

Developing Physical Infrastructure: A Comparative Perspective on the Experience of the People's Republic of China (PRC) & India

By

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The Dragon and the Elephant:
Emerging Lessons from the
People's Republic of China and India
3 May 2008, Madrid

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Madrid 2008
41st Annual Meeting
Board of Governors
Asian Development Bank

Development of Infrastructure Capacity - PRC & India

| | | 1985 | 1990 | 1995 | 2000 | 2005 |
|---|-------|-------|-------|-------|-------|--------|
| Power installed capacity (GW) | PRC | 100 | 135 | 217 | 319 | 508 |
| | India | 43 | 64 | 81 | 98 | 118 |
| Road network ('000 kms) | PRC | 943 | 1,028 | 1,157 | 1,403 | 3,345* |
| | India | 1,852 | 2,327 | 2,538 | 3,200 | 3,300 |
| o.w. Expressways | PRC | - | 1 | 2 | 16 | 41 |
| | India | - | - | - | - | 0.2 |
| Coastal Ports - volume of freight handled (mn tons) | PRC | 310 | 480 | 800 | 1,260 | 2,930 |
| | India | 129 | 163 | 223 | 334 | 513 |
| Civil Aviation Routes (mn kms) | PRC | 0 | 1 | 1 | 2 | 2 |
| Civil Aviation Routes (aircraft mn kms flown) | India | 103 | 118 | 115 | 193 | 333 |
| Railways ('000 kms) | PRC | 55 | 58 | 60 | 69 | 75 |
| | India | 62 | 62 | 63 | 63 | 64 |
| National Electrified Railway ('000 kms) | PRC | 4 | 7 | 10 | 15 | 19 |
| | India | 6 | 9 | 12 | 14 | 18 |

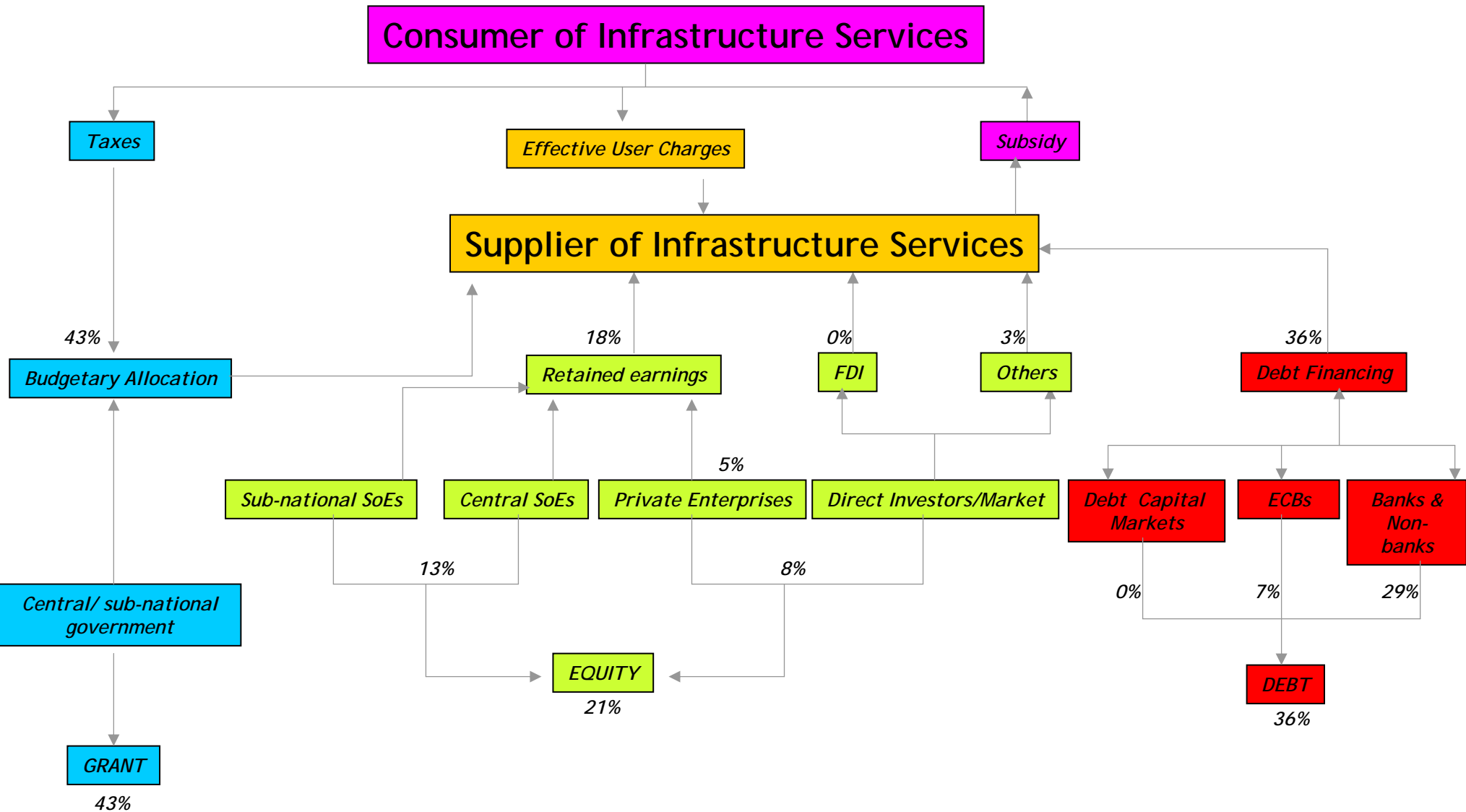
Source: China Statistical Yearbook, various issues, China Highway and Waterway Transport Statistics Yearbook, 2006

