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India

Country Framework Report for Private Participation in Infrastructure

World Bank and Public-Private
Infrastructure Advisory Facility

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Contents

Abbreviations v

Acknowledgments vi

Executive Summary 1

PART 1. SECTORAL REVIEW

1. Telecommunications 5
- Market Structure and Performance 5
- Private Sector Participation 6
- Regulatory Environment 8
- The New Telecom Policy of 1999 10
- Policy Recommendations: Moving to a Competitive Telecommunications Market 10

2. Power 15
- Market Structure and Performance 15
- State-Level Regulatory and Policy Reform 18
- Reforms at the Central Level 19
- Policy Recommendations: Implementing Fundamental Sector Reforms 22

3. Urban Water and Municipal Services 25
- Market Structure and Performance 25
- Private Sector Participation 28
- Tariffs and Financial Performance 29
- Policy Recommendations: Private Participation in Operating Water Systems 29

4. Roads 33
- Sector Performance 33
- Private Sector Initiatives to Date 34
- Policy Recommendations: Developing a Privately Financed Road Program 39

5. Ports 41
- Market Structure and Performance 41
- Private Provision to Date 43
- Sector Regulation 46
- Policy Recommendations: Modernizing the Ports Sector 46

6. Airports **49**
Market Structure and Performance 49
Private Sector Participation 50
Policy Directions: Redefining the Public Sector's Role 51

PART 2. INSTITUTIONAL ISSUES

7. Developing Infrastructure Regulatory Institutions **53**
Regulatory Independence 53
Multi-Sector or Single-Sector Regulatory Agencies? 55

8. Infrastructure Finance: The Role of the Domestic Debt Market **57**
Funding for Infrastructure 57
Debt Market Functioning 58
Policy Recommendations: Developing a Genuine Market for Long-Term Debt 59

9. The Public-Private Interface **61**
Contracting and Implementing Private Infrastructure Projects 61
Sharing Risks between the Public and Private Sectors 62
Environmental and Social Impact Legislation 62
Policy Recommendations: Efficiency and Transparency in Contracting Infrastructure Projects to the Private Sector 63

PART 3. POLICY RECOMMENDATIONS

10. Overview of Policy Recommendations **65**
Telecommunications 65
Power 66
Urban Water and Sewer Systems 66
Roads 66
Ports 67
Airports 67
Developing Infrastructure Regulatory Bodies 68
Developing a Genuine Market for Long-Term Debt 68
Improving Efficiency and Transparency in Contracting Infrastructure Projects to the Private Sector 68

References **69**

Abbreviations

BLT	Build-lease-transfer
BOOT	Build-own-operate-transfer
BOT	Build-operate-transfer
BPC	Bangladesh Petroleum Corporation
BSES	Bombay Suburban Electric Supply Limited
GAIL	Gas Authority of India Limited
GDP	Gross domestic product
GRIDCO	Grid Corporation of Orissa Limited
HBJ	Hazira-Vijaipur-Jagdishpur pipeline
HUDCO	Housing and Urban Development Corporation
IOC	Indian Oil Corporation
LIBOR	London interbank offered rate
MOST	Ministry of Surface Transportation
MTNL	Mahanagar Telephone Nigam Limited
NHAI	National Highway Authority of India
NTPC	National Thermal Power Corporation of India
OERC	Orissa Electricity Regulatory Commission
OIL	Oil India Limited
ONGC	Oil and Natural Gas Corporation Limited
RBI	Reserve Bank of India
SACFA	Standing Advisory Committee on Frequency Allocation
TRAI	Telecom Regulatory Authority of India
TAMP	Tariff Authority for Major Ports
VSNL	Videsh Sanchar Nigam Limited
WPC	Wireless Planning and Coordination Wing of the Department of Telecommunication

Acknowledgments

This Country Framework Report for India is the first in a series of country reviews aimed at improving the environment for private sector involvement in infrastructure. Prepared at the request of the government concerned, Country Framework Reports have three main objectives:

- To describe and assess the current status and performance of key infrastructure sectors.
- To describe and assess the policy, regulatory, and institutional environment for involving the private sector in those sectors.
- Through the above, to assist policymakers in framing future reform and development strategies and to assist potential private sector investors in assessing investment opportunities.

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The report was prepared by a core team led by Clive Harris and comprising Christopher Juan Costain (capital markets), Marc Juhel (ports), Bridger Mitchell (telecommunications), Kumar Ranganathan (water), Jeff Ruster and Mitchell Stanfield (roads), and Alan Townsend (power). The report also draws on inputs from various staff from the World Bank and other development institutions, as well as discussions with representatives of the private sector.

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Executive Summary

Recognizing the need to attract more investment in infrastructure, India opened itself to private investment as part of the country's 1991 reform program. There have since been some advances. The first privately financed basic telecommunications services now compete with the public service provider. More than 1.1 million cellular phone subscribers now receive service from private companies. A total of 3,000 megawatts of privately financed independent power projects are now operational. Private investors are funding the construction of roads, ports, and airports.

Indians still receive infrastructure services largely through public entities—usually part of a government department. Because those services are erratic, Indian businesses routinely provide their own power and water. The World Economic Forum's 1998 *Global Competitiveness Report*, a business survey of international investors, ranked India last among 53 countries in the quality of overall infrastructure. If the provision of high quality, reliable, and reasonably priced infrastructure services continues to be inadequate, it will be a major drag on economic growth in India.

The expected increase in demand for infrastructure services points to the need for augmenting capacity and improving efficiency in all areas. The Expert Group on the Commercialization of Infrastructure Projects estimates that India needs to invest $115 billion to $130 billion in infrastructure from 1996–2001, and $215 billion in 2001–2006 (NCAER 1996). Achieving this investment will require major policy reforms. Looking ahead, private sector participation in infrastructure is an important focus of India's Ninth Five-Year Plan for 1997–2001. The government also has established a high-level task force to attract investment—including private funds—to projects of national and regional importance. The task force is concentrating on developing expressways, adding lanes to national highways, and building five world-class international airports.

The full potential of the private sector to meet India's pressing infrastructure needs is largely untapped. With few exceptions (principally in the power sector in the state of Orissa), there has been little divestiture of existing assets. The private sector has built new infrastructure, such as independent power projects and new port sites, and established new companies that compete with public operators, particularly in the telecommunications sector. However, the productivity and efficiency improvements that private management and ownership

could introduce to existing public sector service providers—under an appropriate regulatory regime and with competition when possible—would help to relieve some of the current infrastructure constraints.

India has started to restructure government roles in power—particularly by separating operations from policy and regulation. This has occurred to a lesser extent in telecommunications and ports. In other sectors the process is incomplete or has not yet begun. This separation of roles and the creation of independent regulatory agencies will be particularly important where there is competition between private and publicly owned service providers—and when there is a need to insulate tariffs from political pressure.

Telecommunications

The entry of private operators into the telecommunications sector indicates great potential for competition and private investment. But market structure and license conditions have undermined incentives for large investments and new entry. Teledensity remains extremely low (table 1). The New Telecom Policy, unveiled in March 1999, provides a platform for further development and liberalization of the sector. It envisions a more competitive market for all telecommunications services. Key issues:

- Defining relationships among the regulatory agency, policymakers, and the current service provider.
- Establishing an efficient interconnection regime to spur competition.
- Continuing to rebalance prices within a more competitive environment.

Table 1 **India's Telecommunications Performance Compared with That of Neighboring Countries, 1997**

	Telephone mainlines per 100 people	Waiting list as percent of mainlines in operation
India	**1.9**	**15.2**
China	5.6	1.5[a]
Indonesia	2.5	6.3[a]
Malaysia	19.5	4.2[a]
Pakistan	1.9	11.8
Sri Lanka	1.7	89.9

a. Data refer to years other than 1997.
Source: ITU 1997a.

Power

State electricity boards are an increasing financial drain on their governments. They have low average tariffs, with high cross-subsidies to agricultural and residential consumers, and suffer from poor management, high levels of theft of power, and a large volume of uncollected bills (table 2). This has lead to capacity shortages, poor system reliability, and frequent blackouts. Despite government steps to introduce private sector investment in generation, the poor financial standing of most boards means that far fewer deals have reached financial closure than expected. Key issues:

- Private ownership in distribution would provide commercial incentives to reduce technical and, in particular, nontechnical losses.
- Genuinely independent regulatory agencies would help ensure that prices are set to correct present distortions and provide incentives to make operators more efficient.

Urban Water and Municipal Services

No large privately sponsored projects have yet reached financial closure in the water and sewerage sector, which is handicapped by inadequate revenues and a cumbersome institutional approach (table 3). Central, state, and city governments have been providing and regulating services. The goal of the 74th Amendment to the constitution is

Table 2 **India's Electricity Performance Compared with That of Neighboring Countries (percent)**

	Access to electricity, 1994	Energy losses, 1996
India	**88**	**21[a]**
China	92	7
Indonesia	39	12
Malaysia	90	11
Pakistan	46	23
Sri Lanka	38	17

Note: Access to electricity in India is measured by electrified villages as a percentage of total villages, rather than electrified households as a percentage of total households. As a result, the above figure may overestimate the percentage of the Indian population with access to electricity. Although the Ministry of Power reported total energy losses of 21 percent throughout India, closer examination shows serious underreporting. In Orissa, for example, where loss reduction and revenue enhancement measures have been most active of late, actual losses are far above losses reported prior to reform, at around 46 percent.
a. Data refer to years other than 1996.
Source: India, Ministry of Power 1997; ADB 1997a, 1997b.

to move toward municipal management of urban water services, but the process is in the early stages. Although several bulk water schemes are under consideration, they are likely to prove viable only when supported by sales to industrial consumers or when the municipality has strong finances. Poor management of existing networks suggests that efficiency could be improved greatly by introducing private operators and measures to provide an adequate revenue stream.

Failure to provide water of adequate quantity and quality is a major cause of death and illness in India, often resulting in epidemics. An estimated 12 percent of premature deaths and disabilities in India are due to water-related infections, primarily diarrheal disease, hepatitis, and parasitic infections, with the proportion rising to about one-fifth of all causes of death among children. That translates into about half a million deaths in children under five each year (based on India 1996). Key issues:

- Municipal governments must be stronger and have sound finances.
- Private sector management is needed to improve efficiency.
- Pricing reform needs to be a priority.

Roads

Small projects, like bridge and bypass construction, have been privately financed, but larger projects have not. Just 4 percent of national highways have four lanes. Only 20 percent of paved roads are considered to be in good condition, and many roads cannot cope with increasing traffic volumes (India, Planning Commission 1999). The government has begun introducing tolls on newly expanded stretches of road, and the number of toll roads, bridges, and bypasses will increase. The government plans to upgrade the national highway network and include the private sector. Key issues for central and state governments:

- Identifying and preparing financially viable projects.
- Determining how tolls fit into the overall funding of road projects, both public and private.
- Identifying and providing for the contingent liabilities that privately financed projects imply for the public sector.

Table 3 India's Water Performance Compared with That of Neighboring Countries

	Access to safe water (percent) 1993	Availability[a] (hours/day) 1995
India	**85**	**4**
China	83	24
Indonesia	65	18
Malaysia	89[b]	24
Pakistan	62[b]	17
Sri Lanka	70[b]	22

a. Water availability figures are for the cities of Delhi, Beijing, Jakarta, Kuala Lumpur, Lahore, and Colombo.

b. Data refer to a year other than 1993.

Source: ADB 1997b; World Bank 1999.

Ports

Indian port productivity is extremely low by international standards. Unless the productivity and capacity of ports are increased, more bottlenecks will occur as demand for port services grows. The Ministry for Surface Transport oversees the country's 11 major ports, for which the Tariff Authority for Major Ports regulates prices. The other 142 ports come under state jurisdiction. The central government has adopted broad policy measures to open ports to private investors and operators. Some maritime states are also attracting private investments. The central government is seeking private investment in captive and other facilities, and state governments are seeking private investment, largely in new sites. Key issues:

- Separating statutory and operational roles at the major ports.
- Continuing to transfer operational roles to the private sector.
- Enhancing competition between ports to provide greater choice for consumers.
- Improving the sector's institutional structure, particularly the distinction between major and minor ports.

Airports

Passenger traffic is concentrated at Bangalore, Calcutta, Chennai, Delhi, and Mumbai. All of these airports are operated by the Airports Authority of India. Major investments in airports are needed to bring existing facilities up to international standards and to handle the expected increase in passengers and cargo. One project with private sector participation was recently commissioned in Cochin, Kerala. To set the stage for more pri-

vate sector participation, the government is planning to lease operations at the Calcutta, Chennai, Delhi, and Mumbai airports. Key issues:

- Structuring the proposed leasing contracts.
- Establishing a regulator to oversee private operations under the lease.

Developing Regulatory Institutions

A growing number of special economic regulatory agencies in India oversee power, telecommunications, and ports. Their experience provides lessons about the political economy of infrastructure regulation in India and about the design of regulatory bodies to ensure that they fulfill their mandate as independent regulators. Key issues:

- Effectively delineating the responsibilities of regulators and policymakers.
- Placing the creation of an independent regulator within a broader restructuring of the sector.

Promoting Domestic Infrastructure Finance

India has a relatively high savings rate of more than 25 percent, but the term of loans available for infrastructure projects is still relatively short. The number of providers of long-term debt is limited; these providers have similar incentives and investment patterns, and the regulatory system constrains the willingness of lenders to provide financing for infrastructure projects. The development of a secondary market for debt is also somewhat constrained by existing taxes and regulations. These factors are reflected in India's relatively large primary debt market, but light secondary market trading. Key issues:

- Increasing demand for long-term debt instruments through pensions and insurance reform.
- Making the debt market work better by simplifying taxes to reduce distortions, regulating the private placement market, supporting securitization, and simplifying and harmonizing debt auction procedures.

Improving the Public-Private Interface

Although public investment in infrastructure has declined as a percentage of gross domestic product (GDP) since the start of the decade, private investment has failed to fill the gap. As a result, total investment in infrastructure, as a percentage of GDP, is below the levels of 1991–93 (table 4).

Table 4 **Investment in Infrastructure as Percent of GDP**

	1991–92	1992–93	1995–96	1996–97	1997–98
Public	4.0	3.7	3.2	2.9	3.0
Private	1.4	1.6	1.0	1.5	1.6
Total	5.4	5.3	4.2	4.4	4.6

Source: World Bank staff.

The increasing emphasis on private provision of infrastructure services is placing new demands on the public sector's contracting and supervision skills. This situation frequently results in the bidding of projects that have been inadequately prepared. There is a need for greater interministerial coordination at the central and state levels. This need is also highlighted by constraints on private sector developers, particularly in the power sector where many public and private sector actors are involved. Policy recommendations:

- Improve the efficiency and transparency in contracting infrastructure projects to the private sector—each state government could establish a single body responsible for contracting and obtaining necessary clearances.
- Report and value contingent liabilities—state governments should monitor their contingent liabilities systematically and provide other forms of support. Public agencies should create liquid funds that allow agencies to meet liabilities as they arise.
- Audit public support to private infrastructure projects—governments should work toward auditing the award of public-private infrastructure partnership projects.

PART 1. SECTORAL REVIEW

1 Telecommunications*

*At the end of January 2000, the Government promulgated the Telecom Regulatory Authority of India (Amendment) Ordinance. This created a Telecoms Disputes Settlement and Appellate Tribunal to adjudicate disputes between the licensor and licensees, two or more service providers, and between service providers and groups of consumers. The ordinance also transferred appeals presently standing before the High Court to the Tribunal. TRAI's powers were redefined under the Ordinance to give it clearer powers over the terms and conditions of interconnection between service providers. In addition, the Ordinance specifies that the government will seek TRAI's views on the introduction of new service providers and on their license conditions, although the government will have the final decision.

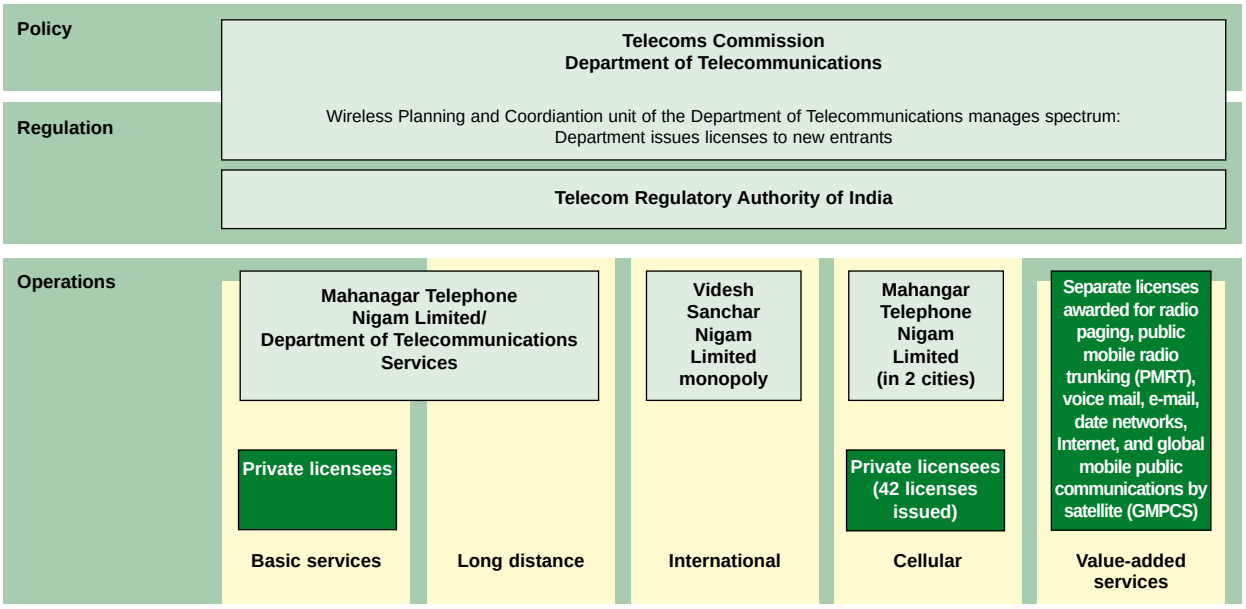
- *Policy objectives.* The objectives of the New Telecom Policy are universal service coverage, world-class telecommunications service, and a rapid increase in the coverage, quality, and range of services.
- *Private participation.* Private companies now provide cellular, radio-paging, voice, e-mail, and video-text services. Private firms are also starting up in fixed services.
- *Key issues.* Effectively separating policy, regulatory, and operational roles, strengthening the authority of the regulator, and introducing competition into all services, through an efficient, interconnection regime and rebalanced prices.

Market Structure and Performance

The public sector still dominates telecommunications service provision (figure 1.1). The Department of Telecommunications is the policymaker and licensor, and the recently established Department of Telecommunications Services, created by splitting the Department, provides fixed services throughout metropolitan India and is the sole provider of interstate long-distance services. Mahanagar Telephone Nigam Limited (MTNL) provides basic services in Delhi and Mumbai, and Videsh Sanchar Nigam Limited (VSNL) has a monopoly on international services (excluding Internet services). Both companies are majority owned and controlled by the government.[1] The Telecom Regulatory Authority of India (TRAI) was established in March 1997 to act as the sector's regulator.

The process of introducing the private sector into telecommunications service provision began in 1991 with the tendering of licenses to provide cellular services in the metropolitan areas of Delhi, Mumbai, Calcutta, and Chennai. India needed to achieve a rapid expansion in the coverage, quality, and range of services available (table 1.1). The National Telecom Policy, issued in May 1994, introduced the private provision of basic fixed telecommunications services and proposed private provision of cellular services in nonmetropolitan areas (table 1.2). The more lucrative interstate long-distance and international services remained in the public sector. The introduction of competition and the need for interconnection with the Department of Telecommunications and MTNL networks led to calls for a regulatory authority, and TRAI was established.

Figure 1.1 India Telecommunications Sector: Institutional Framework



Source: World Bank Staff

Table 1.1 India's Telecommunications Performance Compared with That of Neighboring Countries, 1997

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Malaysia	19.5	4.2[a]
Pakistan	1.9	11.8
Sri Lanka	1.7	89.9

a. Data refer to years other than 1997.

Source: ITU 1997a.

Table 1.2 Private Telecommunications Service Providers as of December 31, 1998

Service	Licenses issued	Service started
Basic	6	2
Cellular	42	39
Radio paging	137	93
PMRT[a]	103	57
Data network	12	10
Voice mail	11	6
E-mail	15	15
Internet	45	1
GMPCS[b]	1[c]	—

a Public mobile radio trunking.

b. Global mobile public communications by satellite.

c. Provisional.

