Railways
Indian Railways – Size of Operations

• Largest Rail network in Asia
• Second largest network in the world, under single management

<table>
<thead>
<tr>
<th>Track Kilometres</th>
<th>Broad Gauge (1676 mm)</th>
<th>Metre Gauge (1000 mm)</th>
<th>Narrow Gauge (762/610 mm)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>86,526</td>
<td>18,529</td>
<td>3,651</td>
<td>108,706</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Route Kilometres</th>
<th>Electrified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16,001</td>
<td>63,028</td>
</tr>
</tbody>
</table>
## Size of Operations

Indian Railways runs 11,000 trains everyday; of which 7,000 are passenger trains

<table>
<thead>
<tr>
<th>Size of Operations</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7566</strong> - Locomotives</td>
<td><strong>37,840</strong> - Coaching vehicles</td>
</tr>
<tr>
<td><strong>300</strong> - Yards</td>
<td><strong>2300</strong> - Goodsheds</td>
</tr>
</tbody>
</table>

Freight – 580 mn tons; 396 bn ton kms
Railways – Organisation Structure

Lalu Prasad
Minister of Railways

R. Velu
Minister of State for Railways (V)

Naranbhai J Rathwa
Minister of State for Railways (N)

Railway Board

R. K. Singh
Chairman
Railway Board

S. C. Gupta
Member
Electrical

R. R. Jaruhar
Member
Engineering

P. N. Garg
Member
Mechanical

V. Viswanathar
Finance
Commissioner

R. N. Aga
Member

Director General
Rly. Health Service

Director General
RPF

Estt
Matters

Admin
Matters

Secretary
Railways – Organisation Structure
## Railways – Organization Structure

<table>
<thead>
<tr>
<th>Zonal Railways</th>
<th>New Zonal Railways</th>
<th>Production Units</th>
<th>Other Units</th>
<th>Public Sector Undertakings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Railway</td>
<td>East Central Railway</td>
<td>Chitranjan Locomotive Works</td>
<td>NF Railway (Construction)</td>
<td>IRCON</td>
</tr>
<tr>
<td>Eastern Railway</td>
<td>East Cost Railway</td>
<td>Diesel Locomotive Works</td>
<td>MetroRail (Kolkata)</td>
<td>RITES</td>
</tr>
<tr>
<td>Northern Railway</td>
<td>North Central Railway</td>
<td>Integral Coach Factory</td>
<td>Central Organisation for Railway Electrification</td>
<td>CRIS</td>
</tr>
<tr>
<td>North Eastern Railway</td>
<td>North Western Railway</td>
<td>Rail Coach Factory</td>
<td></td>
<td>CONCOR</td>
</tr>
<tr>
<td>North East Frontier Railway</td>
<td>South Western Railway</td>
<td>Rail Wheel Factory</td>
<td>Directorate General</td>
<td>IRFC</td>
</tr>
<tr>
<td>Southern Railway</td>
<td>West Central Railway</td>
<td>Diesel-Loco Modernisation Works</td>
<td>RDSO</td>
<td>KRC</td>
</tr>
<tr>
<td>South Central Railway</td>
<td>South East Central Railway</td>
<td>Railway Staff College</td>
<td></td>
<td>IRCTC</td>
</tr>
<tr>
<td>South Eastern Railway</td>
<td></td>
<td></td>
<td>CAO(R)</td>
<td>RCE</td>
</tr>
<tr>
<td>Western Railway</td>
<td></td>
<td></td>
<td>Central Organisation for Modernisation of Workshops</td>
<td>MRVC</td>
</tr>
</tbody>
</table>
RITES

• Govt. of India enterprise, established as a Public Limited Company, under the aegis of Ministry of Railways, Govt. of India, in 1974

• Multi-disciplinary consultancy organization in the fields of transport, infrastructure and related technologies

• Internationally recognized consultants company with experience in 55 countries in Africa, South East Asia, Middle East and Latin America
## RITES - Operations

