply by SPV may reduce the burden but institutional capability to deliver fuel will have to be developed

Infrastructure Support by the Authority

• Depot / Parking Space at right place is important to reduce dead kms.
Issues with GCC .. (Cont..)

Supervision and Monitoring Capacity

• Poor contract management and monitoring from the Authority
  • Building capacity of the institution by recruiting professionals for supervision of various functions of the bus system
  • Introduction of Technology for better monitoring ;
  • Effective contract management
  • Appoint Independent Agency for monitoring & penalty clause implementation

Establishing Right Size of Operations

• Authorities are grappling with the idea of having one or more operators and size of operations with each

Potential Regulatory Capture

• Running of Buses will need to be optimized with demand , avoiding running of empty buses
What do we essentially conclude?

• The issue is less about the model. It is about doing everything first that will create the conditions within which the model will succeed.

• Private Sector can be brought on board only if incentives to perform obligations, impartial contract enforcement and supportive business environment are ensured.

• Fare Income will not be enough. Hence some form of grant is inevitable. Question is how to link it to performance and index it.

• Capacities in both public and private sector are limited and need support.
thank you...
Examples: London City Bus Service – Quality Incentive Contracts

Roles and responsibilities of TfL and Operator

**Transport for London**
- Determines and runs the tendering programme
- Determines the route and specifies the frequency
- Sets and monitors quality and safety standards
- Sets vehicle capacities and minimum standards
- Agrees the schedule prepared by the operator
- Sets fares and retains the revenue
- Supplies and maintains ticket machines
- Radio and vehicle tracking equipment
- Provides and maintains bus network infrastructure
- Provides roadside staff to deal with diversions and major incidents 24 hours a day
- Markets the bus services to the public
- Manages liaison with local authorities and other stakeholders
- Coordinates public customer service contacts – complaints, comments and compliments
- Invests in major network and infrastructure projects.

**Operator**
- Develop timetables, schedules and staff rotas – timetables must be agreed with London Buses
- Provide and maintain premises and vehicles
- Recruit, train and manage sufficient staff of a suitable calibre
- Manage the day to day operation of routes
- Provide day to day supervision of routes, to maintain quality and deal with disruption
- Control the use of passes and collect any cash revenue on buses
- Comply with UK statutory and regulatory regimes, including Operating Licenses
- Provide data that is reasonably required by London Buses.

It can be seen that the Gross Cost Contracts have been successfully implemented across the globe however the model has certain challenges in Indian Context.
London City Bus Service – *Quality Incentive Contracts*

- After decentralization of London Bus Limited in 1985, the city bus service was operated through Gross Cost Contract

- The operators were selected on the basis of all the costs required to operate the specified service, including vehicle, staff and overhead costs, and London Transport retained the fares revenue

- In 1995, London Bus Limited and its 13 subsidiaries were privatized. The Net Cost Contract was introduced.

- Earlier, to allow for a controlled programme of tendering, until all routes were tendered the subsidiary companies of London Bus Ltd. were funded by a “block grant“ agreement to cover the net cost of those services.

- Eventually the Block Grant agreements converted into the Net Cost Contract. Revenue risk was transferred to the privatized subsidiaries and other private players with incentive to generate more revenue by increasing the quality of the service provided.

- In 2001, Quality Incentive Contracts were introduced to replace Gross Cost and Net Cost contracts as routes were tendered. These contracts are a development of previous contracts, but with direct financial incentives for operators linked to the quality of service.

- The new model is extension of the previous GCC Model
London City Bus Service – *Quality Incentive Contracts*

**Key features of Quality Incentive Contracts**

- Contracts are designed to provide incentives to operators to improve quality.

- Routes are generally tendered individually, but often at the same time as other routes in the same area to facilitate service changes.

- Contracts are normally for 5 years, with a potential 2 year performance related extension available to the operator.

- It is a continuing programme of tendering, with between 15% and 20% of the network typically tendered each year.

- Tender evaluation is based on best value for money, taking into account quality and safety as essential features.

- Contract payments are related to the mileage operated and overall reliability of the service.

- Comprehensive quality measurements are used across all aspects of delivery.
Ahmedabad BRTS – GCC model (JnNURM Buses)

- **Model 2**: 35 CNG buses procured by AJL under JnNURM under Gross Cost Contract
  - Operations and Maintenance Contract with Operator for 5 years
  - Per km Rate revision effected based on same formula *
  - Operator to pay Janmarg capital cost of the bus per month divided over the contract period (Rs 29 lakh / 60 months)
  - Buses transferred to Operator on completion of contract
Ahmedabad BRTS – GCC model

* Rate Revision = Fuel Price Adjustment + Other Cost Adjustment

Revision in Rate due to Fuel Price Adjustment
= Value of Fuel price component in the fare x % Change in Fuel Price
(Revision applicable at the end of the month in which fuel price changes)

Revision in Fare due to Other Cost Adjustment
= Value of Other Cost component x % change in WPI x 1.2
(Revision applicable annually)
**Ahmedabad BRTS – GCC model**

**Penalties and Incentives**

- AJL has provision for Penalties in terms of deductible kms. The incidences for penalties are well defined.