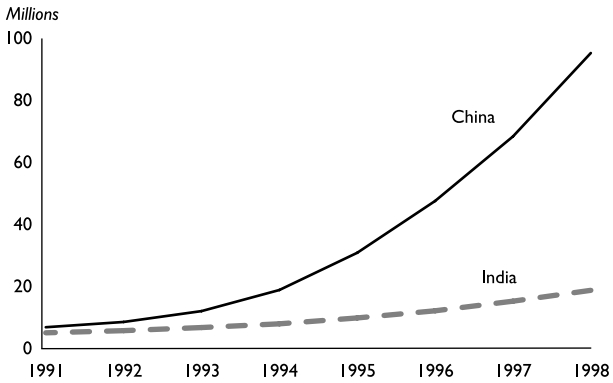
Source: World Bank staff.

Private operators experienced major difficulties in obtaining financing for their projects under the prevailing license structure. There has also been uncertainty over the respective jurisdictions of TRAI and the Department of Telecommunications, and many of the National Telecom Policy's objectives were not achieved. Despite the increase in the number of mainlines for every hundred inhabitants, the waiting list for a connection is higher now than at the beginning of the 1990s (figure 1.2). More than 2.8 million people are waiting for about 20 percent of the current number of lines.[2] Only 44 percent of villages have public telephone service (India, Planning Commission 1999). Teledensity in India (at 1.72 percent) is below that of neighboring Asian countries such as Thailand (11.4 percent), China (7.3 percent), and Indonesia (2.9 percent) (TRAI 1998). These problems, along with recognition of the implications of converging technologies and traditionally distinct markets, led to the New Telecom Policy, issued in March 1999.

Private Sector Participation

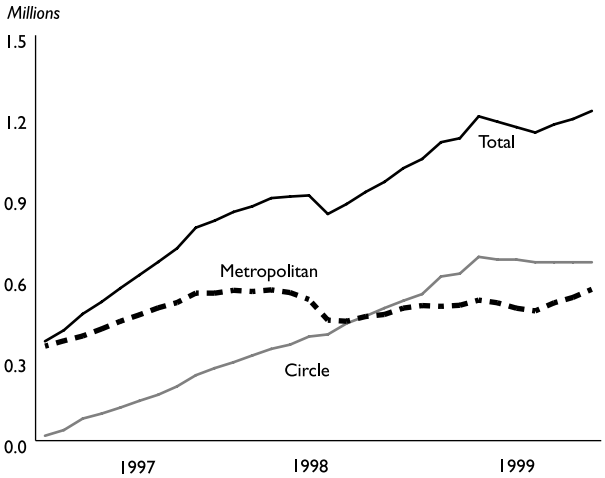
The government originally sought to establish a duopoly in basic and cellular telecommunications, with pri-

Figure 1.2 **Growth in the Number of Connections in India and China**



Note: Includes cellular and fixed services.
Source: Cellular Operators Association of India 1999.

Figure 1.3 **Growth in the Number of Cellular Consumers**



Source: Cellular Operators Associations of India 1999.

vate service providers paying substantial license fees for the right to provide services. This policy commenced in December 1991 with the tendering of licenses to provide cellular services in the metropolitan areas. Eight cellular licenses—two in each city—were awarded in October 1994 for 10 years. The licenses could be extended for five years. Cellular licenses for the state *circles*, which broadly correspond to states, were awarded for the same term by competitive sealed bidding in December 1995. Private companies have been allowed to provide radio paging, voice- and e-mail services, and video text services since 1992.

A total of 39 cellular networks (covering both metropolitan and circle areas) commenced operation. The number of cellular customers has increased since services began, with about 1.2 million customers by September 1999. However, the number of consumers in the metropolitan areas, as figure 1.3 shows, has only recently reached the levels seen in mid-1998. The substantial reduction after mid-1998 may be partly related to the shedding of nonpaying consumers.

The number of subscribers is broadly in line with operators' forecasts. However, revenues in the metropolitan areas are only around 60 percent or less of projections. The revenue shortfall is due to lower-than-expected phone use and lower airtime call charges than the maximum amounts allowed by licenses. Metropolitan operators also saw a decline in average revenue per subscriber as the customer base expanded. Metropolitan cellular licensers pay an annual fee per subscriber to the government. This fee, indexed to the ceiling unit call rate, has now risen to 6,023 rupees (Rs) per subscriber. Around 50 percent of subscribers generated annual revenues below this fee in mid-1998.

For the state circles, the later rollout makes it harder to assess the situation. Indications are that consumer numbers are close to anticipated levels in the metropolitan areas, but use per consumer is also well below forecasts, although use varies by state. Also, some licenses for the "B" circles, deemed to be less attractive at the time of auction, earn revenues per user similar to those of the "A" circles. Although there was considerable variation in the bids for each circle, most bids for basic and cellular circles have proven to be much higher than their markets can sustain. This overbidding was due partly to misestimation of market potential and, in some cases, to hopes that the license terms could be renegotiated. Bharti Telenet became the first basic operator to start operations.

Although the introduction of the private sector has meant some increase in service expansion, particularly through the availability of cellular telephones, paging, and Internet services, the roll-out of services has not begun as quickly as many hoped. This delay is largely due to the difficulties license holders have faced to date in achieving financial closure because of the high cost of license payments.

Licenses to provide basic services within state circles for 15 years (which could be extended by 10 years) were also awarded by competitive bidding. Bids were received for 13 circles. The license was awarded to the bidder who offered the highest net present value of license payments. Of the 13 licenses awarded, 6 basic operators have signed license agreements with the Department of Telecommunications and paid the first-year fees.

Regulatory Environment

The main responsibilities of TRAI are:

- Determining the need for and introducing new service providers.
- Recommending the conditions of licenses.
- Ensuring compliance with license terms and conditions and recommending revocation of licenses.
- Facilitating competition and efficiency in the sector.
- Protecting consumer interests.
- Ensuring technical compatibility and effective connection among service providers and regulating revenue-sharing arrangements.
- Announcing the prices at which telecommunications services can be provided within India.

Court cases between regulators and incumbents are relatively common, and disputes between TRAI and the Department of Telecommunications are best interpreted in this light (box 1.1). TRAI's institutional structure is relatively strong. TRAI has been funded by disbursements from the central government's budget. However, the 1997 Telecom Regulatory Authority of India Act also provides TRAI with the authority to levy fees on the service providers it regulates. These fees are to be paid into the TRAI General Fund to meet its operating costs.[3] Members of TRAI can be dismissed only following a

Box 1.1 Establishing the Scope of the Regulator's Authority

The sector has seen uncertainty over the respective jurisdictions of TRAI and the Department of Telecommunications. Under the act that established TRAI it holds powers like that held by regulatory bodies in many other telecommunications markets. However, four cases about the extent to which TRAI can intervene in issues between the department and a service provider have been filed with India's High Court. In a single bench ruling, the High Court has upheld the department's right to grant a license to MTNL to enter the Mumbai and Delhi cellular markets. The court reasoned that the department is not obliged to seek TRAI's recommendation on the entry of new service providers, and that any such recommendation would not be binding. In a case about provision of Internet services, the court ruled that TRAI has no role in the dispute between the license holder and the licensor. These High Court rulings, though subject to appeal, have shown that TRAI has relatively limited power in disputes between license holders and licensers, and in the granting of licenses. There are concerns that the ruling on license holders and licensers has implications for TRAI's role in deciding the terms of interconnection, since these arrangements are specified as part of the license agreement. These tensions have risen largely because of the department's multiple roles as service provider, policymaker, and licensor of the department's private sector competitors, on behalf of the President of India.

Controversy following TRAI's 1999 Tariff Order has highlighted the issue of whether, according to narrow interpretations of its establishing legislation, TRAI is adequately protected from political interference. TRAI's first Tariff Order on March 9, 1999 mandated a reduction in long distance and international call charges, and an increase in the cost of rentals and local calls. The Minister of Communications subsequently directed TRAI to suspend its tariff order. In the final analysis, the government respected TRAI's pricing order and instead, allowed the department to price rural connections at the previous, cheaper rates, but face the lower price caps mandated by TRAI on long distance charges. Although the fact that TRAI's pricing order was not challenged has strengthened the regulator, the possibility still exists that in the future the government could use its powers to issue policy directives to overturn TRAI's orders.

A recent Delhi High Court ruling has posed serious questions over TRAI's authority in interconnection. The court held that under its Act, TRAI could not propose an interconnection regime that differed from that specified in the license. This decision came about as a result of an appeal by MTNL and DOT against the Calling-Party-Pays regime—proposed by TRAI—which would have substantially reduced the revenue that the two fixed line operators would earn through interconnection charges on fixed to mobile calls. The case shows how important it is to clearly define in legislation the powers of the regulator, and in particular how they may apply to licenses issued by another authority. This decision makes it paramount that the government move forward with its announced intentions to strengthen TRAI's powers through existing legislation.

High Court recommendation. However, there is less clarity over the scope of TRAI's powers.

Price Regulation and Interconnection

TRAI issued its first Telecommunication Tariff Order on March 9, 1999. The order is a landmark for infrastructure regulatory agencies in India. It attempts to rebalance tariffs to reflect costs more closely and to usher in an era of competitive service provision. The order is the product of a consultation process with service providers, consumers, policymakers, and members of parliament. The process involved wide dissemination and discussion of two concept papers at open meetings nationwide. Continued use of this consultation process will add robustness to TRAI's decisions and provide it with some defense against arbitrary policy decisions.

In devising its tariff recommendations, TRAI tried to balance multiple objectives. These included aligning tariffs more closely with costs, providing affordable services to low-use consumers, providing a less complex tariff structure, and allowing the Department of Telecommunications to earn sufficient funds to meet network expansion targets over the medium term (table 1.3). At the time that the recommendations were devised, rental and local call charges were well below cost, surpluses were generated by high charges on international and long distance calls, and about 3 percent of subscribers generated 50 percent of call revenue.

The chief features of the tariff order were substantial reductions in long distance and international call charges, increases in rental and local charges, and steep cuts in the cost of leased lines. The Department of Telecommunications will continue to charge rural consumers the current connection rates, with lower rates for low-use urban consumers (see box 1.1). The cost of leased circuits is expected to fall by about 80–90 percent. The department is concerned that this cost reduction will lead to further revenue losses as long distance traffic is routed through leased circuits.[4]

The New Telecom Policy proposed liberalization of long distance service. Liberalization is likely to cause some operators to price below the caps set by TRAI. These caps apply to peak-hour charges for calls. TRAI has defined the peak hours, but allows operators to decide on charges for off-peak hours. Operators may offer alternative tariff packages, but must offer the standard tariff as an option. They also must provide cost comparisons to allow consumers to make informed decisions. Liberalization may also cause some operators to promote a more rapid reduction in rates than planned. For example, mobile cellular tariffs were rebalanced, with monthly rental rates increasing from Rs 156 to Rs 600, but with a reduction in the maximum call charge to Rs 6 per minute. These will be reduced if and when TRAI's proposals to introduce "calling party pays" principles are implemented (see section on Interconnection Terms below).

TRAI is reviewing three separate issues related to the tariff order: interconnection, service quality, and the costs of universal service obligation. TRAI will use the same consultative process that it employed for the tariff review.

Interconnection Terms

Interconnection terms have been largely favorable to the Department of Telecommunications. Although access

Table 1.3 Selection of Tariff Caps from the Telecom Regulatory Authority of India's 1999 Tariff Order

	Previous	1999/2000	2000/01	2001/02
Rural rentals (Rs/month)				
Exchange capacity of less than 999 lines	50	70	70	70
Exchange capacity of more than 100,000 lines	180/190[a]	250	280	310
Urban rentals (Rs/month)				
Low users	75/190[a]	120	120	120
General users	75/190[a]			
Subscriber trunk dialing (STD) calls: peak rates (Rs)				
Radial distance between exchanges of more than 1,000 km	42.00[b]	30.00[c]	25.20[c]	21.60[c]
International calls: peak rates (Rs) to the United States	84.00[b]	61.20[c]	49.20[c]	40.80[c]

a. Ranges show lower and upper bounds depending on the number of lines in the exchange.

b. For pulse rate of Rs 1.40 per metered call.

c. For pulse rate of Rs 1.20 per metered call.

Source: TRAI 1998.

charges are in principle reciprocal for basic service operators, private operators are not allowed to carry calls outside their licensed circle. Consequently, inter-circle calls originating in the private network must be connected to the department; in these cases, callers pay an access charge. The department is able to carry a call originating from any of its subscribers into the destination circle. By connecting the call to the private operator within the local calling area of the subscriber, the department incurs no access charge. Arrangements for connecting cellular operators to the department's network have been colored by its treatment of cellular networks as customers, rather than as "co-carriers." There are several other artificial restrictions on interconnection, including direct connection to VSNL. These restrictions mean that private operators are forced to use government-owned networks, rather than choose the most cost-effective solution for their consumers.

TRAI issued the Telecommunications Interconnection (Charges and Revenue Sharing—First Amendment) Regulation 1999 (3 of 1999) on November 1, 1999, setting interconnection charges for the Calling Party Pays (CPP) on an interim basis. The major impact would have been the payment by MTNL and DOT of mobile termination charges, at Rs 2.4 for the first minute, for calls made from their networks to mobile phones. As explained in box 1.1, a court ruling has suspended implementation of this order.

Managing the Radio Spectrum

Radio spectrum users are spread throughout the usable spectrum bands. The defense forces use a substantial amount of the 1800–1900 MHz band, which would be attractive to commercial operators. The Department of Telecommunication's Wireless Planning and Coordination (WPC) wing is a repository for spectrum assignments data. The WPC's job has become substantially more complex because of the large number of private companies that wish to use the spectrum. There is some concern that the WPC lacks stature within the department and that it lacks the authority to deal with other ministries and public sector agencies because it is too closely tied to the department.

To make spectrum available to new operators at internationally standardized frequencies, the Wireless Advisor has the task of encouraging existing users, who are mostly public agencies, to modify their band use or relocate to another band.[5] Significant new assignments typically require full coordination with the interagency Standing Advisory Committee on Frequency Allocation (SACFA) to obtain site clearances. SACFA has representatives from 19 government departments that use the spectrum. The Department of Telecommunications has recently acted to ensure that SACFA provides site clearances within three months of receiving an application. Private service providers were paying annual spectrum fees of Rs 1200 per subscriber; the department has waived these fees for now because of the financial difficulties many licensers are suffering.

The New Telecom Policy of 1999

The main objectives of the New Telecom Policy are to (box 1.2):

- Increase the availability of affordable and effective communications.
- Provide universal service to all areas, including remote, hilly and tribal areas.
- Capture the benefits of technology convergence in building an efficient telecommunications infrastructure.
- Provide multimedia facilities nationwide.
- Introduce competition into telecommunications and create a level playing field for all players.
- Achieve efficiency and transparency in spectrum management.
- Protect the country's defense and security interests.

The policy has the following targets:

- Telephones available on demand by 2002.
- Teledensity of 7 percent by 2005 and 15 percent by 2010.
- Affordable tariffs for rural connections.
- Mandatory rural connections for all fixed service providers.
- Rural teledensity to increase from 0.4 percent to 4 percent by 2010.
- Telecom coverage of all villages.
- Internet access to all district headquarters by 2000.
- High speed data and multimedia capability to all towns with populations of more than 200,000 people by 2002.

Box 1.2 Key Features of the New Telecom Policy of 1999

Market competition

- VSNL's monopoly on international services to end by 2004.
- National long distance voice open to competition by January 1, 2000, with details to be determined. Alternative infrastructure providers (public and private power transmission companies, Indian Railways, and other public sector agencies with backbone networks) can provide long distance data services immediately.
- Cellular: MTNL and Department of Telecommunications will be third operators, with an additional operator to be added where available spectrum allows.
- Fixed basic services: move toward a liberal entry regime, with potentially open entry, although there will be restrictions initially.
- Internet telephony (voice services via the Internet) will not be allowed.

License fee structure

- License fees will be retained, with a one-time entry fee and revenue sharing thereafter. Initially for 20 years, extendable by 10 years thereafter.

Interconnectivity

- Cellular and fixed basic services can interconnect with all service providers in their own areas.
- Terms for interconnection among service providers in different areas will be announced on August 15, 1999.
- Access providers will be required to provide connection to long distance service providers to ensure competition.

The Department of Telecommunications' future

- The department initially will be divided into separate policymaking and licensing units. The department will be incorporated by 2001.

The role of the Telecom Regulatory Authority of India

- The government will retain a licensing role, but will seek TRAI's recommendations on introducing new service providers. Seeking recommendations is not mandatory.
- TRAI will make recommendations on license fee levels for new licenses.
- TRAI will be involved in developing an interconnection regime.
- TRAI will only have the power of arbitration in disputes between service providers and the policymaker over interconnection terms.
- TRAI will have full authority over the Department of Telecommunications when the department acts as the service provider.

Spectrum management

- The National Frequency Allocation Plan 2000 will be made public and updated every two years.
- Defense and security communications will be relocated from commercial frequencies; these forces will be compensated.
- An interministerial group will establish broad allocation policy.
- Spectrum users will pay fees and TRAI will recommend their level.

Universal service obligations

- Fixed service providers will have targets for universal service obligations; all service providers could participate in universal access programs funded by a levy on provider revenues.
- The Department of Telecommunications will be refunded for cellular license payments because of the burden of universal service obligations.

New legislative framework

- The policy recognizes the need for new legislation to replace the Indian Telegraph Act of 1885, but sets no timeline for devising such legislation.

Policy Recommendations: Moving to a Competitive Telecommunications Market

The New Telecom Policy is a clear step toward modernizing India's telecommunications. The government has publicly committed to separating the Department of Telecommunications' policy and operating functions and has announced a date for corporatizing the department's operations. The new policy is explicit—and fairly progressive—about new entry and competition. The policy also addresses some of the implications of convergence.

*Clarifying the Role of the Telecom Regulatory Authority of India **

The New Telecom Policy reaffirms the government's commitment to a "strong and independent regulator with comprehensive powers and clear authority to effectively perform its functions." TRAI will be involved in key decisions about markets, license fees, and interconnection. The fact that, despite political controversy, TRAI's pricing order of March 1999 was respected has strengthened the regulatory regime (see box 1.1).

In the light of recent court interpretations of TRA's powers, particularly regarding interconnection, it will be important for the government to establish in legislation

* The Government recently promulgated the Telecom Regulatory Authority of India (Amendment) Ordinance, 2000, to clarify the role of the regulator with respect to interconnection and the introduction of new service providers.

TRAI's ability to establish an efficient interconnection regime, in particular overriding whatever clauses may be in the licenses drawn up by DOT. If interconnection is not brought under TRAI's purview, it is hard to see competitive markets developing.

Even following the corporatization of the Department of Telecommunications, the government will own the vast majority of telecommunications assets in the country. The government may face conflicts of interest in determining policy for telecommunications. TRAI's powers should be strengthened to reduce the likelihood of conflicts of interest affecting the design of the rules of the game. This gains increased significance with the entry of MTNL into the cellular markets in Delhi and Mumbai, offering prices considerably lower than private cellular operators and using a different technology to that specified in the original cellular license auctions. MTNL's low prices prompted TRAI to act to review these tariffs, following concerns that it was cross-subsidizing the cellular tariffs with revenues from its fixed line operation. The newly-created Department of Telecommincations Services has recently announced plans to launch mobile services in three states during 2000. The impending opening of the long distance market, and the impact this may have on DOT's revenues, increases the need for an independent body, TRAI, to have the ability to set the framework.

In October 1999 the government formally separated DOT into the Department of Telecommunications Services, which will cover VSNL, DOT's operational arm, and MTNL, and the Department of Telecommunications, which will remain responsible for licensing, policymaking, and promoting private investment. However, at present both departments are still under the Telecoms Commission. Genuine separation and independence for the operational arm will commence only after it is corporatized, in 2001 according to the NTP, at the earliest.

Opening Up Telecommunications Markets

The New Telecom Policy envisions a substantial liberalization in market entry for telecommunications services. However, there are several caveats:

- The present restriction on Internet telephony will be difficult to enforce. The restriction also misses opportunities to increase competition in the sector and allow consumers and service providers to take advantage of technology convergence.

