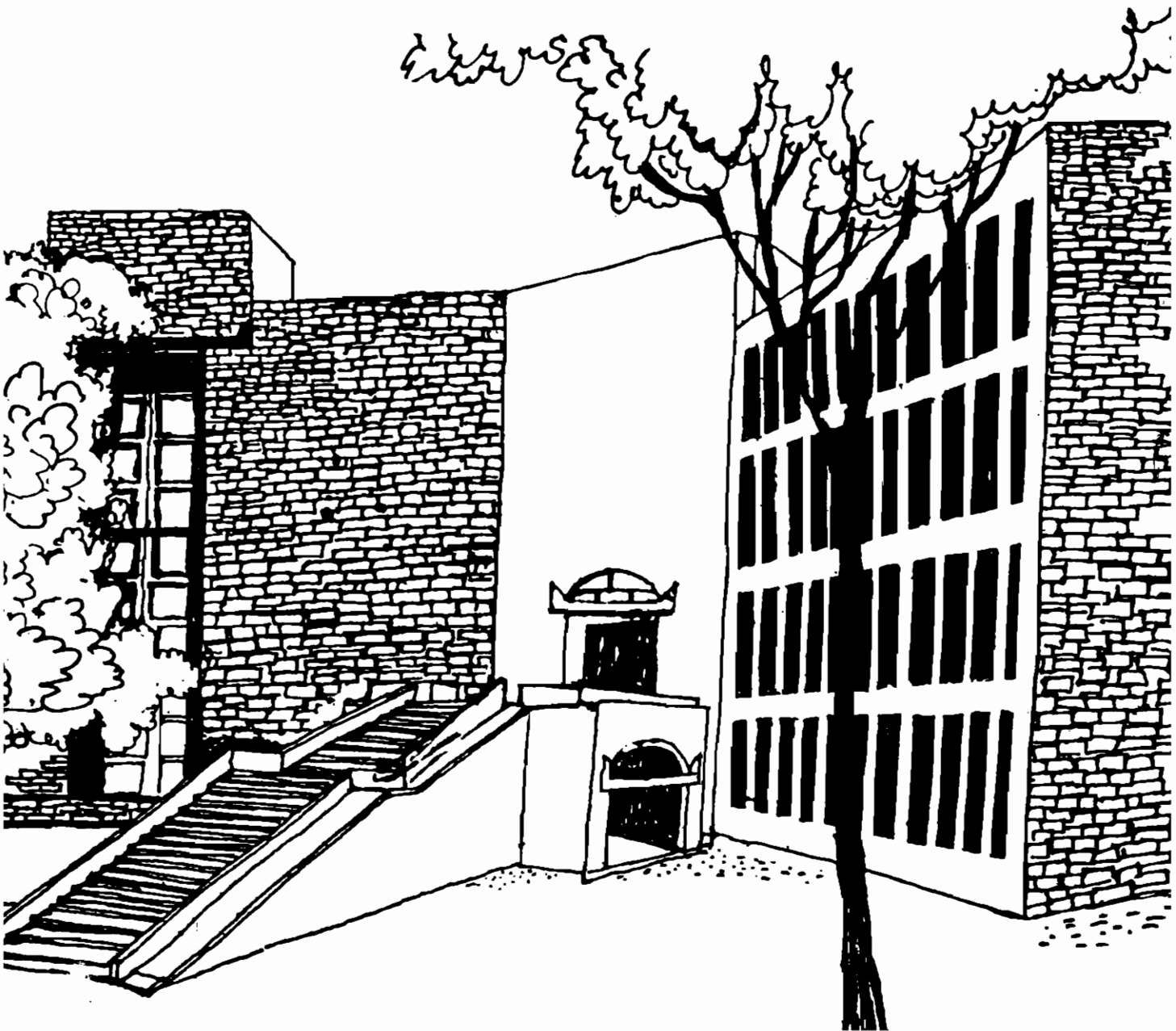




Working Paper



**RESOURCE MOBILISATION STRATEGIES FOR
FINANCING OF TRANSPORT INFRASTRUCTURE
AND SERVICES**

By

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Resource Mobilisation Strategies for Financing of Transport Infrastructure and Services

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Abstract

Transport infrastructure development in India has been slow and unsatisfactory due to the excessive dependence on budgetary support from the State and due to the dominance of state controlled enterprises. Future investment requirements need much greater mobilisation of resources than that accomplished in the past. This paper reviews the Indian experience of infrastructure investment allocations, performance of parastatals and major concerns of policy makers. It provides a framework for formulating "unbundling strategies" for increased private sector participation in the financing of investment and provision of transport services.

1. Introduction

Transport infrastructure is the backbone of a nation's economy which has become one of the most critical elements of economic liberalization strategies of countries throughout the world. Given that there is tremendous need to improve the transport infrastructure in many developing countries, how to provide the required infrastructure is the challenge facing policy makers everywhere. What exactly should be the role of the State vis-a-vis the private sector? Providing infrastructure requires a) **infrastructure planning** -- project identification, formulation and mobilization of capital for investment, b) **project management** -- proper utilization and conversion of such capital into infrastructure hardware and c) **efficient service delivery** based on such infrastructure hardware.

In most of the countries, the State has assumed a significant role in all of the areas outlined above. This is largely due to the assumption that the benefits of transport infrastructure and services thereof affect the society at large and accrue over a long period of time, so that the State had to be responsible for resource mobilization, resource allocation as well as service delivery.

1.1 Role of the State

There are many instances where the State did not have enough funds for investment but had the ability to utilize the funds for infrastructure development and service delivery. This was generally true during phases of high economic growth in the experiences of different countries, at which time the State sought private funds usually through guaranteed bonds. A significant amount of urban and regional transport infrastructure in the USA was built through this route.

There are also many instances where, due to the State's inability to directly invest in infrastructure or lack of capacity to convert capital into infrastructure hardware, private investment was sought, usually with some form of incentive and/or guarantees from the State. Generally, whenever the investment was from private sources, the conversion to hardware and service delivery was also managed by the same private party. The incentive/guaranty structure and the attendant risk-sharing arrangements had major implication for the long run sustainability of the ventures. A good example is the development of railways, both in UK and India, where the initial development was through private investments, but later on the State stepped in due to non-sustainable incentive structures. In the USA, the private role has sustained since the incentives were more in the form of land grants rather than guarantees.

In recent years, privatization has been resorted to in service delivery to ensure optimum efficiency in operations, usually in the context of sufficient or even surplus infrastructure capacity. The railways in UK and Japan and other utilities in UK are examples of this trend.

1.2 Report Card on Developing Countries

Historically in almost every developing country, the State has assumed exclusive responsibility for creation of transport "infrastructure" and has played a dominant role in the provision of transport "services". The usual argument is that government intervention is necessary because of the very large investments required in this sector and because of various public interest concerns associated with natural monopolies. Ironically, it is the dominance of the transport sector by the State which appears to have become the major cause of neglect of transport infrastructure and services in these countries.