- The agreement also provides mechanism for incentives also

**Provision of infrastructure**

- Authority Provides Depot and Parking space to the Operator
Ahmedabad City Bus Services through AMTS – GCC model

First Version of GCC introduced in 2006

- Total of 400 City Buses were contracted on procure, operate and maintain basis to private operator on GCC basis for a contract period of five years.

- On board Fare Collection done by AMTS deployed fare collection staff. No fare collection responsibility by operator.

- Payment of Fuel charges based on predetermined fuel efficiency (i.e. emilege) during the tendering stage. (i.e 3.60 km/ kg for CNG and 3.40 kmpl for Diesel buses).

Second and Third Version of GCC: The new system has been replaced with new system where in payment to be made based on per KM charges and rate revision based on formula specified.
Key Advantages and Disadvantages of GCC

**Advantage**
- Operator’s protected from revenue risk and fare revision (political) risk
  - Wider appeal for bidders, may attract larger number of bidders
- Authority’s full control over selection of routes and bus frequency
  - Route optimization through balance between profitable routes and popular demand
- Authority collects the fare revenue
  - Authority retains surpluses, if any
- Authority has greater control over performance
  - Incentives (bonus)/penalties for operator through service quality and performance

**Disadvantage**
- Exposure to revenue risk
  - Will need high financial commitment from Authority to cover operational losses if any
- Stalled expansion of bus services in case of non viability of the operations
  - The uncovered area of the city shall suffer from emergence of unorganized para-transit
    - In case of such area is provided bus services through another mechanism like Net Cost Contract, issues like integration, fare concession etc shall surface
- Higher administration and monitoring cost
  - Arising from need to curb revenue leakages, preparing and monitoring operations schedule, monitoring of bus maintenance and operations (Need for automatic fare collection )
Net Cost Contract (NCC)

NCC provides greater flexibility to the Implementing Agency as all the risks except procurement, are transferred to the Private bus operator. Sometimes Private players offers premium for bus operations.

In such situation Authority gets less interested in capacity building hence the monitoring and contract enforcement/management remains ineffective.

Urban transportation exists in abusive manner.
### Key Advantages and Disadvantages of NCC

**Advantage**

- **Revenue/ traffic risk and operation risk are transferred to the Service Provider**
  
  *Incentivizes the service provider to increase revenue by attracting ridership*

- **Limited financial commitment/ Steady income to the Authority**
  
  *Required to provide fixed amount of VGF Or Receive Premium from Route Concession*

- **Limited Administration cost**
  
  *As all bus operation functions are to be performed by the Operator*

- **Advantage to Operator as he has some flexibility to modify/ change/ close routes and frequency**
  
  *For operation sustainability*

**Disadvantage**

- **Dis-incentivises the operator in the event of operational viability issues**
  
  *Transferred risks may lead to lower number of bidders*
  *Fare revision concerns*
  
  *Operator may be tempted to reduce costs through poor service quality / avoiding loss making routes*

- **Lack of contractual enforcement**
  
  *As the revenue accrues directly to the service provider, fines and damages are difficult to collect in case of poor services and default in contractual terms*

- **Possibilities for consolidation/ carteling in case more than one operators are appointed**
  
  *Creates informal cartel to operate buses to increase bargaining power*
Recent Attempts in PPP in Bus: Issues

- Change in the routes by the operators from the original routes
  - Original routes found unviable
  - No service on unviable routes

- Overcrowding of passengers in peak hours
  - Underestimation of fleet size
  - No mechanism for increasing the fleet size
  - Adverse for the image of public transport

- Non-adherence to the schedule & routes
  - Lack of effective monitoring
  - Lack of confidence among the commuters

- Low level of participation during bidding
  - High risk anticipation
  - Operators only for viable routes, Monopoly in service

- Poorly maintained buses
  - Lack of infrastructure
  - Image of the system affected
  - Life of buses goes down

- Absence of dedicated top level management
  - Necessity not appreciated
  - Lack of ownership of the overall system

- Skeleton Staffing in the SPV
  - To prevent situation of STUs
  - Non-delivery of regulatory functions

- High risk anticipation
  - Life of buses goes down

- Necessity not appreciated
  - Life of buses goes down
### Responsibility Matrix under various Implementation Models