Box 1.3 The Rural Telephone System: Using Public Funds to Leverage Private Participation

Various forms of support that work with the market can be developed to expand services to areas that are commercially unattractive. Subsidies can be provided either from the general budget (as in Chile), or from the telecommunications sector itself. For example, income can be provided from investing the proceeds of spectrum auctions (as in Guatemala) or from a small levy on telecommunications bills (as in Peru).

Chile's Telecommunications Development Fund is perhaps the best known example of a market-based approach to expanding service coverage. The sector regulator identifies projects in commercially unattractive areas. These projects are put out to bid and awarded to the company asking for the smallest subsidy. (The regulator also establishes a maximum subsidy.) In 1995 the fund committed US$2.1 million of public money and leveraged an estimated $40 million of private investment.

Source: Wellenius 1997.

- Standard qualification requirements would be more appropriate for opening up fixed services, and qualified new players should be allowed to enter. For instance, a broadband network operator coming from the rapidly growing data and Internet fields would be well equipped to provide voice service but would be ruled out if required to have telephone company experience. Similar arguments can be made for long distance services (voice and data), which should be liberalized without delay.
- The proposed license fee regime is inconsistent with principles of opening up the market to allow increased competition. The regime represents a special tax on telecommunications services, increasing the cost to users. In areas where there will be a liberal entry regime, payments should be minimal and reflect regulation costs alone.
- The licensing regime maintains the fiction of separate technologies, although the New Telecom Policy will permit accumulation of licenses in different areas, allowing both consumers and providers to reap the benefits of convergence. Future legislation must not enshrine artificial restrictions of licenses.
- Although Internet Service Providers can have the option of establishing their own international gateways, the envisaged monopoly on international

voice services until 2004 will clearly not benefit consumers.

- The interconnection policy, to be developed by the end of 1999, will be crucial to the development of competition.

Handling Existing License Fee Problems

The New Telecom Policy established the possibility of a revenue-sharing regime with a one-time entry fee and a more open market. The government has recently initiated moves to allow existing license holders to migrate to this new regime, whereby licensees will pay 15 percent of their gross revenues on an interim basis, with a requirement to pay arrears in license fees payable up to end June 1999 before migration is allowed. The industry has generally reacted favorably to this move.

Meeting Universal Service Obligations

The New Telecom Policy acknowledges the costs of universal service obligation by introducing a fund to encourage expansion into noneconomic areas. However, prices charged by the Department of Telecommunications for rural connections are estimated to be less than the costs of connection. If long distance competition develops it will drive down the surplus that the department currently uses to expand the network, especially for rural connections. The lower surplus will put upward pressure on rates offered for rural services and connections.

The rationale for reimbursing the department for license fees from cellular services is unclear. The proposed fund should provide reimbursement and be based on the excess costs that the department is incurring to meet its universal service obligations.

There is also a need to assess what genuinely constitutes noncommercial service. There is evidence from Latin America that removing barriers allows innovation in service provision, both in technology and commercial options. Rural Latin Americans are also willing to spend significant amounts of their income on telecommunications services. There is potential in India for adapting schemes that work with the market to expand service to areas that are not yet commercially viable. However, schemes that work with the market imply that relative prices for different services should provide adequate incentives for investment in rural areas.

Auctioning and Pricing the Spectrum

Relocating defense and security use from parts of the commercially attractive bands (and providing suitable compensation) would be a positive move. The proposed fee system raises the question of how to estimate the value of the spectrum. Administered pricing, in which the government determines the price, is an approach used by several countries. However, serious consideration should be given to auctioning the spectrum, particularly in areas where there are constraints on its availability.

Notes

1. In 1997 the government used the Global Depository Receipt route to sell 10 percent of MTNL's equity and 17 percent of VSNL's equity, raising a total of US$808 million.
2. Although the Eighth Five-Year Plan set new connections targets, which the Department of Telecommunications exceeded by 16 percent, many people are still waiting for a line.
3. TRAI released a consultation paper in June 1998 proposing a levy of 0.15 percent on the revenues of all telecom service providers. This levy will enable TRAI to meet its budgetary requirements and establish a contingency fund.
4. TRAI has indicated that service providers should monitor long distance traffic to ensure that it is not routed through leased circuits.
5. The extent to which spectrum is actually used by these public sector agencies is not always clear.

2 Power

- *Policy objectives.* The central government is putting increased pressure on the states to reform and introduce private participation into the power sectors. This includes a requirement that states establish regulatory commissions. The government envisages an increasing role for the private sector in generation.
- *Private participation.* Independent power projects now operate in several states and more are on the way. Orissa recently completed the privatization of its distribution companies. Two transmission projects involving private sector participation are being pursued.
- *Key issues.* Most states need to undertake fundamental sector reform. Tariff reforms are needed to put the industry on secure financial footing, as is the introduction of the private sector to reduce power theft and other sources of nontechnical losses.

Market Structure and Performance

The Ministry of Power is responsible for policy and planning in India's power sector (table 2.1 and figure 2.1). The Central Electricity Authority and the new Central Electricity Regulatory Commission share regulatory responsibilities. Eleven state electricity regulatory commissions have been established, and two are already fully operational. Two state-owned corporations play key roles in India's power sector: National Thermal Power Corporation, India's largest generator, and Powergrid, which operates the national transmission system. State-level generation, transmission, and distribution is largely in the hands of state electricity boards, most of which are in poor physical and financial health. The power sector depends heavily on Coal India, Ltd., Indian Railways, and the Gas Authority of India, Ltd. for fuel supply.

Throughout India the shortfall in meeting electricity demand is conservatively estimated at 11 percent for nonpeak demand and 18 percent for peak demand, although the variation among states is substantial (India, Ministry of Power 1997).[1] During the period of the Eighth Five-Year Plan (1992–97), 16,422 megawatts of

Table 2.1 India's Electricity Performance Compared with That of Neighboring Countries (percent)

	Access to electricity, 1994	Energy losses, 1996
India	**88**	**21[a]**
China	92	7
Indonesia	39	12
Malaysia	90	11
Pakistan	46	23
Sri Lanka	38	17

Note: Access to electricity in India is measured by electrified villages as a percentage of total villages, rather than electrified households as a percentage of total households. As a result, the above figure may overestimate the percentage of the Indian population with access to electricity. Although the Ministry of Power reported total energy losses of 21 percent throughout India, closer examination shows serious underreporting. In Orissa, for example, where loss reduction and revenue enhancement measures have been most active of late, actual losses are far above losses reported prior to reform, at around 46 percent.

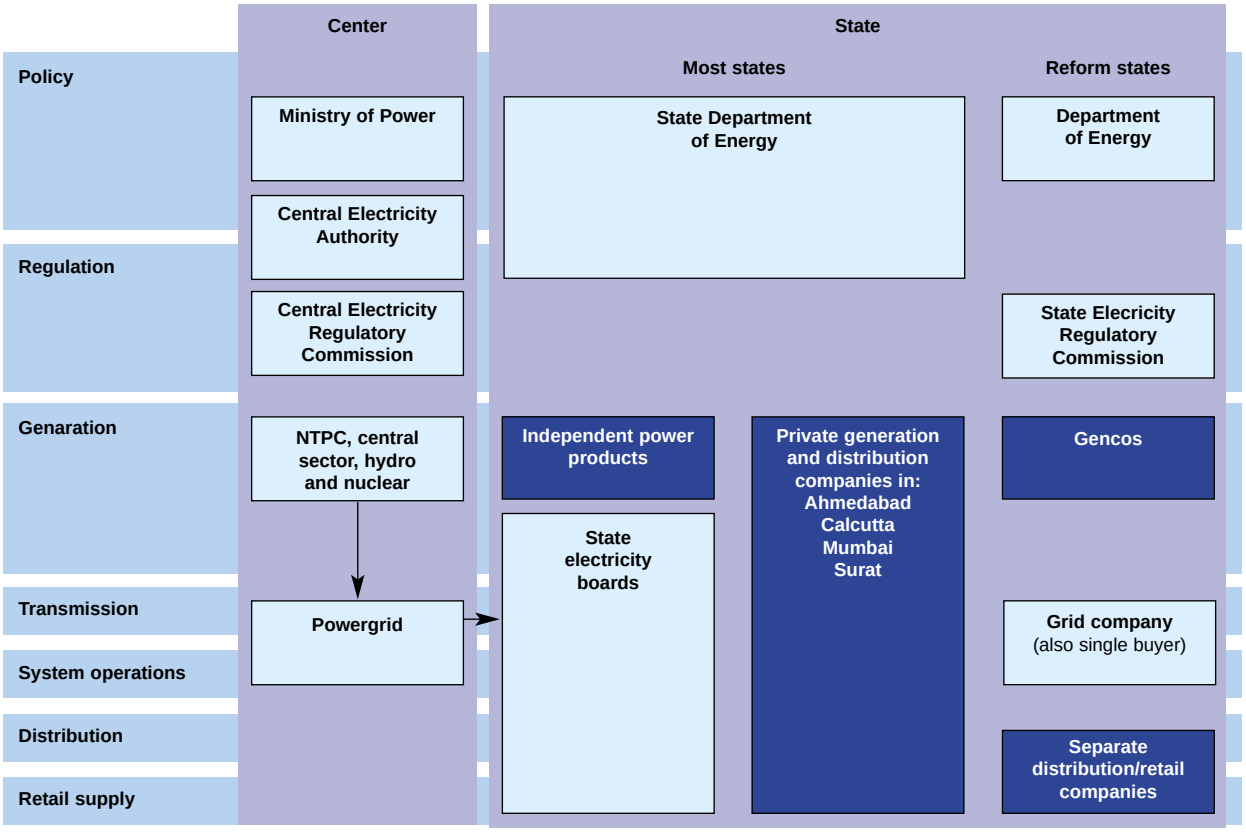
a. Data refer to years other than 1996.

Source: India, Ministry of Power 1997; ADB 1997a, 1997b.

capacity were added to the system. Projections had called for 30,540 additional megawatts, of which the private sector was to provide about 2,800 megawatts. Industry has increasingly relied on captive generation to cope with irregular supply and with high tariffs, which subsidize agricultural and residential consumers. Although the Central Electricity Authority estimated in 1996 that there was around 11,600 megawatts of captive plant capacity, industry sources suggest that the total is now around 20,000 megawatts. Half of this amount was added between 1992 and 1997.

The Electricity Supply Act of 1948 was amended in 1991 to encourage private investment in power generation. However, private investors did not provide the additional capacity that was hoped for. Although projects totaling 23,000 megawatts have received technical and economic clearance from the Central Electricity

Figure 2.1 India Power Sector: Institutional Framework



a. Such as Orissa, Haryana, and Andhra Pradesh.
Source: World Bank Staff.

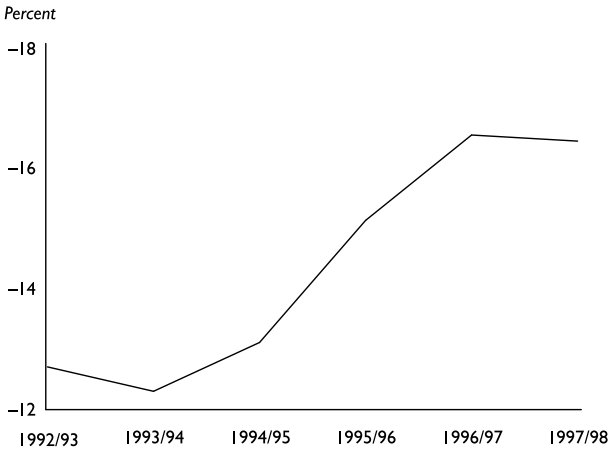
Table 2.2 Status of Major Independent Power Projects

Project	Capacity (MW)	Comments
In operation		
Essar Power Ltd., Gujarat	515	Partly captive
AP Gas Power Corp Ltd., AP	172	
GVK Industries, AP	216	Central government counter-guarantee covering termination
Gujarat Industrial Power Co. Ltd., Gujarat	167	
Spectrum Power Limited, AP	208	Withdrew from counter-guarantee scheme
Dabhol Power Company (Phase I), Maharashtra	826	Central government counter-guarantee covering tariff payments and termination
Gujarat Torrent Energy Corporation, Gujarat	655	Part of sales to large industrial consumers
GMR Vasavi Power Corporation, Tamil Nadu	200	
Total commissioned	2885	
In construction		
Jindal Tractebel Power Company, Karnataka	260	Partly captive: 160 MW for use in steel plant, 80 MW for sale to grid
Jojobera TPP, Bihar	240	67.5 MW already commissioned
BSES Kerala Power Ltd., Kerala	165	
Jaiprakash Hydro, HP	300	
Gujarat Industrial Power Corporation, Gujarat	250	
Kardapathy Power Corporation, AP	350	
PPN Power Generating Company, TN	350	
Dabhol Power Company (Phase II), Maharashtra	1,630	
Total under construction	2,530	

Source: World Bank staff.

Authority, only 3,000 megawatts from independent power plants have started production. However, several of these projects supply a substantial proportion of power to large industrial consumers (table 2.2). Another 2,500 megawatts are under construction. Guarantees from other governments or from Indian banks (including the Industrial Development Bank of India and the ICICI) have covered all foreign debt invested in the sector so far.

Figure 2.2 State Electricity Boards: Rate of Return without Subsidy



Source: India, Ministry of Power 1997.

Existing licensees (private companies supplying power in Mumbai, Calcutta, Ahmedabad, and Surat) have financed another 1,000 megawatts since the Private Power Policy was announced in 1991. Licensees are expected to commission an additional 835 megawatts before the close of 2000.

State electricity boards have become a major and increasing financial burden on the public sector. Commercial losses reached $2.3 billion in 1996–97 (India 1997).[2] Because of the nonpayment of Board dues to central utilities and suppliers, this figure underestimates the true losses. These dues are now believed to total almost $3 billion, up 34 percent from the previous year.[3] These heavy financial losses are the result of tariffs that do not cover costs and of poor management and operational practices.

Residential and especially agricultural consumers are heavily subsidized (figure 2.2 and table 2.3). These groups enjoyed a subsidy of $4.8 billion in 1996/97, equivalent to around 1.4 percent of GDP. About 80 percent of the $4.8 billion went to agriculture. Average revenue per unit was estimated at about Rs 1.7 per kilowatt hour (about 4 cents per kilowatt hour) in 1996/97, compared to average costs of just over Rs 2 per kilowatt hour that year (or 4.75 cents per kilowatt hour).

Table 2.3 Power Sector Subsidies (Rs billion, current prices)

	Agriculture	Residential	Total	Cross-subsidy from commercial, industrial	Net subsidy in sector
1992/93	51.4	20.3	74.5	39.1	35.4
1993/94	67.4	21.3	88.7	45.2	43.5
1994/95	85.4	25.4	110.7	53.8	56.9
1995/96	109.9	31.6	141.5	66.6	75.8
1996/97	12,912	3,897	16,809	8,034	8,775
1997/98	15,987	4,295	20,282	11,385	8,897

Source: India, Ministry of Power 1997.

Although publicly reported energy losses are about 21 percent throughout India, closer examination of state electricity board losses often shows serious underreporting. In Orissa, where loss reduction and revenue enhancement measures have recently been most active, actual losses are far greater than the amount reported prior to reform, at around 46 percent. This greater accuracy is due to better information about sales and losses than existed before corporatization and privatization. Orissa's experience may be typical of all boards, and preliminary work in Haryana and Andhra Pradesh bears this out.[4]

State-Level Regulatory and Policy Reform

Several states are attempting far-reaching power sector reform. This involves a combination of divesting existing assets to private operators and establishing a regulatory framework for the sector, which will allow recovery of cost-based prices.

Efforts to change the performance of the state electricity boards have been pioneered in Orissa. Legislation was enacted in 1995 as the basis for this reform. This legislation established the Orissa Electricity Regulatory Commission (OERC) as an autonomous regulatory body. The OERC regulates transmission and distribution tariffs. The Commission has many other powers, including the authority to license companies that want to engage in transmission and distribution and regulate the quality of the services those companies provide.

Corporatization and Divestment

The same legislation also provided for the corporatization of the Orissa State Electricity Board and created the Grid Corporation of Orissa Limited (GRIDCO), which is responsible for transmission and distribution. The Orissa Power Generation Company, a state-owned corporation, has since been successfully divested. Forty-nine percent of the equity was sold to the AES Corporation, the highest bidder for the assets. The government is nearing completion of the privatization of GRIDCO's distribution business (box 2.1) GRIDCO will continue as the bulk transmission entity, and will become the bulk purchaser of power on behalf of the distribution companies operating in the state. The Regulatory Commission will review this arrangement at a later date.

The states of Haryana and Andhra Pradesh have enacted legislation comparable to Orissa's as the first step in restructuring the power sector. In addition to creating regulatory bodies with similar autonomy and powers, the legislation in both states provides for the corporatization of power sector entities. The Haryana Electricity Regulatory Commission has already held its first hearings.

Box 2.1 Privatizing Distribution in Orissa

In July 1997 the Grid Corporation of Orissa Limited (GRIDCO), the utility responsible for transmission and distribution services in Orissa, offered the entire distribution business in the state (divided into four zones) for privatization simultaneously instead of sequentially, as contemplated earlier. The Orissa state government and GRIDCO decided to offer majority stake and management control to strategic investors.

Eleven consortia, including major international utilities and leading Indian power companies, were prequalified to bid for 51 percent of the shares in each distribution company. Bids from a total of three consortia (the Bombay Suburban Electric Supply Limited—BSES, Grasim Industries/Singapore Power, and Tata Electric Companies/Viridian Group PLC) were received for three out of the four zones in January 1999. The BSES emerged as the successful bidder for all three zones. Majority equity and management control in these distribution companies have been transferred to the BSES. GRIDCO recently completed the sale of the fourth zone to AES Corporation.

Box 2.2 Price Regulation in Orissa

The Orissa Electricity Reform Act of 1995 requires the Orissa Electricity Regulatory Commission (OERC) to prescribe terms for determining a licenser's tariff by framing appropriate regulations. The commission must follow the parameters of the 1948 Electricity (Supply) Act's Schedule VI, a relatively detailed cost-of-service methodology for price regulation. The schedule includes an allowed rate of return, which is calculated as the rate of the Reserve Bank of India plus 5 percent. The OERC may introduce factors that would encourage efficiency and safeguard consumer interests if it provides reasons for doing so in writing. Thus the regulator has substantial discretion in setting prices.

The commission passed its first tariff order on March 12, 1997. The utility's revenue requirement was determined by the Schedule VI methodology and modified to incorporate efficiency requirements and consumer interests. The OERC considered the high level of system losses (46.4 percent) unacceptable. GRIDCO was penalized for allowing power purchases corresponding to the excess amount of power needed to meet demand over the amount that would have been reduced had system losses been at an acceptable level (35 percent). The OERC calculated the allowable return, but did not include the figures in average revenue calculations.

GRIDCO submitted its second tariff application on August 17, 1998. The OERC gave its second tariff order, effective on December 1, 1998. The commission included an allowed return based on the rate prescribed by Schedule VI and on reasonable loss levels of 35 percent, again adjusting revenues downwards to reflect differences between the target and actual losses. Once the 35 percent target was reached, the licenser could include the capitalized losses resulting from those adjustments in its rate base. The OERC also proposed another incentive—an increase in allowable return by 1 percent for every percentage point reduction in losses below 35 percent. This target was a benchmark for GRIDCO as a whole. Because different distribution zones have their own loss levels, new parameters will be established for the first tariff order following privatization. Aside from the approach implicit in the tariff rulings relating tariff levels to losses, the OERC did not make any other precise commitments to tariff changes.

The OERC also indicated that it is likely to use tighter labor productivity norms in the future. Overall, average revenue per unit was increased by 10.5 percent in the first order and 10.7 percent in the second. There has been some rebalancing in tariffs, although the regulator has indicated that rebalancing will be implemented more fully once the quality of service has improved.

State-Level Reform under the Electricity Regulatory Commissions Act

The Electricity Regulatory Commissions Act of 1998 establishes a Central Electricity Regulatory Commission (see the section on reforms at the central level) and State Electricity Regulatory Commissions. The Act provides state commissions with powers over setting tariffs, procuring and purchasing power, and promoting competition and efficiency. The commissions are established by state government notification rather than through legislation. Although the Act does not automatically provide commissions with powers over the granting of licenses, settlement of disputes between licensers, or other matters, these powers can be granted with the consent of the state government. Tariffs are to be regulated in a similar manner as they are under the Orissa legislation (box 2.2). Like that legislation, the Act also requires that state boards earn the 3 percent rate of return specified under the Electricity Supply Act. The new legislation mentions compensation by the state government for subsidies for particular consumers.[5] Since the central government felt that each state should choose its own model of reform, the legislation does not address the wider issue of power sector reform. In particular, the Act does not address the transformation of state electricity boards into corporations. A total of 11 state regulatory commissions had been established following the Act, or through state legislation.