<table>
<thead>
<tr>
<th>Sectors of Operation</th>
<th>Services Spectrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railways</td>
<td>Architecture &amp; Planning</td>
</tr>
<tr>
<td>Highways</td>
<td>Project Management</td>
</tr>
<tr>
<td>Urban Transport</td>
<td>Feasibility studies</td>
</tr>
<tr>
<td>Airports</td>
<td>Design</td>
</tr>
<tr>
<td>Urban Infrastructure</td>
<td>Urban Planning</td>
</tr>
<tr>
<td>Ports &amp; Waterways</td>
<td>Marine engineering</td>
</tr>
<tr>
<td>Ropeways</td>
<td>Economics &amp; Statistics</td>
</tr>
<tr>
<td></td>
<td>Training</td>
</tr>
</tbody>
</table>
Revenues from International assignments: 35 – 40%
## RITES - Profitability

<table>
<thead>
<tr>
<th></th>
<th>2003-04</th>
<th>2002-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover</td>
<td>51.82</td>
<td>48.73</td>
</tr>
<tr>
<td>Profit before tax</td>
<td>15 (29%)</td>
<td>8.7 (17.8%)</td>
</tr>
</tbody>
</table>

*Declared dividends of 400% in 2003-04*
Mumbai Rail Vikas Corporation Ltd. (MVRC)

- MVRC is a Public sector Undertaking of the Govt of India, incorporated under the Companies act, 1956.
- Established to implement the rail component of the integrated rail-cum-road urban transport project, The Mumbai Urban Transport Project (MUTP).
The Mumbai Rail Constraints

- 6.3 million passengers everyday
- 5000 passengers per 9 car train at peak loads (against a rated carrying capacity of 1710)
- Super dense crush load: 14-16 passengers standing per sq m of floor space
MVRC

- Develop coordinated plans and implement the rail infrastructure projects
- Integrate urban development plan of Mumbai with rail capacity & propose investments
- Undertake commercial development of railway Land & airspace in Mumbai

Total project cost : 1.62 bn Euros
  - Phase 1 : 570 mn Euros (Dec 2001 prices)
  - Phase 2 : 1.05 bn Euros (2005 prices)
Scope of MUTP (Rail Component)

- Addition of track kms: 93 kms (Phase 1) & 122 kms (Phase 2); existing – 790 kms
- New 9 car Rakes: 101 (Phase 1); 131 (Phase 2)
- Lengthening of platforms to be able to handle 12 car rakes
- DC to AC conversion in all suburban section
- Respacing of signals to achieve 3 min headway on all lines (Phase 1)
- Signalling & Telecommunication system upgradation for improved headway and reliability
- Resettlement & Rehabilitation of all project affected persons
Rail Vikas Nigam Ltd.

• SPV created to undertake
  – Project development
  – Mobilization of financial resources
  – Project implementation
  of Golden Quadrilateral & Port Connectivity projects

• Mission
  – To implement rail infrastructure projects on a commercial format through various PPP models
  – Make project implementation process efficient in time and cost
  – To complete National Rail Vikas Yojana by 2008
Dedicated Freight Corridor

- 9260 km corridor, over the next 5-7 years
- Corridor will be along the Golden Quadrilateral
- Tracks to be upgraded to carry 12,000 ton freight trains
- Estimated project cost: 11 bn Euros
- Expected increase in annual revenues: 180 mn Euros
- Funded through: Internal generation; PPP; market borrowings; budgetary support
- RVNL to be nodal agency
Private Sector Participation

- Gauge Conversion of Mehsana – Viramgaon section of Western Railways
  - 65 km stretch
  - Annuity basis – half yearly annuity payments for 12 years
  - Estimated Project cost – 20 mn Euros
  - DS Construction (also lowest bidder for Chandrauli-Utratia – 28kms and Sultanpur – Bandhukalan – 9kms)
Private Sector Participation

• Broad gauge rail connectivity to Pipavav Port
  – MoU between Pipavav Port and Min of Railways: Pipavav Railway Corporation Ltd.
  – Conversion from Meter Gauge to Broad Gauge for 250 kms
  – New Broad Gauge line for 23 kms
Opportunities

• Other Public Private Partnership projects
  – Railway Land Development Authority
    • develop surplus land available with the railways for construction of warehouses & logistics parks
    • Modernize existing metro railway stations
  – Develop integrated warehouse complexes at 22 locations
  – Railtel Corporation of India Ltd. – leverage the vast 40,000rkms of optical fibre network
  – Pvt sector handling of Container traffic (other than Container Corporation of India)
Opportunities