* The series is discontinuous: The data on rural roads is included only starting 2005

Defining Features of Chinese Infrastructure Development

- **Infrastructure led growth**
 - Infrastructure investment as counter-cyclical policy, especially in aftermath of Asian Crisis
- **Fiscal discipline**
 - Large increase in infrastructure spending with little dependence on state budget
 - In fact, government savings increasing and consolidated deficit declining (-1.2% of GDP)
- **Urban focus**
 - Urbanization has contributed to accelerating economic growth
 - Marked shift in investment to urban infrastructure from 77% of total investment in 1997 to 89% in 2006
- **High local level participation in infrastructure development**
 - Less reliance on budgetary expenditures (10% of total infrastructure financing) as sub-national governments have gained greater autonomy in development decision making process
 - Most resources are from 'self-raised and other funds' (extra-budgetary revenues and retained earnings) of local governments and their enterprises
- **Limited private sector and foreign participation**
 - Largely in the form of investment in stock of listed SOEs

India Infrastructure Financing Chain



Returns to Power Generation, Transmission and Distribution

| | PRC | India |
|-------------------|---|--|
| Generation ROEs | ~15.0 | 19.0 (NTPC) - 25.0 (Merchant) |
| Transmission-ROEs | Paid on residual revenues after paying generators | 12.5 |
| Distribution | No theft, effective cost recovery | 35% losses and very poor cost recovery |
| User Charges | Effective user charges 1.4x India | 4.3 cents/kWh |

Source: IDFC; Company Reports

Institutional Framework

| <i>Nature of:</i> | PRC | India |
|--|--|--|
| SOEs | Results-oriented | Risk-averse |
| Government-Bureaucracy Relationship | Incentives aligned | Contentious |
| Political Intervention | Deliver Party agenda | Undermines professionalism & performance |
| Independent Regulation -For consumer protection -For Investor protection | - Low priority - Not essential because of state ownership | - Essential - Essential because of private sector participation |
| Co-ordination & Implementation | - Unique role of planning authority | - Inter- and intra-government gridlock |

Inclusiveness of infrastructure services - PRC & India

- Despite PRC's pro-urban bias and India's ostensible village-oriented development of infrastructure, PRC's record on inclusiveness is better.