Reforms at the Central Level

The Central Electricity Regulatory Commission was established to provide these functions, among others:

- Regulate tariffs charged by centrally owned generating plants (such as the National Thermal Power Corporation of India, NTPC) or plants that sell electricity to more than one state.
- Regulate interstate transmission.
- Provide guidelines for tariff setting by state electricity regulatory commissions.
- Resolve disputes between generators and transmitters that fall under the commission's purview.
- Licensing entities engaged in interstate transmission—this provision does not apply to Powergrid but would

apply to the new, privately financed transmission projects that could be established in connection with independent power projects.

According to the Electricity Regulatory Commissions Act, interstate transmission is defined not only as the conveyance of energy between states or across an intervening state, but also the conveyance of energy within a state that "is incidental to such Inter-State transmission of energy." The Act's definition includes transmission by a central transmission utility or an entity working on the utility's behalf.

The Central Electricity Authority would continue to advise the Ministry of Power on policy developments. The authority is supposed to develop a national power policy and plan and coordinate the development of the sector—for example, by granting clearance for new generation plants. However, it is likely that these responsibilities will be transferred to the state electricity regulatory commissions, given their role in investment approval.

Financing Additional Power Generation

The original forecasts for the Ninth Five-Year Plan called for an additional 57,000 megawatts. The Ministry of Power has scaled back these forecasts and is now anticipating 40,000 megawatts, of which around 40 percent is expected from the private sector. A similar volume of investment is expected in transmission and distribution.

Independent power projects have added substantially less capacity than expected. Around 5,500 megawatts of privately funded independent power projects are now either in operation or under construction, but this amount is small compared to the number of projects that have received Central Electricity Authority clearance.[6] The financial weakness of the state electricity boards is a major reason for delays in achieving financial closure, although some delays are due to difficulties in obtaining commercially acceptable fuel supply and transportation mechanisms. Several projects, notably in Madhya Pradesh, are awaiting the award of escrow cover to complete financing (escrow cover involves committing revenues from specific blocks of customers). The amount of escrow cover, calculated on a basis acceptable to lenders, cannot support all of the projects that have been awarded state electricity board contracts and that have received bankable fuel supply agreements. In Madhya Pradesh the courts have even become involved in decisions regarding escrow cover allocation.

The government recognizes a need to accelerate hydropower development in India to maintain a balance with thermal power generation. This is especially true of "run of the river" hydropower projects that tend to have fewer environmental and resettlement problems than those involving the flooding of large areas. In planning these developments the government tries to consider full river systems and basins rather than individual project sites. The power ministry also is discussing a central initiative on hydropower development. A hydropower policy has been formulated that establishes a return on equity of 16 percent, allows for premium tariffs for peaking power (although it is not clear how these will be calculated), and defines incentives for developing mini-hydel projects.

The Power Trading Corporation and Megapower Projects

The central government is unwilling to issue further counter-guarantees for projects beyond the eight originally selected to receive them.[7] It has recently established the Power Trading Corporation (PTC) to enhance the development and implementation of large power projects selling to more than one state. The government's goal is to reduce the cost of generating power by reaping economies of scale available through large facilities. Fiscal incentives, such as lower import duties on capital equipment and longer tax holidays, also are expected to reduce final costs.

Under the current plan, the Power Trading Corporation initially would buy power through long-term agreements from large independent power projects and on-sell the power to state boards and distribution companies. Later, the corporation may develop more of a trading function. The government has proposed that in addition to escrows and letters of credit, the corporation would be able to draw on defaulting states' central plan allocations. However, independent power projects that are close to tying up their financing are likely to have the bulk of escrowable revenues. Thus fresh credit enhancement will come from guarantees provided by the central plan allocations, which may offer only limited coverage. To encourage reform, it is proposed that the corporation should only sell power to states that are making progressive changes, such as

establishing regulatory commissions and privatizing the urban areas of their distribution networks. The Power Trading Corporation is expected to start operations shortly.

Fuel Policies

Difficulties in arriving at commercially bankable fuel supply and transportation agreements have caused implementation problems for independent power projects, although some progress has been made in these areas. The government has allowed coal importation and reduced the duty on power station grade coal from 85 percent to 10 percent. Locally produced coal is currently the least expensive option for base-load power generation in India. Given the cost advantage and India's large reserves, domestic coal is likely to remain the main source of primary energy for India; other options are supplements, not substitutes. Because the Indian coal industry (dominated by Coal India Limited) could not meet the increasing demand requirements, the government established a new coal policy in 1996. This policy aimed at increasing competition in the coal sector and opening the industry to private investment. The policy included phasing out budgetary support to Coal India, reducing import duties, liberalizing marketing, and implementing legal and regulatory measures to enable private participation. However, there have been no amendments to the Coal Nationalization Act that would enable such participation.

Natural gas is likely to become a much more important part of India's fuel mix. Increased gas availability would be a boon to the development of new power generation capacity. Natural gas output in 1997 was 755 billion cubic feet. Reserves at the end of 1997 are estimated at 17,400 billion cf, for an apparently healthy reserve-to-production ratio of 23 years. But production is still relatively low, accounting for only about 7 percent of India's primary energy consumption, compared to coal, which accounts for 56 percent (BP 1998). Any appreciable increase in gas demand in India would quickly reduce reserves unless they were supplemented by imports. For this reason, the quest for a reliable and affordable stream of imports has been an important goal of Indian gas sector policy for some years. However, policymakers have been extremely reluctant to fully involve companies outside the core, state-owned oil and gas corporations, such as the Oil and Natural Gas Corporation Limited (ONGC) and Gas Authority of India Limited (GAIL).

Natural gas production in India is dominated by state-owned ONGC and Oil India Limited (OIL). However, private joint ventures between Indian and foreign companies produce 10 percent of current output. Private companies involved in oil and gas production include Reliance and Videocon of India, Marubeni of Japan, Hardy and Cairn of the United Kingdom, and Enron of the United States. In January, under the New Exploration Licensing Policy, the government invited 48 oil exploration licenses from domestic and foreign companies to give bids to obtain licenses. Companies that obtain these licenses will have the freedom to sell gas and crude oil directly in the domestic market. Natural gas transmission is currently handled exclusively by the Gujarat Gas Company (GAIL, partly owned by British Gas). The company operates one major pipeline, the Jazira-Vijaipur-Jagdishpur (HBJ) line, which brings gas from the Western offshore into Haryana, through Gujarat, Madhya Pradesh, Rajasthan, and Uttar Pradesh. The major consumers along the HBJ line are fertilizer plants, gas-fired power plants belonging to the NTPC, and some other industrial users.

GAIL and Mahanagar Gas (a British Gas/GAIL joint venture for gas distribution in Mumbai) handle natural gas distribution. No gas is currently imported. Two consortia are now lining up liquefied natural gas imports: Enron for its Dabhol power plant south of Mumbai, and Petronet (a joint venture of ONGC, GAIL, the Indian Oil Corporation (IOC), and BPC) for plants in Gujarat and Kerala.[8] At least 10 liquefied natural gas import schemes involving a range of current liquified natural gas suppliers and prospective buyers have been proposed. The Enron and Petronet proposals are by far the most advanced. Enron has made a supply deal with Shell for a project in Oman, while Petronet has signed a contract with Mobil for an liquefied natural gas project in Qatar. Both projects will export gas to India. GAIL will be the exclusive gas distributor in the Petronet deal. Enron hopes to market gas beyond the needs of the Dabhol power plant.

The government has set natural gas prices at very low levels, making both imports and expansion of

domestic production difficult. Major changes have occurred, however. India has increased gas prices to 75 percent of import fuel oil parity, a first step in the direction of full deregulation. The government also has accepted that regional variation in gas prices may be necessary. (GAIL now supplies gas at a uniform price everywhere in India. The HBJ line rate is essentially a single-zone, all-in-one tariff.) This step could be important in southern India, where the proposed fuel for new power plants is often petroleum.

The government is considering gas sector legislation that would establish a new regulatory agency for the natural gas transmission and distribution sector, clarify market structure, and elucidate the roles of GAIL and the private sector. Separate regulatory provisions are being developed for upstream oil and gas and downstream product sectors.

Development of Bulk Power Markets and Regional Power Trade

India's power system is divided into five regional systems: eastern, northern, northeastern, southern, and western. Weak or nonexistent connections between these regions mean that there is little exchange of energy. The east cannot export much of its power surplus to other regions. The government plans to increase regional interchanges of power by developing the transmission system and creating the necessary pricing and grid rules for bulk power markets.

The Electricity Laws Act, passed in August 1998, aims to facilitate the development of the national grid and encourage private investment in the sector. Transmission is defined as a distinct activity under the Act, thereby creating a regime for licensing transmission service providers. The Central Electricity Regulatory Commission will grant licenses for interstate transmission; state regulatory commissions will perform this function for intrastate transmission. Licensing will be for new service providers only—for example, building a transmission line with private funding that connects an independent power project to the main grid.

The Central Electricity Regulatory Commission is overseeing the development of a grid code for system operation. The code will provide technical regulations for planning, operating, maintaining, and dispatching the power system and is due to be issued in January 2000. As the central transmission utility, Powergrid will develop a seven-year investment plan that will identify new transmission projects to be offered to private investors.

A national task force has been considering options for developing bulk power markets in each region. The task force has recommended that daily system operations involve the dispatch of power owned by the central government per an agreed schedule, following individual state allocations. Each state could schedule and dispatch its own generation to meet the remaining demand, taking into account any agreed withdrawals from the regional system. The new frequency-linked Unscheduled Interchange Tariffs will be used to charge state electricity boards and central generators that deviate from schedules.

There is also growing interest in cross-border power trade. The benefits from trading power lie in addressing the mismatch between supply and demand in the region, while using regional natural resources better. India has large supply shortfalls and could be the main purchaser. Bangladesh and Nepal possess considerable resources of low-cost power generation (natural gas reserves and hydropower potential, respectively), but these resources are located in areas far removed from the centers of rapidly growing electricity demand and are separated by national borders. Lower than anticipated demand growth in Pakistan and excess power supply from Pakistani independent power projects has motivated discussions about the sale of power from Pakistan to India. The two countries are discussing the possibility, but talks are at a preliminary stage.

Policy Recommendations: Implementing Fundamental Sector Reforms

The key challenge facing the sector is to improve financial and technical performance of the distribution systems. The state electricity boards are a major drain on state government finances and are unable to provide adequate service to consumers.

Reforming Distribution

Three states—Orissa, Haryana, and Andhra Pradesh—have embarked on a comprehensive reform program. This includes the establishment by law of independent

regulatory commissions to implement tariff reform. The state electricity boards also have been transformed into corporate entities with private sector participation. In addition, Orissa has sold off controlling stakes in distribution and a major stake in its thermal generation assets.

Other states are establishing regulatory commissions, following the Electricity Regulatory Commissions Act of 1998. A regulatory agency may be able to clarify nontechnical losses and the reasons for the board's poor performance. However, the establishment of a technically competent and even independent agency is unlikely to improve the operations of a state electricity board that has no real motive to improve efficiency. GRIDCO, for example, had little success in Orissa in reducing losses as a publicly owned entity.

Fundamental changes are required in the boards' management and operations. Improving their performance will require the introduction of private management, with a substantial financial incentive to cut losses and increase efficiency. Experience from power privatizations in Latin America suggests that the private sector can minimize losses from theft, inadequate metering, and other factors in systems with high and low loss levels (box 2.3.) Corporatization will be an important first step in introducing the private sector, and will require legislation to allow the transfer of state electricity board assets to successor companies.

Box 2.3 Reducing Losses: Experience from Power Privatizations in Latin America

Chilectra is the largest electric distribution company in Chile and distributes and transmits electricity in the Santiago metropolitan region. Chilectra has cut losses from 22.4 percent in 1983 to 8.6 percent in 1996.

Edesur is the largest electric distribution company in Argentina and has exclusive rights to distribute electricity in southern and central Buenos Aires. When the company was privatized in 1992, it was suffering from high financial losses, due largely to theft and inadequate billing. Under private sector management, losses were reduced from 22.1 percent in 1993 to 10.1 percent in 1996.

Edelnor distributes electricity in Lima, Peru's northern metropolitan area and an adjacent province and has cut losses from 15.7 percent to 13.8 percent in the first year of private management.

Source: World Bank staff.

Strengthening Regulatory Agencies

The establishment of regulatory agencies by several states following the Electricity Regulatory Commissions Act is a welcome step. However, legislation will be required to transform the power sector's operations. This legislation also could take the place of the notification process that is now used to establish regulatory bodies. Regulatory agencies could be granted a wider range of powers as well, comparable to those of commissions in Orissa and Haryana. These powers could include licensing, resolving disputes among service providers, and regulating their quality of service. This authority can be given to regulatory commissions established under the 1998 Act, but at the discretion of the state government, which can also remove these powers.

The need to strengthen the regulatory body arises partly from the need to insulate tariffs from political processes as much as possible. This will enable tariffs to track costs over time. These bodies will also facilitate the process of introducing tariffs that reflect costs and reducing current levels of cross-subsidies.

Financing a New Generation: The Megapower Policy

The government has announced plans to develop a megapower policy using the Power Trading Corporation. Of the proposed methods of supporting the corporation, only central plan allocations would provide fresh credit enhancement. The extent to which these allocations will be able to support substantial amounts of capacity is unclear.

Further support from the central government, including support through a company such as the Power Trading Corporation, would require states that benefited to undertake major power sector reform. Reforms would include establishing a regulatory agency with sufficient powers, and introducing private management and ownership into the sector, especially in distribution.

Notes

1. However, when using higher estimates of captive capacity (of around 20,000 megawatts), peak deficit is estimated at about 10 percent.
2. In the absence of rigorous auditing of the state electricity board's financial positions, financial statistics quoted in this report must be regarded as estimates.
3. Together, the states of Bihar, Delhi, and Uttar Pradesh reportedly account for more than 50 percent of total outstanding dues.
4. There are indications that state governments overstate unmetered sales (for example, to agriculture) to avoid reporting growing system losses due to theft, broken meters, and underinvestment.
5. The 1948 Act also requires state governments to provide funds to the state electricity boards to allow them to recoup the cost of politically mandated subsidies. In reality, these subsidies are hardly ever provided due to the poor financial health of most state governments.
6. According to the Ministry of Power, a total of 23,000 megawatts of projects have received techno-economic clearance. Another 54 projects amounting to 27,873 megawatts have received initial clearance.
7. Of these eight, Spectrum Power dropped out and has since commenced operations. Five counter-guarantees have been issued. The first of these, to Dabhol Phase I, provided a 12-year counter-guarantee from the central government for tariff payments by Maharashtra State Election Board and a termination guarantee capped at $300 million. The government has since redefined the guarantee to cover payment of foreign debt upon termination.
8. Other firms are looking to join as well.

3 Urban Water and Municipal Services

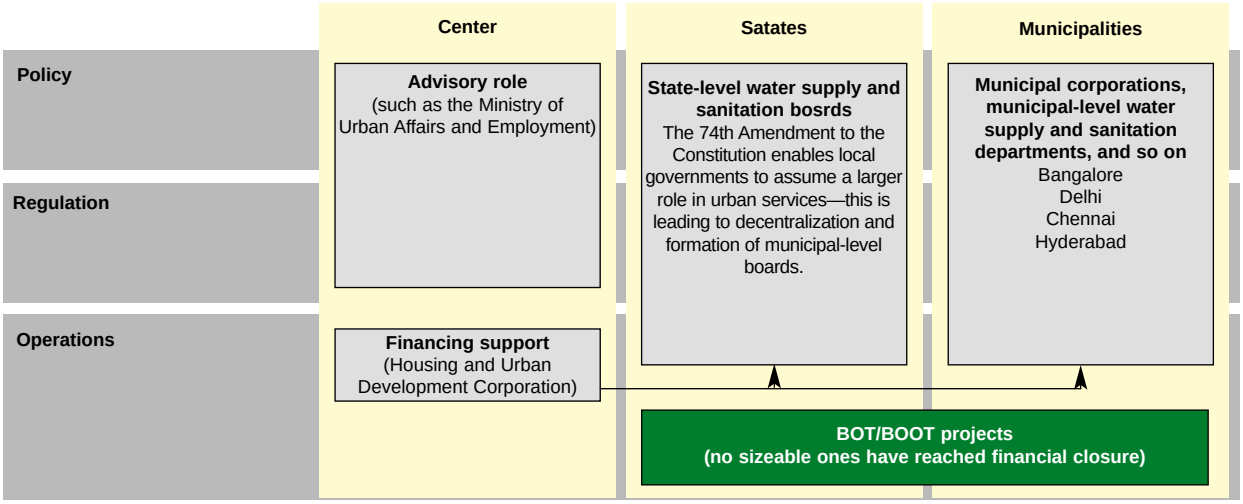
- *Policy objectives.* Provide water supply facilities to 100 percent of the population and sanitation facilities to 60 percent of the population. Strengthen the role of local authorities in operation and regulation and encourage private sector participation.
- *Private participation*. The government has pursued, and in some cases implemented, out-sourcing, management contracts, and build-operate-transfer projects. Concessioning is under consideration but private investment has been limited.
- *Key issues.* Municipal governments must be financially sound and better managed if privately financed projects are to have a significant impact in the water sector. Pricing reform needs to be a priority.

Market Structure and Performance

Authority over urban water and sanitation services lies with each state, although implementation of the 74th Constitutional Amendment, passed in 1992, is intended to promote decentralization of service provision to the municipal level (figure 3.1). The central government's role in urban water is generally limited to an advisory function through the Ministry of Urban Affairs and Employment. The government also influences the sector through centrally controlled infrastructure finance institutions such as the Housing and Urban Development Corporation.

There are no standard institutional arrangements for providing water and sanitation services. In Karnataka, for example, the state Water Supply and Sewerage Board is responsible for operations and maintenance and capital works in certain small cities. In other cities the board is only responsible for capital works, while municipal bodies handle operations and maintenance. There is an entirely separate, partially autonomous local water board in the capital city of Bangalore. In some cases, the Public Health and Engineering Department of the state Urban Development Department handles engineering planning, design, and construction, while the local government water and sanitation service provider manages operations and maintenance. However, there are relatively few metropolitan agencies that supply only water and sanitation services. The Delhi Jal Board was recently created to provide these services, which were previously supplied by the municipality. There are now boards in Delhi, Bangalore, Chennai, and Hyderabad.

Figure 3.1 **India Water Sector: Institutional Framework**



Source: World Bank Staff.

Even service providers that are semi-autonomous in theory are governed by an extensive set of government regulations. There is also considerable political interference in operations, managerial decisionmaking, and tariff setting. The current institutional arrangements do not create the proper structures and incentives for improving operational efficiency and quality of service. They also do not encourage service providers to operate in a commercially oriented and financially sound manner.

The 74th Constitutional Amendment, passed in 1992, enables local governments to assume a greater role in the planning, management, and financing of urban services. The approach paper to the Ninth Five-Year Plan states, "The responsibility for planning, operation and maintenance of the urban facilities will be passed on, wherever not done, to the local bodies, in line with the 74th Amendment to the Constitution." Generally, this means that municipal bodies will take responsibility for providing services within their geographical boundaries.

Although most states have ratified the amendment, there are many problems related to realizing decentralization in practice. There is the need to make management in medium and small urban areas more professional; build technical skills in accounting, procurement, and financial planning; and change the roles of the institutions that now perform these functions.[1] Another concern is how to transfer resources from state governments to municipalities. Kerala, for example, has transferred more than 40 percent of its funds to municipalities and other local governments.

Operational Performance and Unmet Demand

Although official statistics indicate a reasonably high level of service coverage (85 percent of people living in urban have access to safe water), water availability is very low in practice. Of 27 Asian cities with populations over 1 million, India's four largest cities are ranked among the five worst cities in terms of hours of availability of water per day (tables 3.1 and 3.2). Between 25 percent and 50 percent of water supplied is lost due to leaks. Low water pressure and intermittent supplies allow back-syphonage and contamination.

