



# INFRASTRUCTURE PLANNING AND MANAGEMENT


- KEY ISSUES – SECTOR-WISE
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# INFRASTRUCTURE PLANNING – KEY ISSUES

## DEFINITION

“PROCESS OF INTEGRATING, DESIGN, CONSTRUCTION, MAINTENANCE AND REHABILITATION TO MAXIMIZE THE BENEFITS TO THE USERS AND MINIMIZE THE COST TO THE OWNERS AND USERS.”



“SYSTEMATIC, CO-ORDINATED, PLANNING AND PROGRAMMING OF INVESTMENTS OR EXPENDITURES, DESIGN, CONSTRUCTION, MAINTENANCE, OPERATION AND IN-SERVICE EVALUATION OF PHYSICAL FACILITIES

# PROBLEMS

- **PROBLEMS:**
- Under investment in public works programme
- Lack of good management system
- Failure to recognize importance of future economy by maintaining sound infrastructure
- Failure to recognize the impact of poor infrastructure on society
- Failure to replace the infrastructure as fast as it wears out
- Tendency by the national, state and local officials to defer the maintenance of public infrastructure
- Increased cost of tax payers to repair and rebuild the obsolescent public infrastructure
- Others
  - Political considerations in setting user charges
  - Social obligations
  - Over staffing
  - Lack of competition

# OBJECTS OF INFRASTRUCTURE

- Facilitate economic development
- Alleviate poverty
- Protect natural environment

# KEY ISSUES

- Huge Costs
- Lack of funds to maintain and improve the infrastructure
- High cost + lack of comprehensive approach to managing infrastructure
- Condition of infrastructure and level of service has deteriorated through aging and usage
- Some infrastructure components have failed due to normal disaster
- Design process has not given adequate consideration to loads, material variability, climate, environment etc. – Past designs produced physical systems that would last a given life with no consideration of maintenance

# KEY ISSUES (Contd..)

- Maintenance management strategies
  - Adhoc- Based on rules of thumb
  - Not adequate to sustain a healthy infrastructure
  - Effect of maintenance action not considered
- Life cycle cost not considered in the design process
- Inadequate models to predict traffic, performance, service requirements
- Scarcity of Financial Resources
  - Innovations needed to identify financial resources
  - Cost-Effective solutions
  - Better management of funds
  - Better analytical tools for priority programming



# KEY ISSUES- ROAD SECTOR

- Present condition and status of development of SH and MDR varies from state to state
- States of MDRs worrisome – Funds for development grossly inadequate; NHs and Rural roads receive lion's share
- AP, Rajasthan, Karnataka, Maharashtra have set up road development corporations - can issue bonds for financing road projects
- Risks in road development is high
  - Govt. action at every step
  - Land acquisition – delay, litigation
  - Rehabilitation, resettlement concerns
  - Post construction traffic risks
  - Design for the capacity in future – over capacity design in initial years – unlikely profit in the initial years; losses in the initial year – deter private investment
  - Fix toll rate initially and then award contract on the lowest bid for subsidy.
  - Economic toll that provide adequate returns to private investment in highways would be too high; leveraging private investment would involve provision of some level of subsidy from the Govt.
  - Payment of annuity to developer to cover the full cost over the project period - lower risks – no traffic risk to investor; risk – miscalculation of annuity.

# KEY ISSUES – TELECOM SECTOR

- Rural market of India is very large as 70% of the population lives there
- Need to create a competitive market for rural telecom
- Need to explore the incentives to mobile operators

# KEY ISSUES – PORTS SECTOR

- Need for alternatives to decongest major ports
- Greater potential for private sector investment for the development of minor/intermediate ports
- Gujarat – Most active state to attract private participation
- Necessary to set up a mechanism for setting tariffs on a transparent and fair basis; earlier – ad hoc basis by each port trust
- Tariff Authority for Major Ports (TAMP) was set up in 1997; TAMP worked out the cost on a cost plus basis - transparent and consultative basis with stakeholders before approving or setting any tariff.
- TAMP needs:
  - Promote competitive tariff
  - Users of cargo services should not end paying for port or labour inefficiencies
  - Tariff policy to prescribe standards of service – contribute to productivity and efficiency
  - Competition between ports to be encouraged through flexibility in pricing
  - Tariff policy can be used for rationing port capacity – high tariff for ports that are congested {consider land transportation also}
  - Indian port tariff higher than other ports
  - Comparison of port tariff : <http://unescap.org/publications>
  - Need to convert existing port trusts as limited companies – need to design appropriate governance structures; raise funds from capital market