According to the World Bank's assessment, excessive dependence on the State's fiscal resources is only one of the factors contributing to poor state of the transport systems. The other factors responsible for the poor performance of governments in providing transport services are: inefficiency of operations; inadequate maintenance; financial inefficiency; and unresponsiveness to user demand [World Development Report, 1994].

In most of the developing countries, infrastructure services are priced significantly below the cost of providing these services. These subsidies constrain the providers from generating sufficient internal resources and result in excessive dependence on budgetary support. Operational inefficiency and poor maintenance result in low quality and unreliable delivery of services.

While the relationship between economic growth and infrastructure capacity is difficult to establish, a cross sectional analysis, across all countries shows that a 1% increase in the stock of infrastructure is associated with a 1% increase in Gross Domestic Product (GDP) [World Development Report, 1994]. It, therefore, follows that the developing countries would need to make substantial investments in transport infrastructure to satisfy the current demand for transport services and to support future economic growth.

Further due to increased globalisation of international trade, competition for export markets is becoming increasingly dependent on costly high quality transport infrastructure. The challenge for these countries is not only to improve the quality and reliability of their transport systems, but also to establish institutional and organizational systems for efficient management.

For developing countries like India, where the existing transport infrastructure is insufficient and unreliable, the strategies for infrastructure development would depend on whether the critical gap is one of resource availability or efficient management of service delivery or both. What would be the desirable role of the State if the financing system were to be liberalized in order to attract private investments in this sectors? Would it improve the overall efficiency of the State controlled enterprises if they were to open some of their activities for private sector participation? What is the appropriate

course of action for this unbundling process? This paper examines the above issues and presents a framework for formulating strategies for transport infrastructure financing.

2. Current Status of Transport Infrastructure in India

A comparison of availability of transportation infrastructure in some selected developing and developed countries is shown in Table 1. With total road availability of 1935 km. per million population, India leads Indonesia, Korea and Egypt, but trails the developed countries like Japan, USA, France and UK by a large margin. The disparities are just as glaring with respect to road density per unit of land area.

On average the availability in the developed countries is anywhere from 5 to 15 times greater than in the developing countries. While Brazil has a very large road network, only 8.1% of its roads are paved. In India roughly half of the total road length is surfaced/paved. With their well developed network of road infrastructure, the developed countries produce a much higher level of output of passenger and freight movement as shown in Table 2. In addition, Table 3 shows that except Korea, the road network in other developing countries is of poor quality. This may possibly explain the high rate of fatalities in road accidents. The extremely high fatality rate for Korea defies explanation. It is estimated that poor roads in India result in annual loss of Rs 15,000 crores to the economy [Sahoo, 1994].

In the rail sector, the gap between developed and developing countries is similarly large though Korea and Brazil have better availability relative to their population size. The USA has considerably higher levels of passenger and freight movement per unit of population compared to all other countries. In the air sector, India and Indonesia lag far behind the other countries in the production of air transport services.

Given the fact that India is lagging behind other countries in the provision of transport infrastructure and services, it is unrealistic to project future infrastructure requirements on the basis of past growth trends. It is more common practice to assess these requirements on the basis of forecasts of economic growth. Since the national economy is expected to grow at about 6% a year, it would be safe to say that the infrastructure stock would also have to grow at a minimum of 6% a year as per the World Development Report finding that a 1% increase in GNP is associated with a 1% increase in infrastructure stock [World Development Report, 1994].

In the roads sector for example, it is estimated that the national highway network would need to be doubled by the year 2015 besides building a new 10,000 km. long expressway network. The total projected costs for these projects which include the removal of deficiencies in the existing highways

Table 1. Comparative Transport Infrastructure Availability

Country	Population (million)	Area (1000 sq km)	Roads			Rail		
			(km)	(km per 1000 sq km)	(km per mil pop)	(km)	(km per 1000 sq km)	(km per mil pop)
India	883.6	3288	1709760	520	1935	61985	18.9	70.3
Indonesia	184.3	1905	230505	121	1251	6856	3.6	37.2
Korea	43.7	99	55935	565	1280	6337	64.0	145.0
Brazil	153.9	8512	1676864	197	10896	30642	3.6	199.1
Egypt	54.7	1001	46046	46	842	4606	4.6	84.2
Japan	124.5	378	1114344	2948	8951	26568	70.3	213.4
U.S.A.	255.4	9373	6364267	679	24919	247457	26.4	968.9
France	57.4	552	808128	1464	14079	34555	62.6	602.0
U.K.	57.8	245	359415	1467	6218	17126	69.9	296.3

(mil pop: million population)

Sources: 1. World Resources Institute, UNDP, UNEP. World Resources. 1992-93.
2. Indian Railways. Annual Report. 1992-93.
3. Asian Development Bank. Transport Policy. 1989.

Notes : These figures are taken from different sources which do not necessarily tally and the time period is generally 1985-89.

Table 2. Comparative Transport Output							
(Period 1985-90)							
Country	Population (million)	Passenger Transport Output			Freight Transport Output		
		Road	Rail	Air	Road	Rail	Air
		(MPK/mil pop)			(MTK/mil pop)		
India	883.6	1335	318	20	334	268	0.77
Indonesia	184.3	1709	37	81	136	5	2.43
Korea	43.7	2467	595	416	197	316	117.35
Brazil	153.9	3374	96	181	1692	712	15.37
Egypt	54.7	656	256	113	570	122	20.99
Japan	124.5	4884	2906	749	1977	189	41.19
U.S.A.	255.4	17538	79	2715	4404	6477	57.36
France	57.4	10697	1289	897	2505	899	66.53
U.K.	57.8	9654	709	1597	2253	311	59.64

(MPK: Million Passenger Kilometre. MTK: Million Tonne Kilometre.)

Sources:

1. World Resources Institute, UNDP, UNEP. World Resources Report. 1992-93.
2. Indian Railways. Annual Report. 1992-93.
3. Ministry of Surface Transport. Basic Road Statistics. 1988-89.

Table 3. Comparative Transport Quality					
Country	Road Traffic ¹ (100 MPK)	Paved Roads Quality ²		Accidents	
		% of total road length	% in good condition	Fatalities	Fatalities per 100 MPK
India	11800	47.3	20%	50711	4.30
Indonesia	3150	61.6	30%	N A	N A
Korea	1078	61.4	70%	11563	10.73
Brazil	5192	8.1	30%	5699	1.10
Japan	6081	67.9	>85%	11086	1.82
U.S.A.	44792	57.0	>85%	47093	1.05
France	6140	92.2	>85%	10527	1.71
U.K.	5580	100.0	>85%	5052	0.91

(MPK: Million Passenger Kilometre. NA: Not Available)

Sources:

1. Ministry of Surface Transport. Motor Vehicle Statistics - 1989-91.
2. World Development Report. Infrastructure. 1994

is expected to be around Rs 150,000 crores [Kumar, 1995]. Considering that the current annual allocation from the central government is only of the order of Rs 600 crores, the future requirements are staggering.