The lack of water availability disproportionately affects the urban poor. For example, although the official per capita water supply is about 200 liters a day in Delhi, about 30 percent of the city's 9 million people have access to less than 25 liters a day. About 42 percent of the population is reported to have access to basic sanitation services, but only 15 percent of the households in low-income slum and squatter settlements have toilets. About 21 percent of these settlements have access to community toilets. About 61 percent of poor households use open spaces for personal sanitation (Sivaramakrishna, Dasgupta, and Buch 1993).

Table 3.1 India's Water Performance Compared with That of Neighboring Countries

	Access to safe water (percent) 1993	Availability[a] (hours/day) 1995
India	**85**	**4**
China	83	24
Indonesia	65	18
Malaysia	89[b]	24
Pakistan	62[b]	17
Sri Lanka	70[b]	22

a. Water availability figures are for the cities of Delhi, Beijing, Jakarta, Kuala Lumpur, Lahore, and Colombo.
b. Data refer to a year other than 1993.
Source: ADB 1997b; World Bank 1999.

Investment Requirements

Municipal authorities traditionally have depended somewhat on their own budget surpluses, but more on grants and loans from the central and state governments. Recently, limited institutional financing from government-owned development finance institutions has benefited the sector. The funds available through plan allocations are less than those required for providing basic services. Political considerations, rather than any rigorous project preparation or appraisal process, generally decides allocation of these funds to different municipal authorities. The levels of investment needed are dictated largely by the sector objective to be achieved in the Ninth Five-Year Plan. The broad objective is to achieve 100 percent urban population coverage with water supply facilities and 60 percent population coverage with sanitation facilities. The Plan envisions substantial support from the private sector in meeting these targets.

Framework for Ownership and Use of Water Resources

Water provision is considered a state responsibility under the Indian Constitution (World Bank 1998a). Although the Constitution does provide for the regulation and development of interstate rivers and river valleys by the central government, state authority is preeminent in practice. Exploitation of interstate river basins is to some extent governed by specific interstate agreements or tribunal decisions, rather than a national policy outlining the principles by which states will share these resources.

The legal status of individual surface water abstraction rights from rivers is unclear. The courts have recognized riparian rights in which people living next to natural waterways can use the water without disturbing a similar benefit to other people. However, only a government permit can grant extraction of water from artificial bodies and waterways. Individual rights to water abstraction and use can be established only through time-consuming litigation. It is unclear whether government assurances of water allocation can be withdrawn in favor of new uses. Given the lack of definition and security of surface water rights, there is considerable confusion over whether these rights can be commercially transferred.

There is more clarity on the status of groundwater rights. Indian law considers groundwater an easement

Table 3.2 Summary of Results for Water Utilities

	Coverage (percent)	Water availability (hours)	Consumption (liters per capita/day)	Average tariff (US$/m3)	Metering (percent)	Staff per 1,000 connections	Accounts receivable (months)
Calcutta, India	66	10	202	0.01	0	17.1	1.5
Chennai, India	97	4		0.25	25.9	25.9	5.8
Delhi, India	86	4	209	0.03	73	21.4	4.5
Mumbai, India	100	5	178	0.06	67	33.3	19.7
Beijing, China	100	24	96	0.05	100	27.2	0.1
Shanghai, China	100	24	143	0.07	100	6.1	11.1
Colombo, Sri Lanka	58	22	165	0.14	94	7.3	3.2
Dhaka, Pakistan	42	17	95	0.09	74	18.5	11
Faisalabad, Afghanistan	60	7	170	0.03	5	25	12
Jakarta, Indonesia	27	18	135	0.61	100	5.9	1
Karachi, Pakistan	70	1-4	157	0.09	1	8.4	16.8
Kathmandu, Nepal	81	6	91	0.14	83	15	4.5
Kaula Lumpur, Malaysia	100	24	200	0.34	100	1.1	0.5
Lahore, Pakistan	84	17	213	0.2	24	5.7	7
Manila, Philippines	67	17	202	0.23	98	9.8	6

Source: ADB 1997b.

connected to land. Ownership of groundwater thus falls to the landowner; tenancy laws govern groundwater uses, and groundwater rights cannot be transferred to others. The existing legislation also treats groundwater as a private good, ignoring externalities. Only a few states have passed legislation concerning groundwater extraction. Legislation covers groundwater extraction in the Chennai metropolitan area. In Maharashtra an act passed to protect the drinking water supply provides for some regulation of groundwater quality.

Private Sector Participation

A relatively limited number of build-operate-transfer (BOT) projects have been attempted in India so far. When these projects sell water to a municipality or board, the potential investor's main concern is the purchaser's ability to pay for services. When these projects sell water to industrial consumers who have the ability to pay, additional complications arise, such as the requirement to provide water at subsidized rates to residential consumers located nearby. In the case of the Tiruppur project (table 3.3) out of a total of 185 million liters per day (MLD), 14 MLD will be provided at highly subsidized rates to residential consumers.

Municipalities and water boards are looking to the private sector to provide financing to increase capacity and supply. Their weak financial condition leads to questions about their ability to pay for increased supply. Increasing bulk supply will not solve these problems. And if water pressure is increased, it could lead to greater losses. Substantially improved commercial performance and mechanisms for ensuring more cost-reflective tariffs are required if the sector is to generate financial resources that meet the expected increase in demand.

There have been several initiatives to encourage private sector participation in providing urban water, sewer, and other municipal services in India. The Chennai Metropolitan Water Supply and Sewerage Board outsourced the operations and maintenance of 14 sewage pumping stations in 1992. These were followed by an additional 61 pumping stations, the operations and maintenance of 4 water boreholes, and an operations and maintenance contract for Chennai's new water treatment plant. Sewage pumping stations that are contracted out have achieved cost savings of 45 to 65 percent over the time stations were operated by the board. Other municipalities, including Hyderabad, Rajkot, Surat, Nasik, Pune, and Tiruppur have contracted out the provision of services. Rajkot has contracted out solid waste management, street light maintenance, and other services to private companies and community groups. The municipality has maintained sufficient capability to provide essential services in the event of service disruption. Rajkot has reduced costs by 5 percent of total revenue expenditures and has achieved some increases in service coverage.

As is common in most developing countries, private water vendors play a substantial role in meeting demand. Water vendors operating with carts or trucks and self-supply by housing associations are examples of private participation meeting residential demand.

Municipalities, state governments, and water boards have shown considerable interest in attracting the private sector into funding, constructing, operating, and maintaining facilities such as bulk water treatment plants. However, no projects have reached financial closure so far, although the Tiruppur project is nearing this milestone, and several projects have been abandoned, notably in Hyderabad, Cochin, and Pune (table 3.3). The planned project in Goa has been shelved and the state govern-

Table 3.3 Private Sector Initiatives in the Water Sector

City	Cost (Rs million)	Form of private sector participation	Water purchase agreement (million liters per day)	Creditors' security	Status
Tiruppur, TN	15,000	BOT	185	State government guarantee	Financing being arranged
Bangalore, Karnataka	13,000	BOOT	500	State government guarantee	Evaluation underway
Hyderabad, Andhra Pradesh	5,000	BOOT	410	State government guarantee	Project abandoned
Cochin	4,000	BOT	200	State government guarantee	Project abandoned
Pune, Maharashtra	7,500	BLT	180	Debt provided by state	Project abandoned
Panjim, Goa	3,000	BOOT	165	State government guarantee	Project may be relet as full concession

Source: World Bank staff.

ment is considering the introduction of a statewide concession.

There are two main approaches to structuring these projects. The first is selling water solely to a municipality or water board, as in the abandoned Hyderabad project or the ongoing Bangalore project. The second is delivering water principally to industrial consumers who have a good credit base, as in the Tiruppur project.

Several municipalities have attempted to tap the financial markets. Ahmedabad's bond issue, which was based on escrowing octroi revenues, is relatively well known. To attract private funds in Pune, bonds backed by octroi receipts were to fund proposed water projects. The Tamil Nadu Urban Development Fund finances predominantly small projects within municipalities. This fund is composed of about Rs 191 crores. Of this amount, the ICICI Ltd. provided Rs 21 crores and Infrastructure Leasing and Financial Services Ltd. and the Housing and Urban Development Corporation provided Rs 15 crores each.

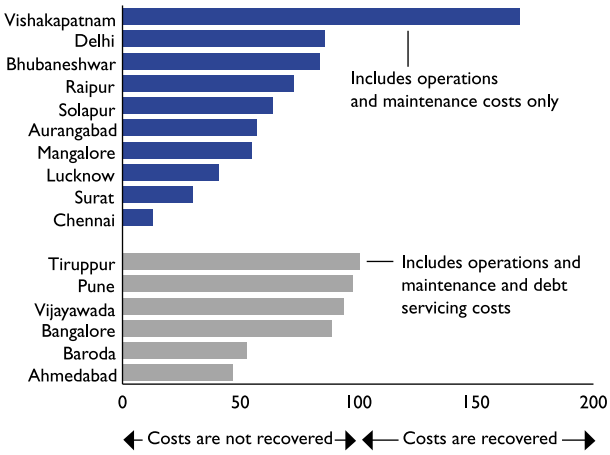
Many international water operators are investigating opportunities for managing water service providers in India. There are several potential obstacles to introducing the private sector. These include inadequate information about the current financial and physical condition of the service provider and assets, tariffs well below cost recovery levels, and the need to obtain the full support of the workforce. Additionally, there is a need to create regulatory oversight for other forms of private sector participation such as leasing and concession contracts. Many international water operators are trying to identify opportunities for concessions in medium-size towns in India.

Tariffs and Financial Performance

The financial performance of water and sanitation agencies is generally poor. Many agencies fall short of recovering even operations and maintenance costs through tariffs (figure 3.2). One justification for low tariffs is that they allow the poor to receive essential services at affordable rates. However, the evidence suggests that the urban poor face significantly higher charges for water.[2]

The existence of a secure revenue stream, the finances to pay bills on time, and sound accounting and financial management practices will allow municipalities to access the domestic debt markets and pay for facilities constructed and operated by the private sector.

Figure 3.2 Cost Recovery in the Indian Urban Water Sector



Source: World Bank 1998b.

Municipalities receive revenues from three principal sources: transfers from state governments; taxes levied by the municipality, such as octroi and property taxes; and nontax revenues, such as service charges for water and sanitation and rents from municipal properties. Gujarat and Maharashtra are the only large states that still collect octroi; most other states have phased it out in favor of less distortionary taxes. Service charges are generally low and do not contribute much to overall revenues.

A formula-based approach for devolving funds would provide secure revenues for municipalities. There are other ways to increase revenues as well. The Ahmedabad Municipal Corporation, for example, increased its revenue base by raising octroi revenues from Rs 13 billion to Rs 22 billion, and property tax receipts from Rs 4 billion to Rs 9 billion from 1993/94 to 1996/97. These revenue increases stemmed from measures to improve collection ratios of taxes and to update assessment procedures.

Policy Recommendations: Private Participation in Operating Water Systems

Recent trends indicate that the urban water sector is highly inefficient, there are problems in meeting the growing demand from industry; and investment needs exceed funding from existing sources. The public has

adjusted to some extent, meeting its needs by storing water to safeguard against shortages and purchasing extra water from private suppliers.

The poor operational performance of this sector strongly parallels the performance of the power sector. The emphasis on bulk supply facilities financed by the private sector and selling water to a public body or industrial consumers mirrors the power sector's initial emphasis on independent power projects. Experience in that sector since 1991 has shown that it will be difficult to finance projects without fundamental reform. Although some of the bulk water and sewer schemes being negotiated may reach closure, they are unlikely to solve the fundamental problems besetting water systems.

India's urban water supply suffers mainly because it lacks a commercial orientation. Under an appropriate regulatory framework, the private sector can provide the management expertise and incentives to reduce losses and expand service. However, India has yet to introduce private management in this area. An appropriate strategy would combine tariff increases with improvements in service standards and water availability, which in some cases will require substantial investments.

Management contracts may be an entry point. However, without full management control (including the authority to hire and fire workers and the ability to provide incentives for good performance), such contracts are unlikely to improve operating performance significantly. Some private operators have suggested using management contracts to gather information about the system to allow the introduction of a more substantial form of private sector participation, such as concessioning. One alternative would be for the municipality or water board to undertake extensive due diligence to give bidders a concession with all the relevant information. This approach would avoid providing an advantage to a management contractor who is responsible for collecting the information and then allowed to bid.

The issue of cost recovery needs to be addressed if the private sector is to assume investment responsibility (box 3.1). Price increases may need to be phased in over time to better match improvements in water availability and quality, and to allow a transition from the current low price levels. Targeted government support may be required. Such support could include financing a revenue gap, with explicit targets that would diminish over time, or providing capital investments to match private sector resources. Maintaining adequate prices while protecting consumer interests will require the creation of an appropriate regulatory framework.

The strategies that are adopted need to provide a policy framework in which informal water providers can continue to provide services to the poor. The framework must also address water resource and allocation issues, particularly in water-deficient areas.

Establishing a Regulatory Framework

The continuity and stability of the contractual environment will be critical to private participation in the water sector. The nature of the regulatory regime will be driven by the extent of that participation. For example, a well-written management contract could be enforced largely through contract terms. A more complex approach, such as a concession, in which the private sector has a much greater financial stake, would require a tight contractual framework and an oversight role for an independent agency. These would ensure that tariff and investment decisions are insulated somewhat from political interference, as in the power sector.

Box 3.1 Private Participation in Water and Sewage Projects in Developing Countries

Nearly 100 water and sewage projects involving private participation were implemented by the end of 1997. Of these projects, just over 40 percent were in Latin America. South Asia is the only part of the world where substantive private participation has not been realized, although several projects are under consideration. An analysis of these projects shows that around half have been concessions; these account for 80 percent of private investment in the sector.

Private Water and Sewer Projects in Developing Countries (1990–97)

Type	Projects	Total investment ($ millions, 1997 prices)
Concession	48	19,909
Greenfield	30	4,037
Operations and management	13	na
Divestiture	6	997
Total	97	24,950

Source: Silva, Tynan, and Yilmaz 1998.

Under the 74th Constitutional Amendment, municipalities are increasingly providing public services such as water and sanitation. This change raises questions about the appropriate focus of regulation and the division of responsibilities between the municipality and the state regulator. One approach could be to establish joint powers, for example allowing the municipality to grant the contract or license but giving powers of enforcement and monitoring to a state regulatory agency. Under this approach, for example, revisions or terminations could be done by the municipality but only following the recommendations or clearance of the regulatory body.

Policy Initiatives from the Central Government

There is a role for the central government in promoting sectoral reform. The development of a benchmarking scheme that compares the technical and financial performance of water systems in towns across India would help stimulate public debate. The central government also should consider enhancing fiscal support for municipalities that are attempting to reform water distribution.

Notes

1. See table 2.1 of World Bank 1998b for a summary of the issues to be confronted in ensuring effective and efficient decentralization of these services.

2. A recent study in Dehradun, Utter Pradesh estimated that those with access to a public tap spent 6.7 percent of their income on water, while those with access to an individual connection spent only 1.6 percent of their income on water. Additionally, the poor often pay high prices to purchase water from illegal suppliers or private suppliers such as water tankers.

4 Roads

- *Policy objectives.* Expand the capacity and quality of national and state highway networks, and attract private sector financing to the sector.
- *Private participation.* Numerous bridge and highway bypass projects have been privately financed; larger projects are being pursued.
- *Key issues.* The structuring of privately financed deals, including the level of dependence on tolls and the extent of support from the public sector, needs to be carefully considered.

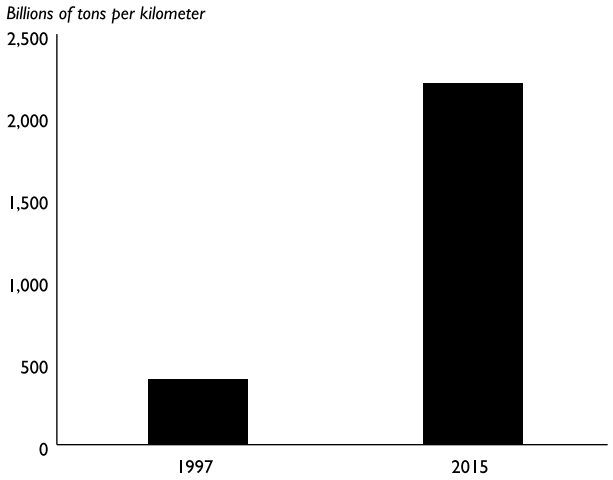
Sector Performance

Responsibility for managing India's national highways is shared by two central agencies, the Ministry of Surface Transportation (MOST) and the National Highway Authority of India (NHAI), along with various state public works departments. Both the central and state governments are interested in attracting private sector funding to increase the capacity of roads. Several privately financed bridge and bypass schemes are in operation. More are under construction, and additional schemes are under negotiation or out for bid.

India's total road network now approaches 3 million kilometers. It is the second largest road system in the world, but there is a significant variation in construction quality and road conditions nationwide. India's highways carry approximately 60 percent of the country's total freight, measured in billions of tons per kilometer (figure 4.1). This demand is expected to double every 12 years; demand for passenger transport is expected to double every 8 years (figure 4.2). Of the total 34,000 kilometer national highway network, 5 percent is four lanes, 80 percent is two lanes, and 15 percent is one lane.[1] The aggregate length of roads has increased eightfold, but traffic has increased almost twentyfold. The length of national highways has increased only 1 percent a year, and the length of state highways has increased 1.8 percent a year. Investments in road development in India have emphasized secondary or local roads rather than arterial highways. Arterial highways receive 20 percent of total road expenditures, although the country's national highways carry 40 percent of India's road traffic. Expenditures on national highways also declined from 1.4 percent of the total plan during the 1950s to 0.6 percent today.

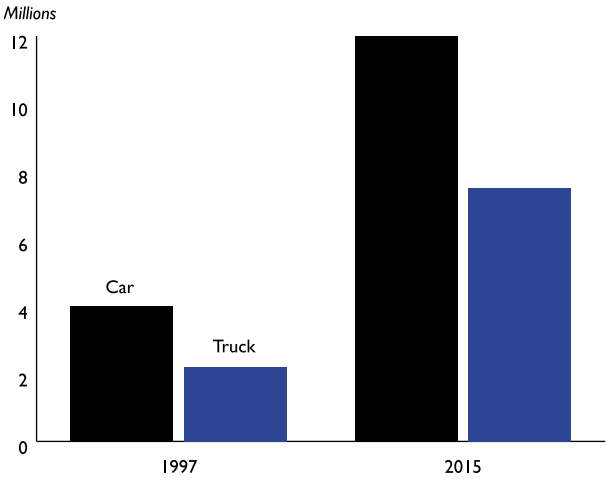
In preparing for the Ninth Five-Year Plan, the Planning Commission declared strengthening and improving crucial sections of the national highway network a

Figure 4.1 **Freight Movement**



Source: India, Ministry of Surface Transport 1997.

Figure 4.2 **Car and Truck Population**



Source: India, Ministry of Surface Transport 1997.

priority. These sections are the major highways linking Delhi, Calcutta, Chennai, and Mumbai (the "Golden Quadrangle") and the North-South and East-West corridors. Recent traffic counts on these corridors indicate substantial congestion on the routes identified by the Planning Commission (table 4.1). Forecasts of traffic volumes suggest that many four-lane stretches will have inadequate capacity by 2005.[2]

Private Sector Initiatives to Date

Experience suggests that smaller projects, such as bridges and bypasses, can attract private financing, although the public sector is still providing substantial support (table 4.2). There are relatively few large-scale projects under construction. The NHAI is embarking on a program to attract private financing and expertise for the construction and operation of roads. One privately funded expressway is under consideration from Bangalore to Mysore. The profitability of the project is determined to a considerable extent by associated real estate development.[3] Because private toll roads are a relatively new phenomena in India, it is not surprising that the first projects (bridges and bypasses) have been fairly small.

MOST and the NHAI have signed concessions with the private sector for the development of nearly 20

Table 4.1 **Daily Traffic Flows on Segments of Priority Roads**

Corridor	National highways	Cars	Buses	Trucks	Total vehicles
Delhi-Mumbai					
Delhi-Jaipur[a]	8	4,328	1,591	10,370	18,088
Jaipur-Ajmer	8	2,208	1,603	9,850	14,386
Vadodara-Talasri	8	4,212	1,322	15,775	22,792
Delhi-Calcutta					
Delhi-Agra[a]	2	6,018	1,452	5,794	19,159
Durgapu-Palsit	2	1,349	412	9,426	12,383
Calcutta-Chennai					
Calcutta-Baharagoda	6	1,754	1,648	7,641	12,474
Pannikoil-Khurda	5	4,839	2,326	7,133	19,308
Vishakhapatnam-Vijayawada	5	3,173	2,765	6,368	14,227
Mumbai-Chennai					
Pune-Kolhapur	4	7,054	4,622	8,848	22,107
Hiriyur-Bangalore	4	1,893	1,148	8,039	12,249
Ranipet-Chennai	4	5,231	2,450	7,716	17,987

a. These segments have four lanes or are being expanded.