Almost 99% household access to electricity



Village electrification (87%) vs rural household access (44%)



Rural roads comprise 34% of total road length but expanding fast



'Other district and rural roads' comprise almost 80% of total road length, but quality is questionable



- Rural electrification driven by:

Industrialisation (town and village enterprises)

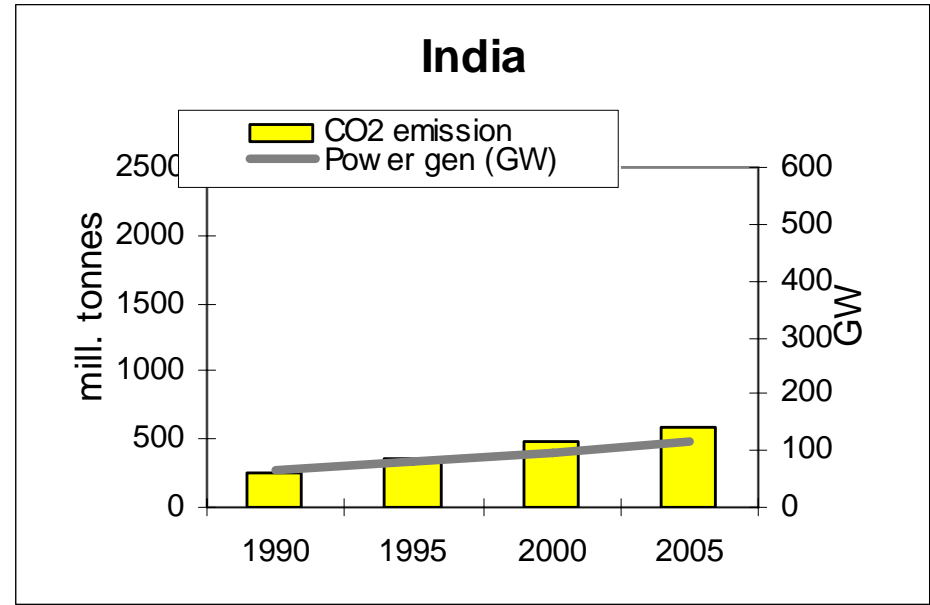
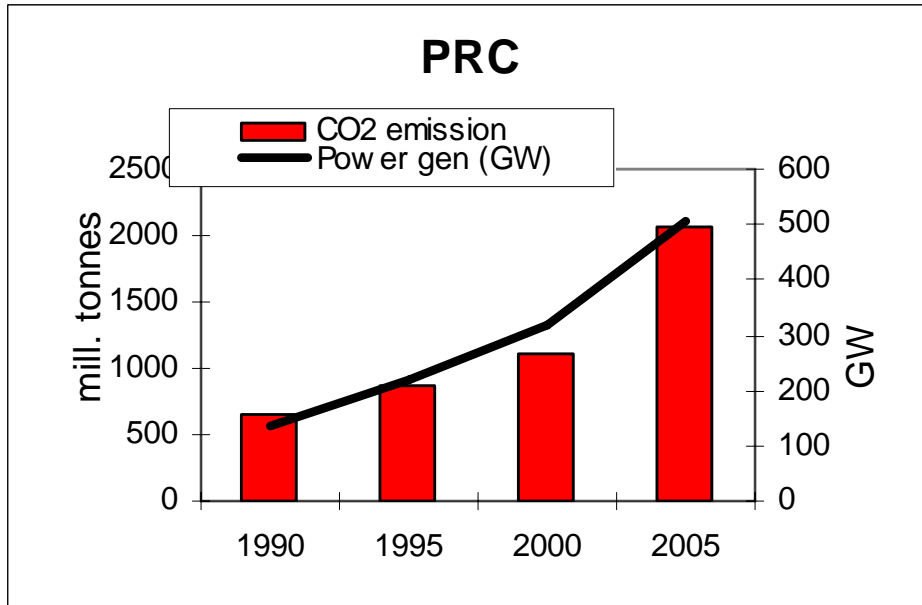


Agricultural irrigation



- Last mile connectivity done in PRC - not in India.
- Cost recovery more effective in PRC - non-existent in India.

CO₂ Emission from Thermal Power Plants and Power Generation



Source: World Energy Outlook 2007, IEA

Key Lessons for India

■ Financing

- Better balance needed between user costs and subsidies.
- Budgetary expenditure could have greater leverage if limited to capital subsidies.
- More creative and commercially sustainable ways of using SOEs to deliver services.

■ Institutional

- Major challenge to improve governance and overcome inter-jurisdictional and inter-governmental wrangling.

■ Access

- PRC's record on inclusiveness more sustainable as it is based on user charges that generally meet operating costs.

■ Environment

- Large scale coal mines and power plants with improved technologies.
- Demand side management through appropriate pricing.
- Focused policy of encouraging renewable energy.

Thank you