The rate of growth for the rail sector would be expected to be much lower than for roads, however significant improvements in performance would necessitate a sustained increase in traffic carried. Substantial infrastructure investments would be required just to accomplish this goal. All of the other modes are also expected to experience high growth rates. In any case, it is reasonable to conclude that future investment requirements for development of adequate transport infrastructure in the coming years would be several fold larger than the current levels of investment.

3. Pattern of Transport Infrastructure Financing in India

3.1 Plan Investments

The pattern of public sector plan investments, which represents the total capital investment for infrastructure by government agencies and state controlled enterprises, shows that the share of transport sector in the total "plan" expenditure has declined from about 22% in the First Five Year Plan (1951-56) to 13% in the Eighth Five Year Plan (1992-97) [Appendix, Table A1]. While the relative importance of the transport sector may have declined over these plan periods, the expenditures in absolute terms and at current prices increased at an average annual growth rate of around 12% uniformly across all modes. This would translate into real growth rate in capital expenditures of about 2 - 4% per year.

Railways, roads and road transport have together accounted for more than 80% of total investment in the transport sector in most of the plan periods. Among these modes, the budget allocations for railways have always been considerably higher than for roads although the gap narrowed down somewhat during the fourth & fifth Five Year Plans. Given that roughly 80% of the passenger traffic and 40% of the freight traffic movement takes place by road transport, it appears that the budget allocation favour the railways over the road sector [Sahoo, 1994].

3.2 Sources of Finance

A further examination of the recent financing pattern of state agencies and state controlled enterprises, shows that only the roads sector is financed entirely from the budgetary support of Central and State Governments [Table 4]. In the road transport sector, the State Road Transport Undertakings (SRTUs) and Municipal Undertakings, which account for nearly 40% of total passenger bus services in the country, rely heavily on government budgetary support and extra budgetary support in the form of institutional loans, due to their inability to generate sufficient internal resources for capital investment.

Table 4. Pattern of Financing of Transport in India

Sector	Plan Period	Unit	Sources of Finance				Total
			Budgetary Support	Internal Resources	Bonds	Institutional Loans	
Railways	VII (1985-90)	Rs Crores	6942 41.9%	7087 42.8%	2520 15.2%	-	16549 100%
	VIII (1992-97)	Rs Crores	5375 19.8%	21827 80.2%		-	27202 100%
Roads	VII (1985-90)	Rs Crores	6335 100.0%	-	-	-	6335 100%
	VIII (1992-97)	Rs Crores	13210 100.0%	-	-	-	13210 100%
Road Transport	VII (1985-90)	Rs Crores	2151	*	-	++	NA
	VIII (1992-97)	Rs Crores	3850	*	-	++	NA
Shipping	VII (1985-90)	Rs Crores	719	706	-	++	NA
	VIII (1992-97)	Rs Crores	++	++	-	++	3669
Ports	VII (1985-90)	Rs Crores	641 47.8%	701 52.2%	-	*	1342 100%
	VIII (1992-97)	Rs Crores	840	++	-	++	3535
Civil Aviation	VII (1985-90)	Rs Crores	*	++	-	++	1948
	VIII (1992-97)	Rs Crores	192	++	-	++	4106

(1 Crore = 10 million)

- Source: 1. Planning Commission, Eighth Plan Document, Vol II. 1992-97.
- Notes : 1. NA Not Available
 2. ++ Significant Share (Figure not available)
 3. * Insignificant Share (Figure not available)
 4. - Nil

The Indian Railways have undergone a major transformation of their financing pattern from the seventh Five Year Plan (1985-90) to the eighth Five Year Plan (1992-97). The budgetary support has shrunk from 42% to 20% of the total plan outlay respectively. During this period, the organisation showed impressive ability to fill the resource gap by generating substantial internal resources and by borrowing in the domestic capital markets in order to maintain a modest growth in infrastructure investment.

3.3 Financial Performance

A detailed analysis of the financial performance of the Indian Railways is summarized in Table A2 in the appendix. It reveals that the maximum extent to which internal resources can be mobilized by controlling operating costs may already have been attained. Consequently, the future reductions in budgetary support could seriously undermine the future infrastructure investment programmes. The fact that the Indian Railway Finance Corporation (IRFC) is facing difficulties in borrowing from the market and managing its own financial assets raises doubts about the ability of Indian Railways to meet the anticipated infrastructure investment requirements.

The case for increased budgetary support for the Indian Railways is based on three convincing arguments: (a) impressive operating performance in recent years, (b) the annual dividend payments to government are expected to exceed the amount of budgetary support from government and (c) the imputed losses to the Indian Railways due to social obligations and subsidies are also in excess of the budgetary support received by them [Appendix, Table A2].

The case of increasing budget support to the roads and road transport sectors is based on the argument that government revenues from taxes on road users (including fuel taxes) are considerably more than the government expenditures on investments in road and road transport infrastructure [Appendix, Table A3].

The parastatals in the remaining transport sectors, ie. shipping, ports and civil aviation, were able to match the budgetary support from government by generating adequate internal resources for infrastructure investments. These sectors also receive significant extra budgetary support in the form of soft loans from state controlled financial institutions.