Source: India, Ministry of Surface Transportation 1997.

Table 4.2 Privately Financed Road Projects

Name of project	Length (kilometers)	Concession period	Estimated cost (Rs million)	Status
NHAI/MOST projects				
Thane-Biwandi Bypass Two-laning (NH 3/4)	24	7 years, 8 months	170	In operation
Udaipur Bypass (NH8)	11	10 years, 2 months	240	In operation
Coimbatore Bypass (NH17)	33	30 years	900	Construction started 11/97
Durg Bypass (NH6)	18	30 years	680	Financial closure achieved
				Under construction
Nellore Bypass (NH5)	18	29 years	730	Time period for financial closure has expired
Hubli-Dharward Bypass (NH4)	24	26 years	750	Under construction. Financial closure achieved
Six Bridges, A.P. (NH5)	—	35 years	500	Financing being sought
2nd Narmada Bridge (NH8)	—	12 years	1,130	Construction started 12/97
Chalthan ROB (NH8)	—	2 years	100	In operation
Nardhana ROB (NH6)	—	12 years, 10 months	340	Financing being sought
Patalganga Bridge (NH17)	—	15 years, 10 months	330	Facility expected to be completed 1999
Koratalaiyar Bridge (NH5)	—	10 years	300	Financing being sought
Nasirabad ROB (NH6)	—	10 years, 11mos	105	Financing being sought
Wainganga Bridge (NH6)	—	18 years, 9 months	326	Financing being sought
Mahi Bridge (NH8)	—	7 years, 8 months	420	Financing being sough
Kishangarh Bypass ROB (NH4)	—	4 years, 3 months	167	Financing being sought
Khambadki Tunnel	—	—	400	Financing being sought
Kaman-Paigon (NH8,3)	—	—	240	Financing being sought
Thane-Biwandi Four-laning (NH 3/4)	24	—	900	Financing being sought
State government projects				
Pali Bypass, Rajasthan	7	—	102.5	Opened 6/98
Karaunti Bridge, Rajasthan	—	—	22.5	Opened 2/97
Rao-Pitanpur Bypass, Madhya Pradesh	11.5	—	150	Opened 11/93
Delhi-Noida Toll Bridge	—	30	4,000	Financial closure achieved
Bangalore-Mysore Expressway	—	—	7,870	Government of Karnataka acquiring land
Mahakali Flyover (Mumbai)	—	BLT	1,400	Construction started; financial closure achieved
Vadodara-Halol Bypass (Gujarat)	35	30	1,350	Financial closure achieved
Ahmedabad-Mahesana (Gujarat)	63	30	1,750	Construction started, financing being arranged

Source: World Bank staff.

bridge and bypass projects, costing Rs 10 billion (approximately $240 million). Because concessions were awarded to run from the date of signature, construction began before financial closure was achieved in several cases.[4] Of the facilities that are now operational, the Thane-Bhiwandi Bypass in Maharashtra is earning revenues 60 percent above projections.

The NHAI is developing several other projects that will be offered for private financing (table 4.3). These include projects to create four or six lanes in some stretches of national highways. The Jaipur-Kishangarh portion of National Highway 8 will be the first project offered; six bidders have been prequalified for this project.

Road User Charges: Financing Network Development

India has a Central Road Fund and a history of excise and import duties, fees, and taxes for road users.[5] Total road user charges in India currently account for 2.1 percent of GDP. About one-third of this amount (Rs 113 billion) was spent on state and national roads and highways in 1995–96. The Central Road Fund raises approximately Rs 200 million for road development. However, these funds are retained in the national consolidated fund.

The Ministry of Finance determines allocations for the road sector. The 1998 budget introduced an additional Rs 1 levy on petrol. The funds derived from this levy, estimated to be Rs 7.9 billion, are earmarked for the NHAI for the future development of national highways.[6] The 1999 budget provided for a tax of Rs 1 per liter on diesel to generate about Rs 50 billion a year. These funds will be distributed among rural development, roads, and railways in a 50-40-10 ratio. Rural development investments will mainly improve roads. The road component will be divided among the national highway system, which will receive 65 percent of

Box 4.1 Tolling National Highways in India

In April 1998 the government began toll collection on an 80-kilometer section of National Highway 8 from Jaipur to Kot Putli, which was recently expanded to four lanes. Tolls are collected at a single toll plaza near the Jaipur end. Trucks, which constitute 90 percent of traffic on this road, are charged Rs 140 (4.3 cents) per kilometer. Cars are charged Rs 40 (1.3 cents) per kilometer. The reaction to the tolls is inconclusive over such a short period, but the NHAI estimates that about 12,000 vehicles use the road daily and that average toll receipts are $25,000 a day. Toll collection was auctioned off to a private company (as it was for tolls on bridges). The winner, Ganpathi Private Tolls Limited, bid Rs 324 million for the first year (ending in March 1999). The contract may be extended for a second year as well. Because National Highway 8 is a public road, the NHAI and MOST receive the tolls, which are deposited into an escrow account. The surplus above the amount owed to NHAI-MOST, based on a monthly average of the annual bid, is returned to the private contractor. NHAI and MOST are examining the experience with this highway to determine if tolls can be applied more widely.

Table 4.3 National Highway Authority of India's Project Pipeline: Private Financing

Project	Length (kilometers)	Project cost (Rs million)	Status
Expansion of national highways			
Jaipur-Kisangarh (NH8)	93	3,500	Bidders prequalified. Concession document being finalized.
Hosur-Krishnagiri (NH7)	61	2,250	Bidders prequalified. Concession document being finalized.
Chinglepet-Tindivanam (NH47)	55	2,100	Bidders prequalified. Concession document being finalized.
Delhi-Gurgaon Six-laning (NH8)			Project structure to be finalized.
Durgapur Expressway	65	300	Project structure to be finalized.
Ahmedabad-Vadodara Phase II	93	3,400	Project structure to be finalized.
Bypass and bridge projects			
Amravati Bypass	—	900	Bidders prequalified.
Second Vivekananda Bridge	—		Preferred consortium has been selected.
Jaipur Bypass	—	700	Project structure to be finalized.
Chennai Bypass	—	710	Project structure to be finalized.
Tiruneveli Bypass	—	540	Project structure to be finalized.
Belgaria Bypass	—	1,000	Project structure to be finalized.
Talpuna Guliba Bypass	—	600	Project structure to be finalized.
Namakal Bypass	—	100	Project structure to be finalized.
Akola Bypass	—	675	Project structure to be finalized.

Source: NHAI 1999.

funds, and the states, which will receive 35 percent of funds. Funds will be used largely for building four lanes on national highways and providing financial support to the private sector to construct national highways and expressways on a build-operate-transfer (BOT) basis. The rail component will be used to construct bridges over railways at staffed and unstaffed crossings. The proposed tax will be used primarily for development rather than maintenance.

Risk Allocation and Incentives in Projects to Date

Projects that have been completed or reached financial closure have involved both the construction of a new facility (such as the Second Narmada and the Delhi-Noida bridges) and capacity expansion on an existing route (such as with the Thane-Biwandi Bypass). In some cases concessionaires have received revenues from existing assets. For the Second Narmada Bridge, the concessionaire will receive revenues from the existing bridge once financial closure has been achieved.

Table 4.4 presents a sample of the support privately financed road projects receive. A range of support is provided. Real estate rights are being granted in the Bangalore-Mysore Expressway project and are available to concessionaires in the Noida Bridge and Vadodara-Halol Bypass projects. There is extensive recourse to the public sector in many transactions. Under the Noida Bridge and Vadodara-Halol Bypass projects, full recourse is provided to the public sector, with senior debt being covered even in the event of a concessionaire's default.

Government agencies have taken an equity stake in a special-purpose contract vehicle established for the exe-

Table 4.4 Public Support Provided to Privately Financed Road Projects in India

Project	Public agency	Nature of support and government participation
Durg Bypass	NHAI	NHAI subordinated the loan in the event that revenue reaches a shortfall over projected amounts of Rs 50 million or more. The termination package covers senior debt in all events of default.
Pali Bypass	Government of Rajasthan	Traffic guarantee.
NH8 Jaipur-Kisangarh four-lane expansion	NHAI	Revenue shortfall loan. Equity support in the form of a grant. The termination package covers senior debt in all events of default (post-construction). More details are provided in table 4.5.
Moradabad Bypass	NHAI	Special-purpose contract vehicle established in which NHAI and a private EPC contractor own equity. The bulk of funds are public.
Vadodara-Halol Bypass	Government of Gujarat	The termination package covers senior debt in all events of default. Equity stake from the government. Development rights can be granted to concessionaire if an independent engineer judges revenues from concession insufficient to earn a 20% return. The government will provide 20-year term convertible capital dividend of 1% up to year 12. Interest thereafter will give a 17% yield over the life of the instrument.
Delhi-Noida Bridge	Municipality of Noida	The termination package covers senior debt in all events of default, even concessionaire default. Equity stake from Noida. Development rights can be granted to the concessionaire if an independent engineer judges revenues from concession are insufficient to earn a 20% return.

Source: World Bank staff.

cution of many projects. The municipality of Noida has taken equity in the Delhi-Noida toll project, equivalent to 8 percent of project costs. The NHAI has established a special-purpose vehicle to construct the Moradabad Bypass, although the engineering-procurement-construction contractor is only providing private equity to a limited extent.

Toll Rates and Performance Incentives

The basis for NHAI and MOST projects awarded to date was the estimated lowest cost to facility users. Since the tolls and traffic levels used in the bid were pre-specified, awards were based on the shortest concession period. The concession period is fixed by the bid and cannot be adjusted if demand is higher or lower than expected. Tolls for bridges are specified, but not for bypasses, where there are free routes. On the 18 kilometer Durg Bypass, the concessionaire is planning to charge Rs 50 per truck in the first year, followed by Rs 60 in the second year. Thereafter the toll will be linked to the wholesale price index. Although operators gain from increased traffic, they do not have any specific performance incentives linked to the quality of service, such as the speed of emergency response systems or the removal of vehicles blocking traffic lanes.

In the Vadodara-Halol and Delhi-Noida projects, there is a 20 percent cap (in nominal terms) on funds invested. If this cap is not realized within the pre-specified concession period, the term will be extended. The concession term can be lengthened to allow the project to meet the target, providing some insurance against traffic being lower than anticipated. However, this cost-of-service style regulation reduces the operator's potential upside from increased traffic flows.

The National Highway Authority of India's Concession Document for the Expansion of National Highways

The NHAI developed a concession document specifically for the Jaipur-Kisangarh section of National Highway 8. The authority envisions that the document will serve as a template for awarding contracts with a value of more than Rs 100 million. (MOST is reportedly developing a model document for smaller contracts for bridges and smaller bypasses, for example.) Table 4.5 provides an overview of the key features of the concession agreement, and table 4.6 provides an analysis of risk allocation under the contractual framework.[7] The concession agreement includes a state support agreement, under which the state government of Rajasthan would commit to cooperating in constructing and implementing the project. There is also a provision for an arrangement allowing senior lenders to transfer and assign the concession agreement in case of concessionaire default on the terms of the contract.

Table 4.5 Key Features of Concession Agreement for Jaipur-Kishangarh (NH-8) Six-laning

Element	Allocation of risk and responsibilities
Concession length	15 years from financial closure.
Financing package provided by NHAI	NHAI provides "grant" of sum bid by concessionaire, applied to funding the equity part of the capital. This grant cannot be more than 25 percent of the total project cost and no more than 50% of equity subscribed. The concession will be awarded to the bidder who asks for the least amount of the grant.
Revenue shortfall loan	In the case that direct or indirect force majeure results in revenues below subsistence levels, NHAI will provide a revenue shortfall loan to cover senior debt repayment and operations and maintenance costs, with interest of the State Bank of India's prime lending rate. Operations and maintenance costs will have a ceiling of 2% of project costs.
Toll rates	Rs 0.40 per kilometer for passenger cars, jeeps, and vans, Rs 0.70 per kilometer for light commercial vehicles, and Rs 1.40 per kilometer for trucks and buses. These rates will be effective from July 1, 1997. Indexation: 100% to the wholesale price index.
Dispute resolution	Indian Arbitration Act.

Source: World Bank staff.

Table 4.6 Risk Allocation under the Jaipur-Kishangarh Concession Agreement

Phase and risk	Risk allocation
Predevelopment phase	
Projects may not reach financial closure because of delays in securing permits and authorizations, negotiating third party contractual agreements, and so on.	If financial closure is not reached within 180 days from the effective date of concession, penalties apply of Rs 100,000 a week. If financial closure is not reached within 270 days from the effective date of concession, NHAI can cancel the agreement and seek payment under bid security or performance bond.
	These provisions do not apply if force majeure incidents are responsible for delays in reaching financial closure.
Construction period	
Construction delays and overruns	The government's equity support grant is paid based on financial disbursement targets.
	Delays in achieving operations date lead to payments to NHAI.
	Performance bond (Rs 10 crore) provides comfort, but can be cancelled after the concessionaire has spent 25% of project costs.
	There is no cap on the number of change orders that NHAI can make.
	NHAI will make payments if delays arise due to failure to secure right-of-way.
Cost overruns due, for example, to inflation,	Tolls are indexed to 100% of the movement in the wholesale price index. No indexation to exchange rate movements.
Concessionaire adherence to technical standards	Performance bonds can be cancelled after the concessionaire has spent 25% of project cost. NHAI and concessionaire jointly pay independent engineer.
Operating period	
Quality deficiencies with operations and maintenance	NHAI can terminate concession if concessionaire does not maintain required permits or standards.
	Concessionaire is not required to post performance bond, create maintenance reserve fund, or carry insurance.
	Concessionaire can sell down equity stake from 51% to 33% after two years of operations.
Gross revenue deficiencies, such as low traffic levels, non-payment/non-collection of tolls	Revenue shortfall loan if force majeure reduces revenue below subsistence levels (see table 4.5).
	NHAI to repay 90% of senior debt in concessionaire event of default.
	State governments cannot build a competing highway for first eight years of concession.
Increases in operations and maintenance costs	Operations and maintenance support grant provided from the balance of the Equity Support Grant.
Force majeure and termination	
Nonpolitical	NHAI pays 90% of senior debt.
Indirect political	NHAI pays 100% debt due, 110% of equity.
Political	NHAI pays 100% debt due, 150% equity. NHAI also backstops payments owed by state government to the concessionaire.
Concessionaire event of default (post-construction)	NHAI pays 90% of senior debt.
Creeping expropriation	State support agreement requires the government of Rajasthan to grant all required permits, facilitate access to infrastructure, ensure that barriers are not placed on the highway by state agencies, provide police surveillance, and assure that taxes and tolls are not imposed.

Source: World Bank staff.

Key features of risk allocation include the following:

- The NHAI allows only 180 days to achieve financial closure—a tight time period, even for countries with established private toll-road programs. This time period is even tighter when considering that the conditions include execution of the state support agreement and a tripartite agreement among the state government, the NHAI, and the Reserve Bank of India.
- Surprisingly, the concessionaire is not required to create a maintenance reserve fund. Allowing for cancellation of the performance bond after only 25 percent of total project costs have been spent is also unusual, given that relatively little physical progress will have been made.
- The support to be provided by the NHAI represents a reduction on that offered by the public sector for other road projects in India. The revenue shortfall loan has been defined to be activated in events of direct or indirect force majeure, which means that the NHAI is not simply agreeing to provide support for risk associated with traffic levels. However, the interest rate at which this loan will be made is relatively concessional.
- The NHAI government grant has caps relative to the total project cost and total equity. Any remaining funds that cannot be applied to equity can be used to support operations and maintenance. The grant is provided with fairly limited conditions, linked more to disbursement of funds than to physical progress. The grant essentially covers construction risk, which the private sector may be better able to handle and assess than the government.
- Tolls are not indexed to foreign exchange rate movements. The government also has not provided any exchange rate guarantees in lieu of toll adjustments to provide cover for foreign currency debt. Exchange rate guarantees can expose the government to substantial liabilities.
- Because of the NHAI's commitment to meet debt in the event of termination (post-construction), including breach of contract by the concessionaire, senior lenders face reduced risk.

Delays with Permits and Access to the Site

Major concerns for private toll-road developers in India are delays associated with obtaining clearances and right-of-way free of encumbrances. Recent amendments have streamlined the process, at least for national highway projects. A January 1997 ordinance amending the National Highways Act allows the central government to acquire land for public highways. In April 1997 the Environment Protections Act was amended by notification from the Ministry of Environment and Forests. The amendment clarified procedures for environmental clearances required for road construction. Under this notification projects related to the widening and strengthening of roads with marginal land acquisition along existing alignments do not require Ministry of Environment and Forests clearance. Exceptions are made when the road passes through "ecologically sensitive areas, such as National Parks, Sanctuaries, Tiger reserves, and Reserve Forests" (*Gazette of India* April 10, 1997).

Policy Recommendations: Developing a Privately Financed Road Program

Although experience shows that bridges and bypasses can be financed as toll facilities, there is little experience with highway tolls. Most projects in India have had extensive public sector support. Higher levels of public support are to be expected during the development of a road program. However, certain forms of public sector support (such as covering senior debt in the event of a concessionaire default) should be eliminated following the first phase of successful concessions. Lenders should take some commercial risk, including evaluation of the concessionaire's capabilities.

Each project will have its own commercial, financial, and policy risks. Government support should be tailored to the characteristics of each project. The key is to develop public sector support mechanisms that are well targeted and easy for government to monitor.

Incentive Structures and Demand Risk in Road Concessions

Chile has introduced a new system of awarding projects based on the lowest present value of gross revenues at a concession auction where the concessioning authority sets toll and discount rates. The concession does not have a fixed term but ends when the concessionaire earns the value bid. One advantage of this approach is that it reduces the demand risk facing the concessionaire; if demand is less than anticipated, the concession is lengthened. Establishing a measurable value of the concession—

the amount that is bid—also simplifies issues related to compensation for early termination.

In the Noida Bridge and Vadodara-Halol Bypass projects the concession period is not fixed, but is varied to allow the concessionaire to earn a 20 percent return on the cost of funds invested. The variable concession period again insulates the concessionaire against some demand risk. However, rate-of-return regulation requires careful monitoring of the cost base used to calculate returns. It will be important to use a genuinely independent evaluator, rather than one selected by the concessionaire.

Both incentive structures limit the upside potential facing the concessionaire. If demand is better than forecast, the concession ends sooner. The SR-91 toll road in California, which had a rate-of-return cap, also included performance incentives related to high occupancy vehicle use and user safety. The benefits of such an incentive must be offset against the likely monitoring costs.

Different Approaches for Public Support

In addition to the measures adopted so far for public support to privately funded road projects (which include traffic guarantees and extensive coverage of debt in nearly all instances of termination; see table 4.4), India could consider some approaches tried in other countries:

- *Shadow tolls.* Shadow tolls can be structured in two ways. In the first a capacity payment is made as long as the concessionaire complies with certain key technical requirements (such as timely completion and maintenance) or social requirements (like environmental). The capacity payment can be sized to cover a certain proportion of the project's fixed costs, principally related to debt service. In the second a variable payment is based on actual use by vehicle type. The greater is the weight on the variable payment, the lower is the government's exposure to demand risk. The government is currently considering an approach based on an annual payment to cover both investment and operations and maintenance costs. This would expose the private investor to no demand risk.
- *Minimum revenue guarantees and fall-away provisions.* Another option is to award a project based on the lowest minimum revenue guarantee. These guarantees could be reduced or eliminated as the project achieves certain minimum credit ratings (either for the project or the country), debt service coverage ratios, traffic volumes, or gross revenues, or after a fixed period.
- *Toll-road utility approach.* Variations on the toll-road utility approach have been developed with varying degrees of success in France, Italy, Spain, and the United States. Basically, in the toll-road utility approach project financing is converted into corporate financing once several projects are operating successfully. Future expansions are funded by retained earnings and bond issuance backed by the corporate standing of the toll-road company.

