Financing options for low-carbon transport development in Asia

Decarbonizing Transport Sector towards Net Zero by 2050 @ High-Level 14th Regional Environmentally Sustainable Transport Forum in Asia

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Inadequate urban bus service supply

Currently, the bus sector in India is lagging behind other modes. It is not developing either in capacity or quality and is losing market share. This is happening throughout India, indicating fundamental problems in the overall framework rather than weaknesses in individual States.

- Major supply gap
- Low quality of services
- Low fleet growth
- Limited public resources for scale up

Bus provision is 1/3 to 1/5 of needs in cities

Aging fleet with limited customer focus

Growing at half of competing modes

Public operators on survival mode
Potential Impacts in numbers

A full program that would scale up urban bus service delivery by adding 150,000 buses, would have a large impact across all sustainability metrics.

(a conservative reduction factor of 30% compared to existing average STU ridership value is applied)

- **Improved mobility**: A fleet of 150,000 urban buses can deliver 86 million daily trips or 320 billion passenger kilometres per annum, at a cost lower by 63% than the alternative, saving **US$12 b** per annum.

- **Efficiency**: Over **US$8.4 b** per annum in vehicle operating cost savings
  - Postponed infrastructure upgrade (better use of road space)
  - **4,700 million** fewer litres of fuel consumed per annum

- **Safer mobility**: **8,400** fewer lives lost in road accidents per annum

- **Greener transport**: **6.5 million tons** of CO2 emission avoided per annum
  - **8,900 tons of PM** emission avoided per annum

- **Private investments and employment**: **US$15 b** in private investments in buses
  - Over **780,000 jobs** in the service industry
Key Required Shifts
Refocus from bus purchase to bus services with sustainable funding

Historically, the dialogue of agencies and operators has focused on the need for more buses. While buses are undersupplied, buying more buses does not address the sustainability question, as bus capital costs are a small percentage of overall lifecycle costs. Sustainability requires a refocus towards bus operations and on the cost of service delivery compared to revenues.

Bus cost is less than 10% of total operating cost over a 10 year period
Salaries for the crew account for a majority of the total cost
Average recovery of cost via ticket collection

Need for viability gap financing (VGF) to ensure buses purchased can be operated throughout life-time
Improvement of Public Transport

Roadmap for State Urban Bus Program (SUBP)

Key questions and process to follow to design an urban bus program and determine the level of support required under a SUBP.

Focus on key requirements: customer needs, economic efficiency and sustainability.

1. Define the vision for the State detailing the level and design of bus service to be provided across different tiers of cities.

2. Evaluate the mode of delivering bus services i.e. share of in-house and outsourced.

3. For in-house operations, consider efficiency measures to increase utilization and reduce costs (conductor less - flexwork)
   For outsourced services, adopt best-in-class practices to generate private sector interest
   Develop driver availability through training to align salary increase with inflation.

4. Evaluate total viability gap funding required based on cost of achieving vision based on model of delivery.

5. Identify current and new sources of revenue to balance VGF requirements on a sustainable basis. If required, iterate on vision and business model to achieve balance and finalize Long Term Funding Mechanism.

6. Announce state policy and program, put in place fare policy, funding mechanism, State Technical Directorate, arms-length arrangements with STU; and empower cities.
## Opportunity from bus to e-bus

### Impact of adding 1000 Urban buses

<table>
<thead>
<tr>
<th>Improved mobility</th>
<th>600,000 daily trips or 2 billion passenger kilometres per annum, at a cost lower by 63% than the alternative, &gt;&gt; saving users INR5600 cr for 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>Postponed infrastructure upgrade (better use of road space) 310 million fewer litres of fuel consumed for 10 years</td>
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<td>Safer mobility</td>
<td>560 fewer lives lost in road accidents for 10 years</td>
</tr>
<tr>
<td>Greener transport</td>
<td>400,000 tons of CO2 emission reduction over 10 years 590 tons of PM emission reduction over 10 years</td>
</tr>
<tr>
<td>Private investments and employment</td>
<td>INR700 cr in private investments in buses Over 5,200 jobs in the service industry</td>
</tr>
</tbody>
</table>