# KEY ISSUES – POWER SECTOR

- Poor financial condition of State Electricity Boards – inefficiency, low agricultural and domestic tariff
- Provide payment security to private investors – govt. guarantee, escrow arrangements – provide priority in payment
- *Escrow: A written agreement between two or more parties providing that certain instruments or property be placed with a third party to be delivered to a designated person upon the fulfillment or performance of some act or condition*
- Temporary measures – many assumption on Power Purchase Agreements (PPAs)
- Reluctance of the govt., to tackle the basic issue of power theft and inadequate tariff – bankruptcy of SEBs; commercial loss during 2001-02 was Rs.240 billion (estimated) – default in payment to power generation / transmission PSUs
- Root of the problem – Gap between user charges and cost of supply
- Gap between cost of supply and av. Tariff/unit of electricity produced – Rs.0.23 (1992-93) to Rs.1.10 in 2001-02
- Gap between cost of supply and av. Tariff accentuated owing to losses in Transmission and Distribution (T&D) – electricity produced but NOT paid for!!!
- T&D Losses – 24.8% (1996-97) to 26.5% (1998-99) to 30.9% (1999-00)
- T&D Losses – Electricity sold at low voltage, sparingly distributed loads across large rural networks, inadequate investments in distribution, improper billing and outright theft

# KEY ISSUES – RAILWAY SECTOR

- **Tariff Rebalancing** : To correct the imbalance between passenger and freight tariff; further increase in freight tariff – loss of freight share; Within passenger tariff, ratio of lower class fare to highest I class AC fare ratio 1:14 to about 1:9, in a period of five years.
- **Major Investment Programme**: Expansion of revenue – significant increase in traffic (both freight and passenger) to about 7-7.5% per year; involves, modernization, introduction of high speed modern passenger services, commodity specific freight strategies, introduction of new technology – signaling and communications.
- **Organisational Restructuring and Corporatisation**: ( Traffic growth and strategic investment programme cannot be done in a 'business – as – usual' basis; IR has to be restructured to a corporate framework from the current departmental form of organization.
- **Separation of Functions**: Separate policy setting – Govt., regulatory ( Indian Railways Regulatory Authority) and operational functions (Indian Railway Corporation- Commercial operations)

# KEY ISSUES- URBAN INFRASTRUCTURE

- ULBs are autonomous in theory, but guided by Govt. regulations
- Poor financial position of ULBs
- Political interference in operations, managerial decision making and tariff setting
- Tariff fixing should be based on incremental cost including operation and maintenance charges, depreciation charges, debt dues
- Current institutional arrangements do not create proper structures and incentives for improvement of operational efficiency and quality of service
- Issues concerning International Water Operators: Inadequate information about current financial and physical condition of existing service provider and assets, tariff well below cost recovery levels
- ULBs do not have the institutional capacity to manage complexities and tasks involved in operating infrastructural services
- Need to explore pooled financing of identified projects – Pool water and sanitation projects to float bonds (14 ULBs in TN); 50 ULBs are experimenting with private sector participation in Solid Waste Management.

## KEY ISSUES – AIRPORT INFRASTRUCTURE

- Improvement of air traffic control services
- Improvement of ground facilities
- Improvement of cargo handling facilities
- Commercial activities
- Airport security
- Financing airport infrastructure
- Private sector participation
- Environmental issues
- Regulatory Mechanism
- Legal Framework

## KEY ISSUES – RURAL INFRASTRUCTURE

- Population density is much lower than urban areas
- Rural density  $> 500/\text{sq.km}$  only in Delhi, West Bengal, Kerala; lower than 300 in other states
- Cheaper to have generators than wired networks connected to the main grid
- Telecom- Mobile may be cheaper than landlines
- Av. population size 2000 (approx.)
- Setting of large water treatment plants, modern piped water supply, sewerage networks are ruled out.
- Per capita income of rural India lower than Urban India
- Pricing of infrastructure services (recovery of capital and operating costs during the life time of the asset) cannot be structured
- Subsidy needs to be provided to the consumer

# NEED FOR REFORMS IN INFRASTRUCTURE

- Private sector participation
- Incentives for companies to strive for efficiency savings which can be passed on to consumers
- Faster roll-out of infrastructure
- Innovative solutions

# TYPES OF REFORMS

- Industry Structure – Concerned with the introduction of competition, removal of barriers, so that contestability is the real option
- Operation – Monopoly is constrained by rules covering areas such as quality, pricing, access – Effective regulatory system – Establishment of an independent agency
- Ownership – Change of ownership from state owned enterprises to some form of private ownership
- Decentralisation in allocation mechanism – Enhances influence of economic forces and participation of stake holders

# TYPES OF REFORMS (Contd.)

- Changes in regulation – to control pricing and entry into market
- Choice of regulation should be based on cost-benefit analysis
- Any regulatory policy should have a clear economic rationale
- Evaluation of the regulation should be by an independent agency that considers economic-wide impact and not by a sector specific agency
- Regulations should be simple and subject to careful scrutiny – Transparent; not to be captured by the political groups

# REGULATORY MEASURES

- Objectives of regulation
  - To attract higher private sector investment
  - To assure reasonable rate of return to the producers
  - Improvements in customer satisfaction
- Common regulatory rules
  - Pricing rules – rate of return pricing, bench mark pricing, price cap regulation
  - Degree of competition allowed
- Conflict resolution mechanism

# CONCLUSIONS

- Inadequate state funds
- Maintenance of existing infrastructure neglected
- Need to allow private sector in rural infrastructure projects
- Public-private participation in which the public sector controls the direction of the private sector investment through appropriate incentives/policies is superior
- Concept of universal access to infrastructure needs change from time to time – e.g., universal access to communication involves community access first, followed by institutional access and later household access