Notes

1. An additional 11,000 kilometers of state highways was recently added to the national highway network.
2. In India a two-lane road is regarded as congested once total vehicle flow is around 15,000 vehicles a day, 50 percent of which are commercial vehicles. The figure for four-lane stretches is around 40,000 vehicles a day.
3. Authorization to transport and sell water to the townships is also part of the concession agreement, as is authority to develop and sell up to 300 megawatts of power. About 20,000 condominiums (for approximately 100,000 residents) are expected to be built in each township.
4. For example, the Concession Agreement for the Second Narmada Bridge states that it should be in operation by December 2000. Work began in December 1997, well in advance of financial closure.
5. The central government receives the revenues from excise taxes and import duties on vehicles and accessories, tires and tubes, high-speed diesel, and motor oil. States receive the revenues from fees and taxes on vehicles (sales, registration, and licensing), fuel and lubricants, and the movement of passengers and goods.
6. A 1988 Cabinet Resolution envisioned directing revenues from fuel levies to the states.
7. The concession agreement is undergoing changes related to the concession fee and expansion of the facility from four to six lanes.

5 Ports

- *Policy objectives.* Expand port capacity through new projects and productivity improvements; secure private financing for 25 percent of total investment over the Ninth Five-Year Plan period.
- *Private participation*. Five greenfield projects are under construction, and many other initiatives are planned.
- *Key issues.* Poor productivity and underinvestment at the major ports has led to inefficient use of existing capacity; inland transportation bottlenecks complicate port expansion.

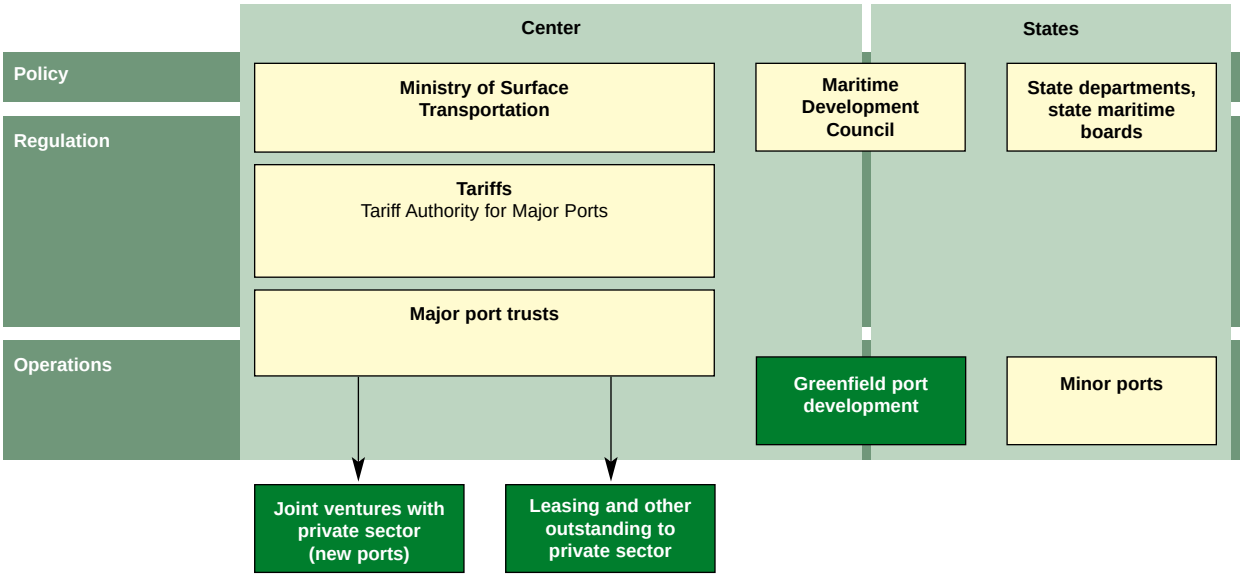
Market Structure and Performance

About 6,000 kilometers of Indian coastline is serviced by 153 ports (figure 5.1). Of these, 11 have special status as major ports under the central government's purview. State governments oversee the remaining ports. The major ports are currently operated as Port Trusts, which exercise both statutory and commercial functions, following what is commonly known as the service port concept. When the Major Port Trusts Act was enacted, six ports were named (Calcutta, Mumbai, Chennai, Cochin, Kandla, and Vishakhapatnam). Since then, five ports have been added (Paradip, Tuticorin, New Managalore, Mormugao, and Jawaharlal Nehru). States administer their ports either through state maritime boards, as in Gujarat, Maharashtra, and Tamil Nadu, or through government departments. Maritime boards have structures and powers similar to those of the board of trustees of a major port.

The government has introduced legislation that will permit gradual corporatization of the major ports through an amendment to the Major Port Trusts Act. This amendment will allow the Port Trusts to invest in equity in companies established to provide operating services at the ports. A parliamentary committee is examining the legislation. The Ministry of Surface Transportation (MOST) has indicated that corporatization through this route could be considered for some of the newer ports, such as Jawaharlal Nehru and Haldia. Corporatization is less likely for older ports such as Mumbai, which are substantially overstaffed and have less favorable commercial prospects. The government also has approved schemes allowing joint ventures between Indian ports and private companies (both foreign and national) to improve productivity and efficiency at the ports.

The government also plans to establish the Ennore Port (which is under construction) along different lines from Port Trusts. The aim is to create a corporatized venture, with the government initially owning all the equity in the controlling company. A portion of this equity would be divested to strategic operators. However, the

Figure 5.1 **India Ports Sector: Institutional Framework**



Source: World Bank Staff.

corporation would have both regulatory and operational roles. Under the landlord port scenario, the port authority only owns land and basic infrastructure, which is leased to operators who provide services.

There is concern at the national level that there has been a lack of coordination in developing new port facilities and perhaps a lack of strategic oversight in bringing the states and the central government together. A National Maritime Council was recently established to provide coordination among government bodies concerned with port development, particularly among state and central government agencies.

Current Operational Performance

India's total port throughput was 287 million tons in 1997–98 (April 1–March 31); 251 million tons (88 percent) went through the 11 major ports. The government estimates that the current capacity of the major ports is overstretched by 217 million tons, substantially below throughput levels. India's ports have struggled to keep up with the increase in demand. Average ship turnaround time increased between 1990 and 1996, reflecting a 30 percent increase in the number of vessels sailing from the major ports and only a 10 percent increase in capacity.

Significant productivity gains could be achieved at major Indian ports by moving closer to average world standards on cargo-handling operations (table 5.1). The total costs of moving a container through a terminal are on average 70–80 percent greater in India than in Japan and the United States, where labor costs are much higher.

Low handling productivity rates mean that ships spend a long time at berth. The Shipping Corporation of India reports that its ships spend 52 percent of their time in ports. Consequently, ship turnaround time in Indian ports is commonly between five and six days, compared to one day or less in other ports in the region. Additionally, waiting times to get alongside the berth are considerable. Waiting time for a berth in Chennai in October 1998 was five or six days. As a result, regional feeder operators recently decided to impose a surcharge ($30 per laden container and $10 per empty container) on inbound and outbound containers between

Table 5.1 **Productivity in Container Handling: International Comparisons**

	Handling productivity (moves per ship hour)	Throughput per day (TEUs)[a]
Chennai	—	310
Jawaharal Nehru	15	800
Bangkok/Laem Chabang	35	1,300
Colombo	38	1,400

a. Twenty-foot equivalent units.

Source: Fairplay 1996a, 1996b.

Chennai and Singapore, Port Klang, and Colombo. External trade procedures, particularly customs, also reduce overall port productivity. Containers usually spend 10 to 25 days in ports; an acceptable standard is 2 to 4 days. Customs clearance can take up to five days; the average is three or four.

Meeting the Growing Demand for Port Services

Increases in demand are likely to require an increase in capacity of more than 70 percent during the period covered by the Ninth Five-Year Plan. Port capacity, based on current operating practices, is around 217 million tons for the 11 major ports. In 1997 total traffic was 251 million tons—an apparent use rate of 115 percent. However, this figure accounts for wide differences in traffic segments. For containers, current capacity is assessed at about 15 million tons, while total traffic in 1997 was more than 20 million tons, showing an apparent use rate of 133 percent.

Previous analysis concurs that implementing rational management and working practices should increase the overall capacity of Indian ports by about 35 percent (Raghuvansi 1996; Shashikumar 1998; Fairplay 1996a, 1996b). For container operations, the figures suggest that at least a 40 percent improvement in handling and processing capacity is not beyond reach. If these changes were implemented today, they would allow Indian ports to provide world-class service without having to expand infrastructure. However, the traffic growth trend—around 6 percent, and close to 18 percent for containers—means that significant capacity expansion will still be needed even if a 40 percent improvement is achieved in coming years (table 5.2).

The government envisions demand growth for port services of around 200 million tons, with estimated throughput of around 415 million tons in 2001–02. It is therefore planning to add 122 million tons of port capacity over the Ninth Five-Year Plan period (figure 5.2). Approximately 45 million tons, or around one-third of capacity, is expected from the private sector, in addition to 31 million tons from captive schemes.[1] The government also anticipates productivity increases of around 11 million tons.

In the longer term, minor ports are expected to play an increasingly important role in meeting India's transport needs. The Planning Commission estimates total capacity of the major ports at about 550 million tons a year; by 2020 MOST projects that demand is likely to be about 1,200 million tons, indicating the important role that minor ports will play.

Private Provision to Date

The Major Ports Act of 1963 allows private provision of services at the major ports. The legislation already permits private sector intervention in port operations in the form of leasing of port assets, construction and operation of facilities, leasing of equipment for cargo handling, pilotage, and captive facilities for port-based industries.

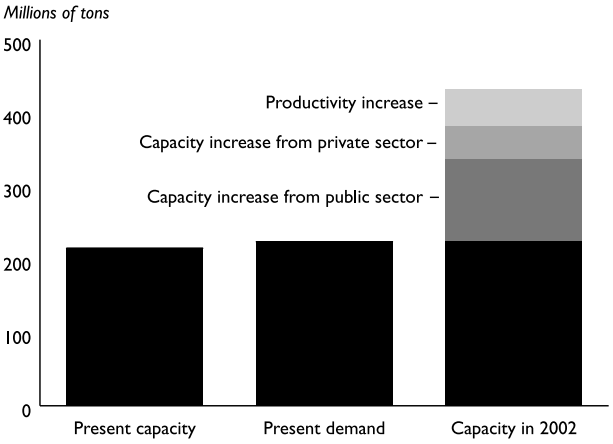
The central government has adopted policy measures aimed at opening the port sector to private investors and operators. Based on the Major Ports Act of 1963, this policy was strengthened at the federal level by the 1996 "Guidelines on Privatization," which provides a more precise framework for private participation in the major ports. At the state level maritime states have issued policy statements in the form of infrastructure policy or port policy papers. Gujarat was the first to publish a port policy statement in 1995; Karnataka is the most recent. Private sector participation in development and operations of port infrastructure is the prominent feature in each document. The government of Andhra Pradesh has decided to privatize the operations and maintenance of three existing berths at Kakinada Port and is pursuing development of a number of greenfield sites as well.

Table 5.2 Growth in Container Traffic (thousands of tons)

Port	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98
Calcutta	664	804	1,009	1,339	1,761	1,814	1,951	2,122
Chennai	1,132	1,003	1,253	1,606	2,019	2,308	2,564	3,002
Mumbai	4,286	3,462	,3884	5,413	6,268	6,748	7,632	8,097
Jawaharal Nehru	657	1,314	1,712	2,077	2,929	4,069	5,078	6,050
Total	8,043	7,627	9,009	12,189	15,358	17,618	20,590	23,120

Source: Indian Ports Association 1998.

Figure 5.2 Planned Sources of Capacity Increases at Major Ports



Source: India, Ministry of Surface Transporation 1996.

Following these developments six greenfield private projects are under construction (table 5.3). As far as major ports are concerned, two container terminals are now operational, one being P&O Australia's container terminal at the Jawaharlal Nahru Port Trust and the second the recently opened PSA-Sical terminal at Tuticorin. Construction of one 150-meter container berth was completed, with construction of the remaining berths expected by the first half of 2000. Four largely captive ports, all based in Gujarat, are being developed with private financing.[2] Of these, Dahej and the Pipavav Ports have substantial involvement from the Gujarat government.[3] In addition to these projects concessions have been awarded to PSA Corporation at Tuticorin for container handling and to Abujamaria at Marmugao for coal berths, although concession terms are still being finalized.

In addition to the projects mentioned in table 5.3, several other projects at the state and central government levels have been offered to the private sector, largely for the development of new facilities (table 5.4). The proposed Cochin container terminal project would involve operation of the existing container terminal and the subsequent development of a new, larger terminal. MOST has indicated that several additional projects will be offered to the private sector at Port Trusts, including projects involving the operation of existing facilities.

Risk Allocation and Incentives under the Concession Framework

Concessions awarded for projects at major ports follow the 1996 "Guidelines on Privatization" in establishing the allocation of risks between the private and public sectors and the incentives for efficiency provided under the contract. So far, concessions have been awarded as license agreements. Some key provisions of the concessions:

- Projects are currently defined under the build-operate-transfer (BOT) format, with asset ownership vested in the concessioning authority due to legal constraints linked to public domain legislation. Although a build-own-operate-transfer (BOOT) format would allow assets to be assigned to guarantee commercial debt, existing deals bypass this difficulty and mortgaging rights were granted to investors (for example, at the Jawaharlal Nehru container terminal developed by P&O Australia).
- Assets financed under a BOT basis will revert free of cost to the Port Authority, a possible deterrent to continuous upgrading and modernizing of facilities and equipment throughout the lifetime of the concession.

Table 5.3 Private Initiatives in the Ports Sector

Project	Nature	Status
Pipavav Port, Gujarat	State port Multi-purpose facility	First 400 meters berth ready. Another 325 meters under construction.
Gujarat Chemical Port Terminal Ltd, Dahej, Gujarat	State port Liquid cargo	Under construction.
Essar Shipping Limited, Vadinar, Gujarat	State port Liquid cargo, serving Essar Refinery	Financing completed.
P&O Australia Container Terminal, Nhava Sheva, Maharashtra	Major port Container terminal	Financing being finalized.
Reliance Ports and Terminals Ltd, Jamnagar, Gujarat	POL/petrochemical port. Serving Reliance refinery and Reliance industries	Under construction.
Tuticorin Port	Container terminal	Awarded to PSA, financing being finalized.

Source: World Bank staff.

Table 5.4 Pipeline of Private Port Projects

Project	Description
Major port projects	
Kandla Port Trust	Development and operation of container terminal at berths 7 and 8. Three bidders short-listed. Upgrading and expanding cargo handling facilities.
New Mangalore Port Trust	Dry bulk cargo berths. Bids have been invited.
Cochin Port Trust	Operation of existing container terminal and development of terminal for transshipment at new site.
Cochin Port Trust	Development of LNG terminal (with Petronet). Scheme being finalized.
Chennai Port Trust	Development of container terminal.
Mormugao Port Trust	Coal handling terminal—agreement signed with AGB Industries Ltd.
State port projects	
Dhamra Port	Coal-handling, multi-purpose. Concession agreement signed between Orissa Government and International Seaports Pvt. Ltd.
Kakinada Port	Concession agreement between AP Government and International Seaports Pvt. Ltd.
Dahej Port	Development of liquefied natural gas terminals at Dahej (with Petronet). Scheme being finalized.

Source: World Bank staff.

- The lead partner in a consortium is required to keep its full shareholding in the port development company throughout the concession period and may not sell any part of it.
- The fee structure includes an up-front fee, lease rent, and royalty per ton. The "Guidelines on Privatization" also add the concept of a fee based on an annual minimum of guaranteed traffic.
- There is no compensation in case of failure by the concessioning authority to deliver agreed services (such as power).
- There is no provision for extending the duration of a concession to compensate for force majeure events.
- There are no provisions allowing an amicable settlement process before resorting to court action to settle contractual disputes.
- Concessionaires must assume all labor liabilities attached to an existing facility. Significant overstaffing and low productivity will favor the creation of new facilities with little or no labor liability attached—as with P&O Australia in Jawaharlal Nehru and possibly the PSA Corporation in Tuticorin.[4] This provision will create a bias toward investing in new facilities rather than expanding or improving operations at existing facilities.

New Terms for Concession Contracts at the Central Level

New standard bidding documents and concession contracts are being prepared under MOST supervision for concessions at the major ports. Table 5.5 presents their main contractual provisions.

State Initiatives

Gujarat, Maharashtra, Andhra Pradesh, and Karnataka have introduced contracts that are more favorable to investors. The BOOT format adopted in Gujarat, for instance, includes full tariff flexibility in both level and currency. Gujarat's policy is clearly to attract invest-

Table 5.5 Main Features of New Concession Agreements for Major Port Concessions

Type of agreement	Build-operate-transfer
Tariffs	Freedom to set tariffs under the ceiling defined by the Tariff Authority for Major Ports.
Competition within the port	Port Trust, the licensor, is allowed to compete with the licensee on the same traffic operations (such as container handling).
	Principle of common-user and adoption of nondiscriminatory practices for the terminal.
	Port Trust may not bring another private competitor into port until traffic on concession reaches declared capacity.
Incentives on traffic	Minimum throughput levels.
Labor	Freedom to fix working practices, within applicable labor laws; however, wages must not be lower than for corresponding positions at the Port Trust.
Safeguards	Compensation upon termination.
Arbitration	Before Indian jurisdictions.

Source: World Bank staff.

ments in ports to foster regional economic development. In Karnataka private investment in infrastructure, including ports, should "contribute to economic growth and public welfare" with the objective of "rapid economic development of the State." Fiscal incentives and concessional rates on leases and dues are proposed to enhance the financial attractiveness of development projects.

The main weakness of these contractual frameworks for developing new state ports may be the often limited physical connections between the project site and the main inland transport networks. Under the BOOT format being finalized in Gujarat, road and rail linkages for new port developments may be structured as separate BOT packages to be offered to the private sector. It is unclear whether a private port developer would commit investments in a port facility without assurance that missing or inadequate land connections would be built or upgraded in time. On the other hand, it is unclear whether the private sector will be willing to upgrade road facilities without substantial public support.

Sector Regulation

The Tariff Authority for Major Ports (TAMP) was established in 1997 as a distinct body under the umbrella of MOST to regulate port tariffs independently from the Port Trusts (box 5.1). TAMP has responsibility for setting the tariffs of the major ports. It can also set tariffs for private licensers operating at a major port, where TAMP's tariff rulings will take precedence over charges outlined in a contract between a Port Trust and a private operator. TAMP was created in response to protests by private partners in the port system that they could not expect fair treatment on tariff matters from the Port Trust, which is their commercial competitor.

TAMP guidelines, adopted in Chennai in February 1998, state that "TAMP's overall objective shall be to move towards competitive pricing." TAMP is supposed to promote rationalization of the tariff system, applying uniform principles at ports to develop cost-based prices. TAMP is also working to develop a pricing methodology that will encourage improvements in operational efficiency and the introduction of innovative practices.

TAMP is developing tariff formulations for the Port Trusts. It has already issued a ruling on tariffs to be charged by the Nhava Sheva International Container Terminal, which is being established by P&O Australia at Jawaharlal Nehru. TAMP allowed the operator to have a tariff ceiling based on container handling charges currently levied at Jawaharlal Nehru. Cargo-related charges will be specified in rupees. In this ruling TAMP held that port operators should not be allowed to charge or calculate tariffs in foreign currency for cargo-handling services. It is established practice that only vessel-related charges can be based on foreign currency. However, the Mumbai Port Trust already charges a tariff based on US dollars for container handling services. Most other port trusts would like to do the same. TAMP is considering reviewing the legal basis for the Mumbai Port Trust's tariff and also undertaking a broader review of the issue.

Policy Recommendations: Modernizing the Ports Sector

Although there has been progress in bringing the private sector into port development and operation, reforms are needed to provide greater commercial autonomy to all the port trusts, enhance competition among ports, and provide the institutional structure for a modern ports sector. In the long run, India will have to rely increasingly on throughput from minor ports. This fact

Box 5.1 The Tariff Authority for Major Ports: Jurisdiction and Autonomy

TAMP lacks some of the powers and autonomy that other Indian agencies regulating infrastructure possess. For example, TAMP's mandate is restricted to tariffs for port services at the major ports, but the government retains the right to invalidate TAMP's tariff rulings. There are no provisions for enforcing TAMP orders and the central government can suspend the authority for an unlimited period. TAMP lacks financial autonomy as well, depending on MOST for budgetary support.