### Impact of adding 1000 e-buses

<table>
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<tr>
<th>Improved mobility</th>
<th>Similar but not impacted by future fuel price increase</th>
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<tbody>
<tr>
<td>Efficiency</td>
<td>Save 600 million litres of fuel over 10 years [AC option]</td>
</tr>
<tr>
<td>Safer mobility</td>
<td>Similar</td>
</tr>
<tr>
<td>Greener transport</td>
<td>600,000 tons of CO2 emission reduction over 10 years [including grid] [AC option]</td>
</tr>
<tr>
<td>Private investments and employment</td>
<td>INR1600 cr in private investments in buses and accelerate industry development</td>
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</table>
Challenge

Addressing the viability gap for urban buses
INR 14.6 per km

Urban bus services by STU ran an average deficit of INR 14.6 per km pre COVID ex interest (CIRT 2017-2018)

Addressing TCO GCC gap between electric and diesel buses
INR 13 per km

Estimated GCC Cost for 70,000 km per year intracity

*Value varies (Spotech/Steer 2021)

Beyond the CAPEX Support, OPEX Support is needed

Min INR 1 Crore per bus (real term)
70,000 km*10 year*15INR

Cost (ex interest) | Revenue
76.8 | 62.1

e-bus no subsidy | Diesel BS VI (diesel at 65 INR/L)
With subsidy | 95 | 82
Unlocking E-Bus through bankable solutions

Leverage the detailed work by World Bank Group and address those in up to lighthouse cities at scale prior to replication

**Contracting**

1. **Sound contracting**: Enhance procurement/MCA: Costs - 10%
2. **Scale**: Purchase at scale/unbundled models: Costs - 10%
3. **Good planning**: better use Revenues + 10%

**Lower Risk to banks** to reduce capex financing cost (2%) (e.g. World Bank Group instruments)

1. **Payment Security**: Guaranteed payments (who pays? mechanism)
2. **First Loss Facility**: In case of loss on loans for buses under FAME II contracting with CESL, coverage of [20%] of Loss

**Financing**

Lowering VGF (including fuel costs) from 29 to 6.5 INR/Kms

- Conductor: 7
- Unbundled: 10
- VGF: 6.50
- Revenue+: 66
- Revenue: 60

<table>
<thead>
<tr>
<th>Fame II</th>
<th>MCA+</th>
<th>Unbundled</th>
<th>VGF</th>
<th>Revenue+</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.5</td>
<td>15</td>
<td>7</td>
<td>6.5</td>
<td>66</td>
<td>60</td>
</tr>
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Key Assumptions: [to be tailored for each city]

- Average daily distance travelled is assumed to be 200 km per day (347 days per year)
- For EVs, no road registration fee is assumed for computation of EVs
- FAME-II incentive of INR 20,000 per kWh of battery capacity is taken into consideration
- State Govt incentive of upto INR 10,000 per kWh of battery capacity is taken into consideration
- Debt to equity ratio of 80:20 is assumed with post tax ROE of 14% and interest rate of 10%
- MCA+ and Unbundled, Revenue+ based on World Bank (2021)
Technical assistance to set up procurement and contract management system
Transaction advisory support to the Authority / State Government
Pilot e-bus program using early-stage development product

Technical assistance in policy formulation and system development (vision for mobility, sector funding, effective procurement) at scale; policy lending

Technical assistance for Institutional Capacity Building

Payment Guarantees Assurance to enable Private Sector Participation (especially for GCC, Leasing type of models)
Support to viability gap funding contribution where Private Sector Participation, funding and contracting is in place
Risk sharing facilities and guarantees to enhance commercial bank support to e-bus rollout
Soft loans for infrastructure development / upgradation
Support to development of Green Funds,
Equity and debt financing to private sector (IFC only)
Sub-sovereign lending (IFC only)

Technical assistance in policy formulation and system development (vision for mobility, sector funding, effective procurement) at scale; policy lending
In Summary:
Financing solutions can be an important part of the solution for transitioning to net-zero in transport. However

• Financing solutions need to be tailored
• Built on a sound analysis of the fundamental financials
• Complemented by the right policy framework and well functioning institutions