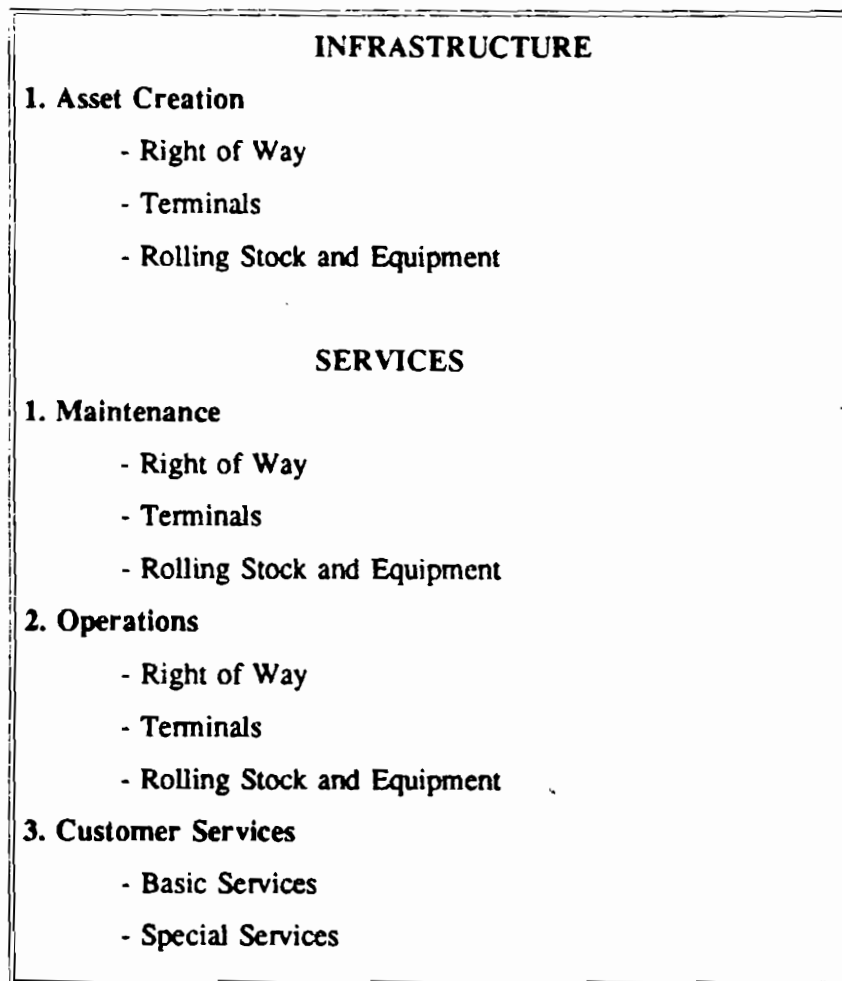
Tables A4, A5 and A6 in the Appendix show the comparative capital structure of two shipping companies, three major port trusts and two airports authorities of India. It shows that the investment requirements of public and private shipping companies are significantly greater than the current levels of internal resource generation and extrabudgetary support loans. The three port trusts (Visakhapatnam, Calcutta and Bombay Port Trusts) and the two airports authorities (International Airports Authority

and National Airports Authority of India) have supported their infrastructure investments with combination of equity contributions and loans from the government as well as internal resources.

4. System of State Controls in the Transport Sector

4.1 System Components

While many activities in the transport sector in India are strictly state controlled, there are significant segments which are open to the private sector. In order to understand the existing system of controls, it would be useful to broadly classify the various transportation infrastructure and services into separate components. There are broadly three components of infrastructure with increasing possibility of being attached to the specific services provided. These are a) right of way, b) terminals and c) rolling stock and equipment. The services can be broadly categorized into four types with increasing visibility to the customer. These are a) maintenance, b) operations, c) customer services and d) special (value added) services. Both maintenance and operations can be further classified as being for the right of way, terminals and rolling stock. Thus the total setup can be viewed as follows:



Each of the above activities can be examined transport modewise for its relative importance and current structure for provisioning in India [Table 5]. There is another dimension regarding these activities, namely identifying the provider who has primary responsibility and accountability for providing the infrastructure and services. Whether there are one or more organizations (principal)

Table 5. Pattern of State Control of Transport Infrastructure and Services in India				
Infrastructure	Ownership Structure			
	Road	Rail	Air	Water
Right of Way	(State controlled) NHAI, PWD, Urban Administrations	(State controlled) Indian Railways	(State controlled) DGCA, NAAI	(State controlled) Major Ports - Govt. of India, State Maritime Boards, Port Directorates
Terminals	(Open to all) SRTUs, Large Industries, Trucking Companies, etc	(State controlled) Indian Railways	(State controlled) IAAI, NAAI	(State controlled) Major Ports - Govt. of India, State Maritime Boards, Port Directorates
Rolling Stock and Equipment	(Open to all) SRTUs, Private Vehicle Owners	(State controlled) Indian Railways	(Open to all) IA, AI, Other Private Airlines	(Open to all) SCI, Great Eastern, Essar & Others
Services	Responsibility for Maintenance			
	Road	Rail	Air	Water
Right of Way	(State controlled) NHAI, PWD, Urban Administrations	(State controlled) Indian Railways	- NA -	(State controlled) Major Ports - Govt. of India, State Maritime Boards, Port Directorates
Terminals	(Open to all) SRTUs, Large Industries, Trucking Companies, etc	(State controlled) Indian Railways	(State controlled) IAAI, NAAI	(State controlled) Major Ports - Govt. of India, State Maritime Boards, Port Directorates
Rolling Stock and Equipment	(Open to all) small scale garages, large organized work shops for SRTUs	(State controlled) Indian Railways	(Open to all) IA, AI, Other Private Airlines	(Open to all) Port Dry Docks, HSL, CSL, Chokhani & Others

cont'd ... (Table 5)

Services	Role in Operations			
	Road	Rail	Air	Water
Right of Way	(State controlled) Police Department in case of high traffic density	(State controlled) Indian Railways	(State controlled) DGCA, NAAI	(State controlled) Major Ports - Govt. of India, State Maritime Boards, Port Directorates, Light House Authority
Terminals	(Open to all) SRTUs, Large Industries, Transport Companies	(State controlled) Indian Railways	(State controlled) DGCA, NAAI	(Partly open) Major Ports - Govt. of India, State Maritime Boards, Port Directorates, Stevedores, Agents, etc
Rolling Stock and Equipment	(Open to all) SRTUs, Private Vehicle Owners	(State controlled) Indian Railways	(Open to all) IA, AI, Private Airlines	(Open to all) SCI, Great Eastern, Essar & Others
Customer Services	(Open to all) SRTUs, Private Bus Operators, TCI, Patel Roadways, Forwarding Agents, etc	(State controlled) Indian Railways	(Open to all) IA, AI, Private Airlines	(Open to all) Brokers, Chartering Agents, Forwarding Agents
Special Services	(Open to all) SRTUs, Private Bus Operators, Tour Operators, TCI, Patel Roadways, Forwarding Agents, etc	(State controlled) Indian Railways	(Open to all) IA, AI, Private Airlines	(Open to all) Brokers, Chartering Agents, Forwarding Agents

primarily responsible for the activity, even though they may have "contracted" out the activity, or whether the "contractors" are in themselves primarily responsible? For example, when a bridge is constructed by a contractor, who (the principal or the contractor) is primarily responsible for its performance? Similarly, when a catering service or a reservation service is provided by a contractor (travel agent), who is primarily responsible for the service performance and for which aspects? While this dimension is also important in creating stakeholders for various activities, we do not examine it within the scope of this paper.

4.2 Air

When we consider "air" as a mode of transport, the right of way is ~~not~~ a significant infrastructure, though it has never been attempted to be privatized. However, the operations associated with it, namely, the air traffic control, has a significant role in pockets of high traffic. The terminals have also never been privatized with respect to the air space, though they have been privatized with respect to the terminal buildings or portions thereof. The rolling stock and equipment, customer services and other special services (for example, reservation) are all privatized.