- Special Railway Safety Fund (SRSF) – total allocated corpus of over 3bn Euros (already spent – 1.85 bn Euros)

<table>
<thead>
<tr>
<th></th>
<th>Completed &amp; Under Imp</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track renewal</td>
<td>12138</td>
<td>4400</td>
</tr>
<tr>
<td>Rehabilitation &amp; rebuilding of bridges</td>
<td>1717</td>
<td>983</td>
</tr>
<tr>
<td>Track circuiting</td>
<td>2277</td>
<td>3023</td>
</tr>
</tbody>
</table>
Opportunities

- Integrated Railway Modernization Plan (2010)
  - High speed (150 kmph) trains on Delhi – Howrah & Delhi-Chennai
  - Running Freight trains at 100kmph on Golden Quadrilateral and its diagonals
  - Higher axle load, double stack containers, roll-on-roll-off wagons
  - Track modernization & its maintenance practices
  - Modernization of Signalling & telecommunication system
  - Upgradation of mechanical & electrical systems
  - Modernization of disaster management system

Total IRMP Budget : 4.4 bn Euros
Safety Initiatives

• Signalling & Telecommunication
  – First ACD worked section, to prevent collision of high speed trains, to be operational soon on Northeast Frontier Railway
  
  – GSM –R based Mobile Train Radio Communication system in progress on 2415rKms
  
  – Train Protection & Warning System to prevent Signal Passed at Danger (SPAD) by drivers to be introduced on 280 track kms in 2005-06
Railway’s Annual Plan

• Railway Plan Outlay in 2005-05 : 2.8bn Euros

• Planning commission funded throughput enhancement schemes : 550 mn Euros

• Plan exp through Internal resource generation : 850 mn Euros

• Market Borrowing : 610 mn Euros

• Total Planned Expenditure : 4.81 bn Euros
### Annual Plan

Planned expenditure on some key Areas in 2005-06

(all figures in Million Euros)

<table>
<thead>
<tr>
<th>Areas</th>
<th>2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Lines</td>
<td>120</td>
</tr>
<tr>
<td>Gauge Conversion</td>
<td>117</td>
</tr>
<tr>
<td>Doubling</td>
<td>92</td>
</tr>
<tr>
<td>Electrification</td>
<td>19</td>
</tr>
<tr>
<td>Track Renewals</td>
<td>477</td>
</tr>
<tr>
<td>Bridges</td>
<td>137</td>
</tr>
<tr>
<td>Signalling &amp; Telecommunication</td>
<td>215</td>
</tr>
</tbody>
</table>
Mumbai Metropolitan Regional Development Authority

- MRTS from Ghatkopar-Versowa-Andheri Link
- 14 km stretch connecting Eastern and Western suburbs of Mumbai
- Elevated throughout (avg height of 14 m)
- 13 stations
- On BOOT (Build, Own, Operate & Transfer) basis: 35 years concession (incl 5 years for construction)
- MMRDA will own 26% of the SPV
## Mumbai Metropolitan Regional Development Authority

<table>
<thead>
<tr>
<th>Area</th>
<th>Cost (Mn Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Works</td>
<td>109</td>
</tr>
<tr>
<td>Electrical, Traction Power supply, Lifts, escalators</td>
<td>22</td>
</tr>
<tr>
<td>Signalling &amp; Telecom works</td>
<td>29</td>
</tr>
<tr>
<td>Rolling Stock</td>
<td>43.5</td>
</tr>
<tr>
<td>Resettlement &amp; Contingencies</td>
<td>14.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>218</strong></td>
</tr>
</tbody>
</table>

These costs are based on 2003 prices; the costs do not include cost of land, which is to be provided by MMRDA; Taxes and duties are not included in these.
Mumbai Metropolitan Regional Development Authority

- Revenues – Fares to be at about 1.5 times current public bus fares

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Peak Hour Ridership</th>
<th>Projected Revenues (Mn Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>2011</td>
<td>35000</td>
<td>24</td>
</tr>
<tr>
<td>2021</td>
<td>45000</td>
<td>64</td>
</tr>
<tr>
<td>2031</td>
<td>60000</td>
<td>136</td>
</tr>
</tbody>
</table>

Over time, bus to act as feeder service, resulting in increase in rider-ship