<table>
<thead>
<tr>
<th>Functions</th>
<th>Model -&gt;</th>
<th>Open market with regulations</th>
<th>NCC</th>
<th>GCC</th>
<th>Monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement of Vehicle</td>
<td></td>
<td>P</td>
<td>P or G</td>
<td>P or G</td>
<td>G</td>
</tr>
<tr>
<td>Bus Operation</td>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>G</td>
</tr>
<tr>
<td>Bus Maintenance</td>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>G</td>
</tr>
<tr>
<td>Route planning and scheduling</td>
<td></td>
<td>P</td>
<td>P and G</td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
<td>-</td>
<td>G</td>
<td>G</td>
<td>G</td>
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<tr>
<td>Fare Collection</td>
<td></td>
<td>P</td>
<td>P</td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td>Fare Fixation and revision</td>
<td></td>
<td>P and G</td>
<td>G</td>
<td>G</td>
<td>G</td>
</tr>
<tr>
<td>Provision of Infrastructure</td>
<td></td>
<td>P (if required)</td>
<td>G</td>
<td>G</td>
<td>G</td>
</tr>
</tbody>
</table>

**P:** Private Players  
**G:** Government Agency
## Rail Based Systems – Public Sector Models

<table>
<thead>
<tr>
<th>Project</th>
<th>Length (Km)</th>
<th>Status</th>
<th>Total Project Cost</th>
<th>Govt. Equity</th>
<th>Multilateral Debt</th>
<th>Other Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kolkata Metro (N-S Corridor)</td>
<td>16.5+8.7</td>
<td>Operational</td>
<td>NA</td>
<td>100%</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Kolkata Metro (E-W corridor)</td>
<td>13.74</td>
<td>Under Implementation</td>
<td>4676</td>
<td>55%</td>
<td>45% (JICA- ODA)</td>
<td>Nil</td>
</tr>
<tr>
<td>Delhi Metro (Phase 1)</td>
<td>65.1</td>
<td>Operational</td>
<td>NA</td>
<td>30%</td>
<td>60% (JICA- ODA)</td>
<td>10% Sub debt by GOI</td>
</tr>
<tr>
<td>Delhi Metro (Phase 2)</td>
<td>82.11</td>
<td>Operational</td>
<td>NA</td>
<td>44% (Equity capital, Internal Accruals, Property Development)</td>
<td>46% (JICA- ODA)</td>
<td>10% Sub debt by GOI</td>
</tr>
<tr>
<td>Chennai Metro</td>
<td>45</td>
<td>Under Implementation</td>
<td>14600</td>
<td>30% (15% GOI and GOTN each)</td>
<td>59% (JICA- ODA)</td>
<td>11% Sub debt by GOI and GOTN</td>
</tr>
<tr>
<td>Bangalore Metro</td>
<td>41.7</td>
<td>Under Implementation</td>
<td>8156</td>
<td>30% (15% GOI and GOKN each)</td>
<td>45% (JICA- ODA)</td>
<td>25% Sub debt by GOI and GOKN</td>
</tr>
</tbody>
</table>
## Rail Based Systems – Private Sector Models

<table>
<thead>
<tr>
<th>Projects</th>
<th>Concessionaire</th>
<th>Project cost</th>
<th>VGF</th>
<th>Revenue Share (pa)</th>
<th>Means of Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi Metro Airport Express Link (Revenue Share Model)</td>
<td>JV of Reliance Infrastructure Limited of India and Construcciones y Auxiliar De Ferrocarriles (CAF) of Spain</td>
<td>Total Project Cost = Rs. 5700 crore. Cost for the concessionaire: Rs. 2800 Crore</td>
<td>Nil</td>
<td>Approx Rs. 51 Crore pa and 1% to 5% share in gross revenue</td>
<td>30% Equity 70% Debt 17.25 years Term loan by consortium of 8 banks lead by Axis bank</td>
</tr>
<tr>
<td>Hyderabad Metro (VGF Model)</td>
<td>L&amp;T Metro Rail (Hyderabad) Ltd.</td>
<td>16378</td>
<td>1458</td>
<td>(9% Total Project Cost)</td>
<td>21% Equity 70% Debt (Rs. 3440 Crore) (Rs. 11480 Crore)</td>
</tr>
<tr>
<td>Mumbai Metro - VAG Corridor (VGF Model)</td>
<td>Mumbai Metro One Pvt. Ltd. – Joint Venture of Reliance Energy Ltd and Violia Transport of France</td>
<td>2356</td>
<td>650</td>
<td>(28% of the Total Project Cost)</td>
<td>22% Equity 50% Debt (Rs.513 Crore) (Rs. 1194 Crore)</td>
</tr>
</tbody>
</table>

1. DMRC Website
2. World Bank PPI update note 39. September 2010
4. Press release by L&T Metro Rail (Hyderabad) Limited on April 05, 2011