4.3 Rail

In the case of rail, currently all activities are being handled by one organization, namely Indian Railways. Only recently, certain value added special services like tourist trains on popular tourist circuits are beginning to be offered through the private route. The Indian Railways are viewed as providing a robust bare minimum service, but with poor customer service.

4.4 Road

In the case of road, in contrast to rail, a variety of organizations are involved. For example, as far as the right of way is concerned, the State Government, the Central Government (for National Highways) and local governments are involved. Apart from this, the Defence Ministry (border roads) and large industries (project roads) are also involved. In recent years, some financing for rural roads has come from the Agriculture Ministry. Regarding terminals, for mass passenger transport either State Road Transport Undertakings (SRTUs) or local governments are involved. For freight transport, large industries have their own loading and unloading areas while smaller organizations tend to use public roads. Transshipment terminals are usually provided by various carriers. A few cities have organized truck terminals under the local governments. The rolling stock and equipment are manufactured by a few large auto manufacturers, while the ownership is diffused across a large number of owners (usually drivers themselves), often owning no more than five trucks.

Continuing our description of Table 5, in road services, the maintenance of the right of way and terminals is vested with the respective governments and organizations providing such infrastructure. The maintenance of the rolling stock and equipment is largely provided for by a huge

number of small scale garages dotted all over the country. Only in the case of mass passenger transport provided by the SRTUs, organized large scale workshops are available. Regarding operations and customer services in mass passenger transport, the SRTUs and private parties provide both. About 35 percent of vehicle (rolling stock) ownership is under the SRTUs. Special services like school trips, contract services etc are provided by various organizations who would hire the buses. In the case of freight transport, operations are largely in the hands of the truck owners, while customer interface and value added services are provided by trucking companies.

Given this complex web of organizations involved in the road sector, the services are seen to be very competitive, though not always of sufficient quality and reliability. This is largely attributed to poor state of road infrastructure.

4.5 Water

Water transport is another area where a large number of organizations are involved. The right of way (approach channels to port) and terminals (ports) are under the Central and State Governments. A few private terminals are in existence, primarily for captive use. The rolling stock (ships) ownership is open to private parties. However, nearly 50 percent of the ship tonnage is owned by one public sector organization, the Shipping Corporation of India. The customer services and special services are privatized significantly. While services are viewed as being competitive, the major bottleneck is in terms of terminal (port) delays. India has an average ship turnaround of nearly eight days in the major ports, while the best in the world would be under two days.

4.6 Pipeline

Another mode of transport gaining its significance as a viable alternative is pipeline. This technology is useful for transportation of fluids (crude oil, petroleum products, natural gas etc) and other commodities transportable in slurry form (coal, iron ore pellets etc). Conceptually, even conveyor belts and aerial ropeways serve the same purpose for transportation of bulk commodities in solid form, though usually for short distances. Currently, all investments in pipelines, belts and ropeways are for captive use and hence managed by the respective user organizations. However, it is likely that a "public" network of pipelines may be useful and even necessary for the oil and gas sector. Questions regarding the actors, the service arrangements and appropriate regulation of infrastructure investments, maintenance, operations and services would then have to be resolved.

4.7 Role of State Controls

In the above framework, it would appear that there is inefficiency wherever the State has direct involvement in transport infrastructure based activities, primarily due to non-accountability in a commercial sense. This is not to generalize that involvement of the State in infrastructure is always

Figure 1.
FLOW OF RESOURCES IN TRANSPORTATION INFRASTRUCTURE FINANCING

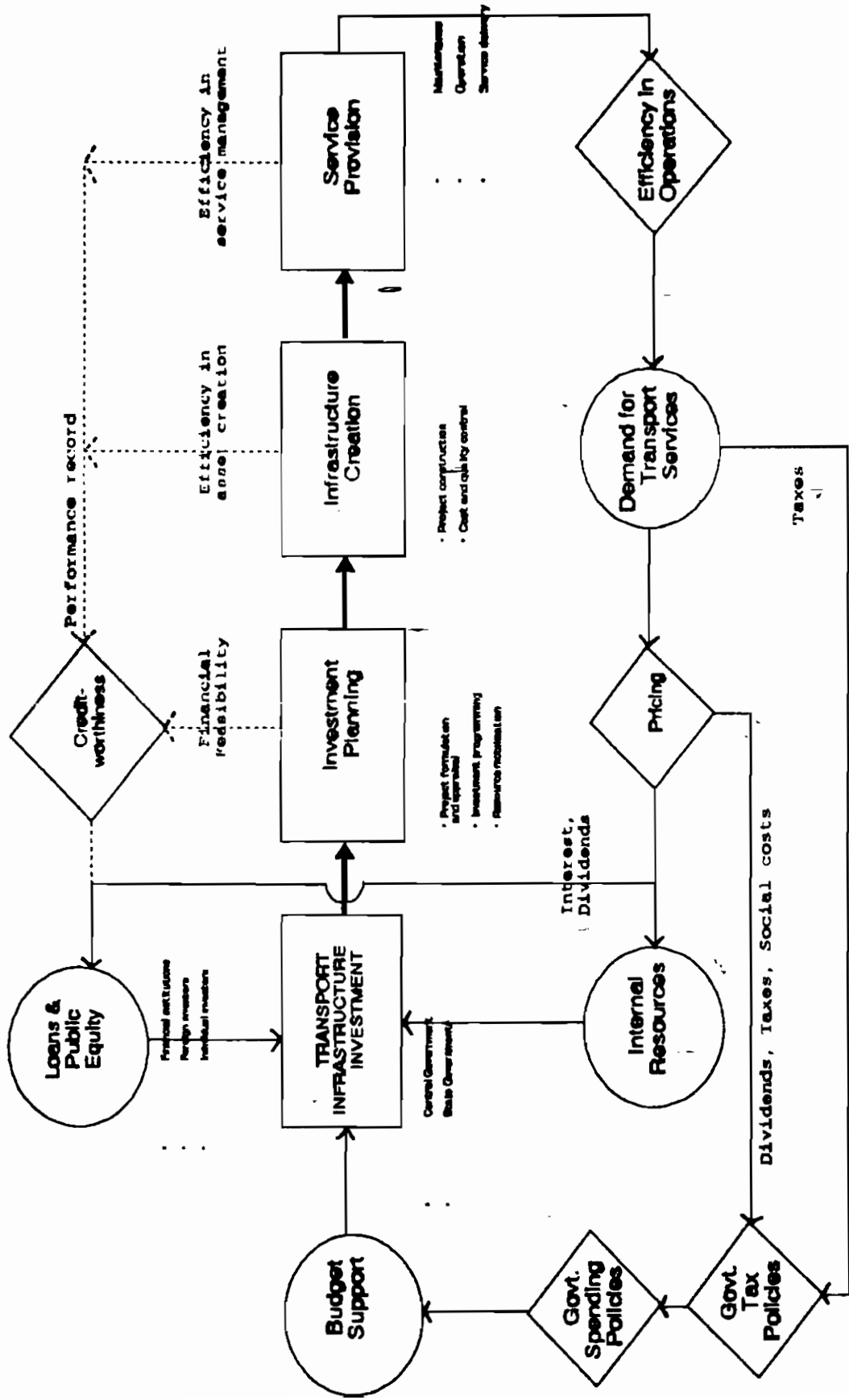


Table A1. Public Sector Plan Investment in Transport Sector (India)

Sector	Unit	Plan Periods									
		I 1951-56	II 1956-61	III 1961-66	Inter Plan 1966-69	IV 1969-74	V 1974-79	VI 1980-85	VII 1985-90	Inter Plan 1990-92	VIII 1992-97
Railways Share in Sector Inv.	Rs Crores %	217 50.0	723 65.7	1326 66.9	589 53.0	934 37.0	2063 37.2	6587 47.4	16549 56.2	10218 56.7	27202 48.5
Roads Share in Sector Inv.	Rs Crores %	135 31.1	224 20.4	440 22.2	309 27.8	862 34.2	1701 30.7	3807 27.4	6335 21.5	3779 21.0	13210 23.5
Road Transport Share in Sector Inv.	Rs Crores %	12 2.8	18 1.6	27 1.4	55 4.9	128 5.1	503 9.1	1276 9.2	2151 7.3	1164 6.5	3850 6.9
Shipping Share in Sector Inv.	Rs Crores %	19 4.4	53 4.8	40 2.0	32 2.9	155 6.1	469 8.5	468 3.4	719 2.4	1007 5.6	3669 6.5
Ports & Lighthouses Share in Sector Inv.	Rs Crores %	28 6.5	33 3.0	97 4.9	55 4.9	255 10.1	497 9.0	725 5.2	1521 5.2	879 4.9	3592 6.4
Inland Water Transport Share in Sector Inv.	Rs Crores %	-	-	4 0.2	6 0.5	11 0.4	16 0.3	63 0.5	188 0.6	104 0.6	348 0.6
Civil Aviation Share in Sector Inv.	Rs Crores %	23 5.3	49 4.5	49 2.5	66 5.9	177 7.0	294 5.3	957 6.9	1948 6.6	765 4.2	4106 7.3
Others Share in Sector Inv.	Rs Crores %	-	-	-	-	-	-	-	47 0.2	120 0.7	166 0.3
Total Transport Sector % to Total Plan Exp.	Rs Crores %	434 22.1	1100 23.5	1983 23.1	1112 16.8	2522 16.0	5543 14.1	13883 12.7	29457 16.4	18034 13.2	56142 12.9
Total Plan Expenditure	Rs Crores	1968	4672	8575	6625	15778	39426	109292	179277	137034	434100

Source: Planning Commission, India. Eighth Plan Document - 1992-97, Vol.II.

Table A3. Fiscal Effects of Road & Road Transport Sector						
						(Rs Crores)
	Item	Centre /State	1989-90	1990-91	1991-92	1992-93
Government Expenditures:						
1.	Roads	Centre	453	407	490	NA
		State	1103	1384	1576	NA
2.	Road Transport	Centre	48	64	70	NA
		State	352	443	587	NA
Total			1956	2298	2723	2560
Government Revenues:						
1.	Motor Veh. Taxes	State	1248	1374	NA	NA
2.	Passenger & Goods Taxes	State	728	885	NA	NA
3.	Sales Tax on Motor Spirit & Lubricants	State	724	776	NA	NA
4.	Excise & Customs	Centre	4073	4596	NA	4792
Total(1+2+3)			2700	3035	NA	4739
Total(1+2+3+4)			6773	7631	NA	9531
(NA: Not Available)						
Sources:	<ol style="list-style-type: none"> 1. Planning Commission. Eighth Plan Document. 1992-97. 2. Ministry of Surface Transport. Motor Transport Statistics. 1988-91. 3. Ministry of Surface Transport. Basic Road Statistics. 1988-89. 4. Sahoo M.S. Resource Mobilization for Road Construction. Transport Management. Dec 1994. 					

Table A4. Capital Structure of Two Major Shipping Companies (1992-93)
(Rs Crores)

	Item	Shipping Corpn. of India	Great Eastern Shipping
1.	Gross Block Assets	2742.2	694.7
2.	Equity	282.3	174.9
3.	Loans		
	- Govt. of India	678.0	-
	- Others	279.5	160.5
4.	Reserves & Surplus	437.3	239.5
5.	Residual Surplus or (Liabilities)	(1065.1)	(119.8)

Sources: 1. Shipping Corporation of India, 43rd Annual Report. 1992-93.
2. Great Eastern Shipping Co. Ltd., 46th Annual Report. 1992-93.

	Item	Visakhapatnam Port Trust 1989-90	Calcutta Port Trust 1990-91	Bombay Port Trust 1991-92
1.	Gross Block	293	735*	315
2.	Equity (from GOI)	-	-	-
3.	Loans*			
	- Govt. of India	164	469	-
	- Others	5	33	-
4.	Reserves & Surplus	127	278	1389
5.	Residual Surplus or (Liabilities)	3	45	1074

Sources: 1. Visakhapatnam Port Trust. Administration Report & Annual Accounts. 1989-90.
2. Calcutta Port Trust. Administration Report. 1990-91.
3. Bombay Port Trust. 113th Administration Report. 1991-92.

Note : GOI Government of India
* Includes capitalized dredging

	Item	International Airports Authority of India	National Airports Authority of India
1.	Capital Assets in Gross Block	530.00	569.00
2.	Equity (from GOI)	61.00	334.00
3.	Loans		
	- Govt. of India	31.00	44.00
	- IAAI	-	16.00
	- Foreign loan	-	6.00
4.	Reserves & Surplus	401.00	25.00
5.	Residual Surplus or (Liabilities)	(37.00)	(150.00)
6.	Annual Plan Expenditure	58.24	75.38
	- Internal Resources	58.24	73.88
	- Budgetary Support	0.00	1.50

Sources: 1. International Airports Authority of India. Annual Report. 1992-93.
2. National Airports Authority of India. 7th Annual Report. 1992-93.

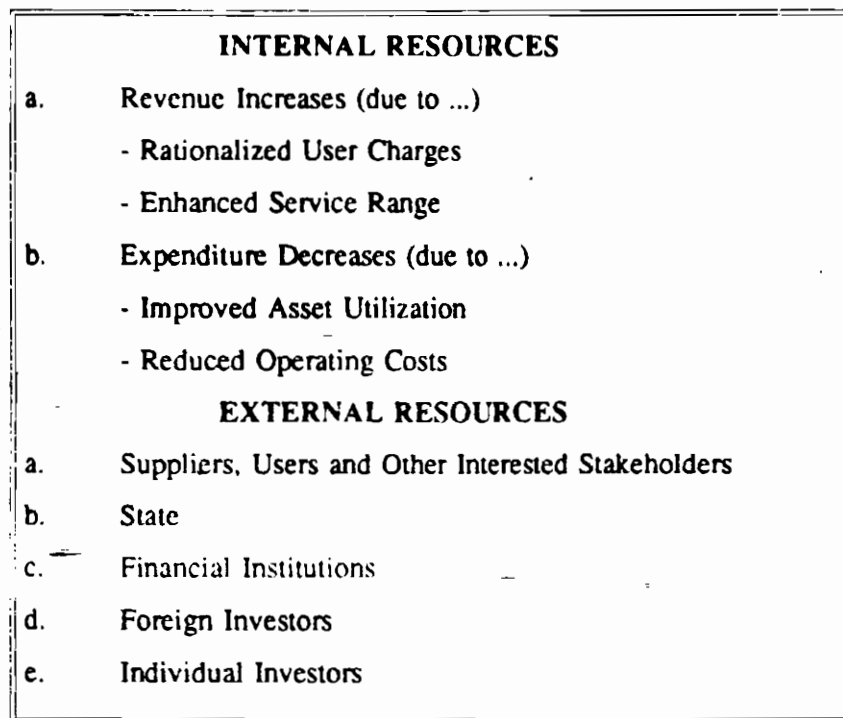
Notes : GOI - Government of India
Reserves inclusive of deferred expenditure.

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stakes) suppliers and users, the State, financial institutions, foreign investors and individual investors. The different possibilities for resource mobilization are as outlined below:



5.2 Options for Mobilizing Internal Resources

Revenue Increases:

Rationalized user charges and offering an enhanced service range ought to be viewed as the major source of finance and pricing done accordingly. The true "value" of the service provided should be charged. When the true "value" is not charged and subsidies provided, then market distortions take place, often leading to unintended segments being subsidized at the cost of service efficiency. While pricing, market segmentation strategies should be adopted, with a "commercial" outlook. Value added services can also bring in more revenues than costs incurred. Another important concept in proactively increasing revenues is the identification of "secondary" users and appropriately charging them for services provided. Going after advertising revenues at crowded stations would fall in this category.

Expenditure Decreases:

Reducing operating costs and improving asset utilization would be the relevant strategies here. In an environment where all expenses are met either through revenues or subsidies, the incentives for cost optimization are non-existent. In a self financing environment, not only are costs controlled but also improved asset utilization is often a greater opportunity.

For example, the broad gauge rolling stock utilization in the Indian Railways is 600 kms, 450 kms and 110 kms per day respectively for locomotives, passenger coaches and freight wagons. At an average speed of 50 kmph for passenger trains (maximum - 100 kmph) and 20 kmph for freight trains

(maximum - 75 kmph), these figures are quite low. A research study by one of the authors in which the potential maximum passenger coach utilization was sought to be determined by a simple strategy of standardized rakes for sets of similar trains showed that a figure of 700 kms per day was attainable, even after satisfying all stated maintenance and operational requirements. This alone would result in an increased rolling stock infrastructure availability to the extent of nearly 1.55 times [Raghuram G, 1994].

5.3 Options for Mobilizing External Sources

Suppliers, Users and Other Interested Stakeholders:

Infrastructure financing can often be provided by suppliers and other interested stakeholders including users. Schemes which involve equipment finance/lease by the manufacturer (aircraft, ships etc) or by major users ("own your wagon" scheme) are examples of this. There could also be other stakeholders not directly connected with the concerned activities, who nevertheless have sufficient knowledge, background and interest in investment. It is in this context that a) the extent of risk-sharing between such stakeholders and the government and b) the relative efficiency of ownership and operations in the long run, become important factors. There are broadly three schemes which take care of this:

BOO (Build, Own, Operate): In this scheme, the relative efficiency of the stakeholder is viewed as being better than the government at all times. The risk-sharing or for that matter the inability to appropriate all benefits due to the infrastructure through user charges, if any, can be handled by the government through direct subsidization of a fixed amount or in a manner as to ensure a minimum return on investment.

BOT (Build, Operate, Transfer): In this scheme, the relative efficiency of the stakeholder is viewed as being better than the government in the short run and the reverse in the long run. Hence, the "transfer". The risk-sharing or for that matter the inability to appropriate all benefits due to the infrastructure through user charges, if any, can be handled by the government through direct subsidization of a fixed amount or in a manner as to ensure a minimum return on investment, during the "operate" phase. However, in this scheme, the "operate" phase is usually provided to ensure collection of user charges at higher than normal rates so that the investment is recovered before the "transfer". The Konkan Railway Corporation is an example of this scheme.

BOLT (Build, Own, Lease, Transfer): In this scheme, the relative operational efficiency of the stakeholder is viewed as being less than the government at all times. The risk is entirely borne by the government, since a minimum return on investment for the stakeholder is provided for by appropriate lease charges. Once the investment is recovered, the ownership is transferred to the government. The

"own your wagon" scheme as also certain other projects announced recently by the Railways fall in this category.

State:

This needs no elaboration since the existing scenario assumes that the State is the only possible actor. The new role of the State in an environment of increased investments in infrastructure would be to a) "commercialize"/"corporatize" existing infrastructure and services to ensure optimization of revenues, costs and asset utilization b) judiciously identify stakeholders for infrastructure investments and facilitate such investments through appropriate risk-sharing/subsidization schemes.

Financial Institutions:

Debt financing for infrastructure can be obtained by the State or the stakeholders from financial institutions at commercial interest rates. It would be important to develop the confidence of such institutions in the basic viability of infrastructure projects and in their appropriate management at the project and service delivery stages.

Since infrastructure financing is a specialized area, the role of special institutions which can a) understand the nature of infrastructure projects and b) bridge the gap between sources of capital and channelizing investments into infrastructure becomes crucial. The World Bank has traditionally been playing this role and India has benefitted from this.

In the recent past, we can recount two institutions which have been successful along these lines, especially in transport infrastructure financing, namely SCICI (the Shipping Credit and Investment Company of India Limited, incorporated in December 1986 with the assets and liabilities of the erstwhile Shipping Development Fund Committee of the Government of India) and IL&FS (Infrastructure Leasing and Financial Services Limited, incorporated in the last quarter of 1987). As of 31st March 1994, the SCICI had a fund base of Rs 2098 crores and the IL&FS had Rs 909 crores. IL&FS has been more venturesome in that it has also provided funds for infrastructure projects as equity capital, apart from leasing and loans.

Foreign Investors:

Due to the general climate of liberalization and the higher interest and dividend rates available in India, this source (both loan and equity) is becoming increasingly significant. Some of the transport related organizations which have been successful in tapping such sources are Great Eastern Shipping Company, SCICI and IL&FS. There is apparently interest for investments in the road and port sectors, especially if channelized through appropriate stakeholders. A very plausible scenario is the tapping of such funds by the specialized infrastructure financing institutions.

Individual Investors:

Equity and bond financing for infrastructure can be obtained by the State from individual investors at commercial capital costs. Just as in the case of financial institutions, the confidence of such investors needs to be developed.

6. Strategies for Resource Mobilisation

For several decades in India, transport infrastructure has been financed essentially from budgetary resources of government. Some of the State controlled transport enterprises have been able to generate sufficient internal resources and borrowings in the capital market to supplement the budget allocations. Others, however, have failed on this count and as a consequence, the infrastructure in such sectors has not expanded and is poorly maintained.

The usual justification for centralised state control of a transport sector is based on the existence of natural monopoly conditions due to economies of scale and economies of scope. Based on the performance record of state controlled transport enterprises in India, it is difficult to claim that the cost of services under state monopolies is significantly lesser than what it would be if these services were to be provided by a decentralised system including private providers.

6.1 Framework for Strategy Formulation

In order to formulate appropriate policies and strategies for transport infrastructure development, it is important to recognize a general constraint for developing countries. During early stages of development, it is usually difficult to attract private sector participation. The major stakeholders in the sector usually lack preparedness to undertake the complex job of tying up finances, building assets and delivering service. Existence of reasonable base capacity and the presence of a well developed financial system, experienced construction consortiums and responsive public authorities, enhance the preparedness of potential private partners.

Unbundling of Activities:

Unbundling of activities into separate components for financing, construction and operation of transport infrastructure is a useful way of exploring the private participation options for each transport mode. For example, the role of a private operator providing certain customer services in the rail sector is quite different from a private firm wishing to manufacture train wagons. Separation of activities and system components allows disaggregated consideration of comparable viable options and leads to better strategy formulation.

Another way to "unbundle" the system is by the nature of stakes of major stakeholders in each activity. This approach helps to determine the form of participation that may be expected from the

stakeholders. The goal of unbundling strategies is to introduce elements of competition and commercialisation in the provision of transport services while also mobilizing additional investments. Table 6 presents a simple framework for analysing unbundling strategies. It uses the approach of unbundling by system components and by the stakes involved in financing, building and operating the infrastructure assets.

In this scheme, the separable system activities are: (a) asset creation, (b) maintenance, (c) operations, and (d) customer services. These are further disaggregated into system components related to right of way, terminals and rolling stock and equipment. There are some obvious and not so obvious stakeholders who could be involved in different activities. Apart from the State, there are several other stakeholders among suppliers, users, financial institutions and investors who may find it profitable to participate in certain activities. The framework suggested here identifies major decision areas, strategy objectives and criteria for comparing available options and as guidelines for arriving at acceptable arrangements for risk-sharing among various participants.

Decision Areas:

Out of the major stakeholders, who would finance the investment? Who would build the project? Who would operate the system? Who would deliver services to customer? These are specific decisions to be made. Each strategy option must also specify the risk-sharing arrangements addressing the issues of incentives and guarantees to ensure reasonable returns on investment; What type of regulations should be put in place to ensure accountability of the provider to maintain standards and meet obligations. In the area of services the decisions are concerned with the identification of primary and secondary operators, setting of terms of payment and regulations to obtain specified standards of service.

Objectives:

Strategies for resource mobilisation should aim at the following objectives:

- Additional resources
- Efficient asset creation
- Efficient utilization of assets
- Efficient delivery of service
- Access to poor; environmental impacts; other social concerns

In order to evaluate alternative strategies, the above objectives should be prioritised according to actual situation prevailing in the particular sector and country context.

Table 6. Framework for Strategy Formulation

Infrastructure Financing:		Decision Variables						
	Who are	Who would				Arrangements for risk sharing		
	Stake-holders	Finance	Own	Build	Operate	Guarantees	Other Incentives	Regulation
Right of Way	A B C							
Terminals								
Rolling Stock and Equipment								

Provision of Service:		Decision Variables				
	Stake-holders	Primary Contractor	Subcontractor	Measures for		
				Incentives	Competition	Regulation
Maintenance						
- Right of Way						
- Terminals						
- Rolling Stock and Equipment						
Operations						
- Right of Way						
- Terminals						
- Rolling Stock and Equipment						
Customer Services						
- Basic Services						
- Special Services						

Criteria:

Apart from the relative effectiveness of alternative strategies in achieving the resource mobilization objectives, it is useful to compare the options against the following criteria which indirectly facilitate achievement of the primary objectives. These are:

- professional management capabilities of the provider organization
- managerial autonomy in decisions regarding project implementation, pricing and setting of service standards
- degree of competition among providers and barriers to entry
- commercialization of service provision on full cost recovery basis.

6.2 Findings and Inferences

1. Since there are major differences in the infrastructure and service characteristics of different modes of transport and due to the variety of stakeholders, it follows that specific strategies would have to be evolved for each situation. The central policy issue is, how to restructure the pattern of public-private participation in order to mobilise additional resources for infrastructure creation and to ensure their efficient utilisation in service delivery.

2. It is possible that in some subsectors the resource gap can be filled by undertaking strategic reforms within the state controlled enterprises in order to increase in internal resource generation. Such a strategy would be based on improving the efficiency of these organisations in asset creation, utilisation and operations; providing greater managerial autonomy; and charging for services on commercial principles of full cost recovery. All subsidies and cross-subsidies would have to be made explicit and transparent and the providers compensated accordingly. Corporatisation of state controlled enterprises and decentralisation of responsibilities to state and local governments are additional policy measures which can enhance resource availability.

3. If, on the other hand, the resource gap is too large to be filled by the above reforms, then strategies should be formulated for selective unbundling of activities for greater private sector participation in financing of infrastructure and provision of services. The key benefits to be derived from these "unbundling strategies" are increased competition and commercialisation. The resulting policy issue is, how to unbundle the system into components and how much private participation to allow in each component.

4. It has already been suggested in this paper that the viability of private participation in each transport sector varies considerably among different components of the infrastructure system - viz. right of way, terminals, rolling stock and equipment. Further, in the existing system in India, while certain components are totally state-controlled and centralised, others are already "open to all" and operate under high degree of competition among public and private providers.

5. Our review of the pattern of financing of transport infrastructure in India has shown that a certain degree of liberalisation of this sector is needed as well as inevitable since the government is keen on reducing budgetary support for new investments. As the potential to generate additional internal resources is also limited compared to the total investment requirements, the obvious strategy direction is towards privatisation. Which specific activities in the transport system should be privatised? Which form of privatisation is most suitable for the purposes of mobilising additional resources and efficient provision? These are complex questions which require a thorough analysis of specific options in each sub-sector of the transport system.