One of the major questions about TAMP is the scope of its jurisdiction. Established through an amendment to the Major Port Trusts Act, TAMP's purview on tariff issues is limited to ports covered by the Act. The government recently made Ennore Port a major port under the provisions of the Indian Ports Act. Because it will not be a trust, however, Ennore will not fall under the Major Port Trusts Act, nor under TAMP's authority. For this reason, Haldia and Jawaharlal Nehru, which will become corporatized port trusts, may not necessarily be under TAMP's jurisdiction either.

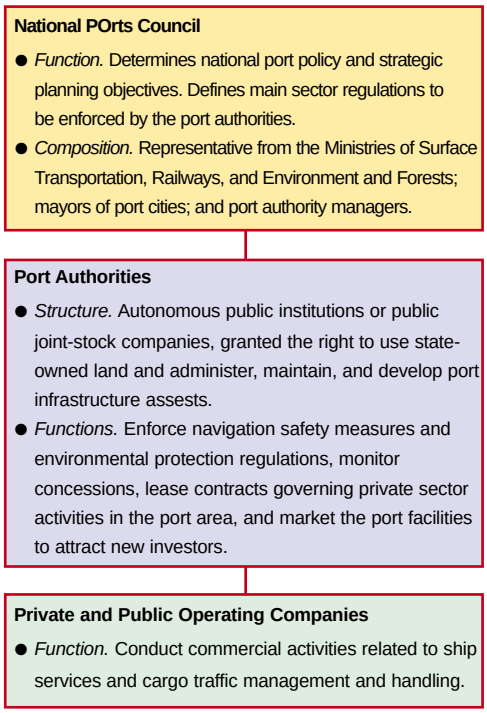
increases the urgency of developing an overarching transport strategy. A three-tiered structure could separate policy, regulatory, and commercial functions clearly and provide a nexus for central and local interests. Figure 5.3 illustrates such a structure.

Restructuring the Ports Sector

As far as corporatization is concerned, separation of policy, regulatory, and commercial roles will help reduce conflicts of interest (such as uneven access to ship services managed by Port Trusts and berthing priorities) that the Port Trusts face. This raises the issue of the appropriate role for TAMP. If statutory authorities are created at each major port, these bodies could assume TAMP's regulatory functions.

Reform is unlikely to be rapid, and TAMP will need to continue in its current role in the medium term. Because its authority extends to tariff setting, however, it may need enhanced authority to handle predatory behavior from Port Trusts against private schemes.

Figure 5.3 **A Proposed Institutional Structure for a Modernized Ports Sector**



Source: World Bank Staff.

Improving Inter-Ministerial Coordination

MOST and the Ministry of Railways have a shared interest in finding a common approach to creating intermodal platforms that would reduce transport costs and increase trade competitiveness. Dry ports are mainly railway-based and developed under the Ministry of Railways' umbrella. A common approach is likely to enhance the impact of such developments and help integrate them into the inland transport network as a whole. At the port level, improved cooperation between actors such as Indian Railways, Container Corporation of India, and the Central Warehousing Corporation would improve the climate for investment in the ports system. In some cases, cargo transfer between Indian Railways and the local port railways results in inordinate delays. Improving the interface between railways and ports should be a priority, possibly using agreements at Jawaharlal Nehru as a model.[5]

Addressing Labor Practices at the Major Ports

A progressive realignment of the workforce consistent with modern traffic and cargo-handling requirements cannot be avoided in the ports sector. Addressing the overstaffing issue before bringing the private sector in supposes that an adequate budget and sufficient staff management skills are available early enough in the process. If the private sector is called in before this issue is resolved, private operators should be allowed to adjust their workforce to actual operational requirements over time, and existing social protection provisions should ensure that the staff adjustment process is acceptable. These changes may require special government provisions to accompany staff retrenchment over a defined time period. These provisions could include retraining, voluntary retirement, indemnity payments for voluntary departure, and creation of a temporary workers' pool.

Award Criteria for Concessions

The success of a concession depends not only on getting the contract provisions right, but also on designing an appropriate method for awarding the concession. The most common options for profitable operations include awarding bids on the basis of the highest price for the assets or shares of the enterprise being privatized, the highest concession fee (one-time or annual), and the highest net present value of discounted revenue streams

Box 5.2 Introducing Competition into the Ports Sector

Port privatizations in Latin America indicate the extent to which introducing competition is important for ensuring that consumers benefit from this transformation. In Argentina competition was introduced not only among ports, but also by dividing up larger ports into distinct terminals and offering them as separate concessions. In Colombia the four major ports were concessioned in 1993 to regional port "societies," which introduced competition for stevedoring services. This helped the ports to achieve substantial productivity gains and about a 50 percent reduction in real rates between 1994 and 1996.

Source: Estache and Carbajo 1996; Gaviria 1998.

over the concession period to accrue to the government. The other most common option is bidding on the lowest tariff charged to consumers.

When competition in the market is strong enough, the government should not worry about tariffs, which market pressure should keep low. In this case the option based on the highest financial benefit to the government can be selected, and commercial tariffs left free of control. When competition in the market is weak or nonexistent, the government should be concerned about the risk of rent-seeking behavior. In this case, the option of bidding on the lowest tariff charged to consumers can be selected. This option will organize competition for the market and force candidates to optimize their bids around the minimum acceptable profit. Bidding documents also will indicate the concession fee to be paid to the government, calculated to cover all infrastructure-related costs that public authorities will bear in connection with the concession.[6]

Notes

1. Capacity increases at the Major Ports are expected at Jawahal Nehru, Kandla, Mormugao, New Mangalore, Mumbai, Chennai, and Paradip.
2. These are petroleum product-petrochemical terminals being established by Essar Shipping, Reliance Ports and Terminals, and the Gujarat Chemical Port Terminal Limited in Dahej.
3. In the case of Pipavav 25 percent of equity is owned by the private sector. The Gujarat government intends to reduce its holding once the facility is operational.
4. For example, there are 35,000 workers at Mumbai, 13,000 at Calcutta, and 11,000 at Chennai.
5. There, an agreement was reached between the Port Trust and Indian Railways, allowing Indian Railways trains to run directly up to the port terminals without disruption.
6. These costs might include the maintenance of access and protection assets, repayment of loans (if any), and return on previous investments in the concessioned facility.

6 Airports

- *Policy objectives.* Meet the future growth demands of air traffic, overcome congestion at airports, and upgrade facilities to world-class standards.
- *Private participation.* One privately financed airport has been commissioned. Some airport operations may be privatized.
- *Key issues.* Privatization of lease contracts, creation of a special regulator, and growth in passenger and cargo traffic levels.

Market Structure and Performance

The Ministry of Civil Aviation is responsible for formulating national policies and programs for public airports. The ministry's functions include overseeing airport facilities, air traffic services, and the carriage of passengers and goods by air. The Ministry of Civil Aviation and the Office of the Directorate General of Civil Aviation also have regulatory and development functions. The Airports Authority of India is responsible for the operation of civilian airports and subcontracts certain tasks. Of the approximately 450 airports and aerodromes (airstrips) in India, five are classified as international gateways.

The Airports Authority of India is a financially independent agency operating under the Ministry of Civil Aviation. Established in 1994 following the merger of the International Airports Authority of India and the National Airports Authority, the Airports Authority of India owns and operates 120 airports.[1] The Airports Authority is also responsible for air traffic control services, air safety, and search and rescue operations with other agencies. Its regulatory function is to oversee technical and safety aspects of airport operation. The authority also intends to take equity stakes in airports that are largely financed privately. The Airports Authority plans to provide air traffic control and navigational services at these airports, including the new airport in Cochin.

Cargo Traffic

India's air traffic is highly concentrated at a few airports. In fiscal 1996/97 Indian airports handled about 37 million passengers (67 percent domestic and 33 percent international). The top five international airports—Mumbai, Delhi, Chennai, Calcutta, and Trivandrum—service about 26 million passengers each year, representing about 71 percent of total air traffic activity.[2] In 1996/97 the total cargo handled at Indian airports was about 680,000 metric tons, up from 650,000 metric tons in 1995/96. About 71 percent of cargo traffic is international. In addition to air cargo, Indian airports handled about 30,000 metric tons of mail. The Delhi and Mumbai airports together account for more

than two-thirds of India's air cargo activity. India's share of total international trade in air cargo has declined relative to other modes of transport. The growth rate in international trade (in terms of value of exports and imports) was more than 25 percent, while the growth rate of air cargo was only 5 percent.

The Airports Authority of India currently shows an operating surplus, although costs lately have increased faster than revenues. As a result, the operating surplus has fallen from 33 percent of revenues in 1994/95 to 25 percent in 1997/98. Indira Gandhi International Airport in Delhi has shown little revenue growth in recent years from passenger or cargo traffic. During 1995–98 traffic revenue increased by 1 percent and cargo revenue by 5 percent. Faster growth in nontraffic revenue meant that the overall increase for the period was 5 percent. However, costs rose by more than 35 percent in the same period, with staff costs increasing 54 percent.

Future Demand for Airport Capacity

The Foundation for Aviation and Sustainable Tourism forecasts that growth in domestic air traffic will be 8.5 percent and growth in international air traffic will be 6 percent annually through 2005. Based on these projections, passenger traffic should reach about 63 million people by the same date. The potential for growth in both passenger and cargo traffic could be significantly higher. In China air travel growth has averaged about 20 percent annually over the past five years. The need for additional airport infrastructure is strongly linked to developing competitive markets for air passenger and cargo traffic.

To meet future growth in demand for air traffic, overcome airport congestion, and upgrade facilities to world-class standards, the AAI has developed an investment plan (under the Ninth Five-Year Plan) of about $800 million, or a yearly investment of about $160 million. The investment gap of Rs1,100 crores is expected to be financed by increasing private participation, borrowing funds in the domestic capital markets, and raising airport fees.

Private Sector Participation

The Policy on Airport Infrastructure, approved by the Cabinet in December 1997, endorsed the government's focus on increasing private sector participation.

Private Sector Initiatives to Date

The partially privately financed Cochin airport has recently been commissioned on a build-own-operate (BOO) basis. It will operate both domestic and international flights catering to passenger and cargo traffic. The state of Kerala has offered guarantees for the entire amount of the term loan, while the Housing and Urban Development Corporation has provided financing up to Rs 98 crores. The government of Kerala also has provided 26 percent of the equity. The Airports Authority of India will provide air traffic control services, although the terms for these services have not been finalized.

Tata Industries Ltd. (India), Raytheon Engineering and Constructors (United States), and Information Technology Park Investments (Singapore) proposed constructing an international airport on a BOO basis at Bangalore, but the project was abandoned. Several key issues had to be resolved for the project to proceed. These included future traffic allocations, terms for the transfer of ownership titles to make land available, and strengthening of related infrastructure activities.

The government of Karnataka has recently taken initiatives to restart the project. The AAI and a state government agency signed a memorandum of understanding for further action. Under the memorandum, the two parties have invited offers from firms to act as partners in the development and operation of the airport. It is proposed that the airport be developed as a joint venture in which the public sector (through the Airports Authority and the state government and its agencies) hold at least 26 percent of the equity. The joint venture agreement will also detail responsibilities concerning provision of basic infrastructure for the airport.

The Link with Civil Aviation

The Directorate General of Civil Aviation oversees the regulatory aspects of civil aviation. It regulates air transport services to, from, and within India; registers civil aircraft; formulates standards of airworthiness for civil aircraft; licenses pilots, aircraft maintenance engineers, and others; and licenses airports.

The growth in demand for airport infrastructure is clearly linked to the growth in demand for air travel from both passengers and cargo. Development of greenfield sites would raise the question of how to allocate existing traffic between new and old airports in the vicini-

ty. The government has introduced some liberalization measures, but also has maintained restrictions on the participation of foreign airlines in domestic routes. The government owns two major service providers, Air India and Indian Airlines, which are candidates for disinvestment. The government therefore faces a conflict of interest in opening the internal sector to further competition. Similarly, because the government owns existing airport facilities, there may be a conflict of interest in the allocation of traffic, much of which affects government-owned airlines.

Policy Directions: Redefining the Public Sector's Role

The government considered the corporatization of the Airports Authority of India but is now leaning toward offering long-term leases for operating some or all activities at the Delhi, Mumbai, Chennai, and Calcutta airports. The Airports Authority is currently a multipurpose entity operating in markets where business conditions are changing rapidly. A restructuring program that would separate policy and regulatory roles from operational roles could be achieved by corporatization. However, a wide-ranging leasing program could also separate operational functions from planning and statutory functions, which would then be undertaken by the residual AAI. The precise strategy to be followed—including whether land and air activities are both concessioned and, if so, whether this is done jointly or separately—has not yet been defined.

Economic Regulation for the Sector

The principal focus of air travel regulations are technology and safety. Economic and environmental considerations receive little attention. The Directorate General of Civil Aviation should continue to play the vital role of technical and safety regulator. Economic regulation should be handled by a separate independent authority, which may require legislation. As with all infrastructure regulatory agencies, the authority's powers should be clearly defined to ensure that it concentrates on areas where competition is restricted.

Economic regulation would encompass pricing for air and land activities, performance and service standards for concessionaires, market access and the impact of horizontal and vertical integration, and asset valuation and land use. The regulator would be expected to regulate leases according to contract terms. Experience in India suggests that entrusting these activities to regulators rather than to government departments can provide greater transparency. Environmental issues such as noise, emissions, water, sewage, fuel storage, and waste disposal would have to be addressed, as would squatters and dwellers on airport properties.

The Link with Aviation Policy

Developing airport infrastructure must be placed within the broader context of growth in air travel and development of the aviation sector. Key issues to address include the future deregulation of the Indian aviation industry and its effect on market size, the role of the public sector in providing airline services (both domestically and internationally), and bilateral arrangements and alternative mechanisms to increase traffic for scheduled and nonscheduled carriers.

The plans for airport expansion must be viewed in the light of traffic levels, which include modest growth in traffic at some international airports, such as Delhi.

Notes

1. Of these 120, 28 are civil enclaves at defense airfields.
2. The top five airports account for about 285 million passengers a year in the United States; about 200 million passengers in Europe; about 180 million passengers in the Asia/Pacific region; and about 40 million passengers in Latin America and the Caribbean. In China the top five airports (Beijing, Guangzhou, Shanghai, Shenzhen, and Chengdu) collectively account for more than 50 million passengers.

PART 2. INSTITUTIONAL ISSUES

7 Developing Infrastructure Regulatory Institutions

With the creation of the Telecom Regulatory Authority of India and the Central Electricity Regulatory Commission, there are now two special economic regulatory agencies for the infrastructure sectors at the central level. The Tariff Authority for Major Ports has more restricted bounds, limited purely to tariff setting. Eleven state electricity regulatory commissions have been created so far. Regulatory agencies such as the Telecom Regulatory Authority of India and the Orissa Electricity Regulatory Commission have already enhanced scrutiny of the performance of public sector service providers. However, the experience of regulatory bodies offers lessons about the political economy of regulation within India and about designing bodies that can fulfill their mandate as independent regulators. In particular, there is a need to effectively delineate the responsibilities of regulators and policymakers and to place the creation of an independent regulator within a broader restructuring of the sector.

Regulatory Independence

Some of the key factors in establishing an autonomous agency are funding methods for appointing and removing commissioners, review of decisions and the government's authority for specifying changes to these decisions, and the consultative process used by the regulator in interactions with consumers, service providers, and other groups. Tables 7.1 and 7.2 summarize the characteristics and responsibilities of the regulatory bodies that have been established in India's infrastructure sectors.

Removing an infrastructure regulator from office usually requires court approval. The exceptions are the Tariff Authority for Major Ports and the State Electricity Regulatory Commissions established by central government legislation. The State Electricity Regulatory Commissions are created by notification and therefore can be de-notified as well.

Table 7.1 Functional Characteristics of Regulatory Bodies

Regulator	Appointment and removal of commissioners	Funding	Consultative process	Appeal of decisions, relation to government policy
Telecom Regulatory Authority of India	Seven commissioners. Chairman to be Supreme Court Justice or High Court Chief Justice. Appointment by the central government. Removal by the central government following recommendation of dismissal by Supreme Court	Currently funded through central government's budget. Provision to charge fees, establish Telecom Regulatory Authority of India General Fund to meet expenses.	Article 11: The Authority shall ensure transparency. Consultative Review on methodologies and proposals (such as recent tariff-setting exercise).	High Court. Central government decides whether its directives constitute policy.
Central Electricity Regulatory Commission	Five commissioners, including Chairman of CEA ex-officio. Selection committee established by the central government. Removal by the president of India, following recommendation of dismissal by the Supreme Court.	Consolidated Fund of India.	Central Advisory Committee. Article 37: Commission shall ensure transparency.	High Court. Central government decides whether its directives constitute policy.
Orissa Electricity Regulatory Commission	Three commissioners (at least one with electrical engineering, and one with economics, accountancy, law, commerce, administration background). Selection committee constituted by the state government. Removal by the state government, following report by judge of the High Court of Orissa.	State Consolidated Fund.	Commission Advisory Committee. Public tariff hearings. Consultative paper on tariff approach.	High Court for appeal on question of law. CEA resolves disputes between OERC and the state government over whether its directives constitute policy or not.
State Electricity Regulatory Commission (following 1998 Act)	Three commissioners. Selection committee appointed by the state government. Removal by the governor, following recommendation of dismissal by the High Court.	State Consolidated Fund.	State Advisory Committee. Article 37: Commission shall ensure transparency.	High Court. State government decides whether its directives constitute policy
Tariff Authority for Major Ports	Three commissioners (with backgrounds in ports, economics, and finance, respectively). Appointed and removed by the central government.	Central government, through Ministry of Surface Transport.	Public tariff hearings, public consultations on tariff principles (although there are no specific legislative clauses relating to this).	Central government may require authority to charge certain rates. Central government can suspend authority on notification in the Official Gazette.

Source: World Bank staff.

Recent disagreements between the Telecom Regulatory Authority of India and the Minister of Communications have highlighted the role that policymakers can play in sector regulation by using policy directives. In the case of the Orissa Electricity Regulatory Commission, an external body, the Central Electricity Authority, will arbitrate whether directives issued by the state government represent policy or not. However, in most other cases the government decides whether its directives concern policy or whether they enter into detailed issues under the regulator's purview. To reduce the risk of arbitrary and ad hoc policy interventions, principles on key issues (such as pricing, competition, and interconnection) need to be specified up front in sufficient detail. The regulator can then work within the parameters allowed by policy.

Of the regulatory agencies that have been established so far, only the Telecom Regulatory Authority

Table 7.2 Responsibilities of Regulatory Bodies

Regulator	Pricing	Licensing	Dispute resolution	Other
Telecom Regulatory Authority of India	Notify tariffs for all telecommunications services. Regulate revenue sharing between service providers, and between technical aspects of interconnection.	Recommend need, timing, and terms of new service providers. Recommend revocation of license. Ensure compliance of terms of license.	Settle disputes between service providers and between service providers and consumers.	Ensure effective compliance with universal service obligations. Advise the government on telecommunications Protect consumer interests. Facilitate competition and efficiency in the sector. Maintain a register of interconnect agreements. Monitor quality of service, conduct periodic surveys.
Central Electricity Regulatory Commission	Generation: plant owned or controlled by the central government, or selling to more than one state. Interstate transmission. Frame guidelines for tariff setting.	Interstate transmission entities (under the Amendment to the 1948 Electricity Supply Act passed in 1998).	Settle disputes between generators and/or transmitters that come under CERC's tariff regulation purview.	Promote competition, efficiency, and economy. Associate with environmental agencies to develop environmental regulations for the sector.
Orissa Electricity Regulatory Commission	Regulation of prices charged by licensees.	Licensing of entities involved in transmission and distribution of power. Regulation of quality of service of licensees.	Settle disputes between license holders.	Promote efficiency, economy, and safety. Promote competition and progressively involve the private sector. Collect relevant data, forecast demand, require licensees to formulate required plans in coordination with others.
State Electricity Regulatory Commission (following 1998 Act)	Determine rates for wholesale, bulk, grid, and retail; use of transmission facilities. Regulate power purchase and procurement, process of transmission and distribution utilities, for in-state sources.	*By notification of the state government:* Issue licenses. Regulate workings of license holders and exit and . entry into industry. .Require license holders to formulate plans for meeting state electricity needs, including power purchase schemes.	*By notification of the state government:* Settle disputes between license holders and utilities.	Promote competition, efficiency, and economy. *By notification of the state government:* Regulate investment approval in sector. Regulate operation of the power system. Set and enforce sector service and safety standards. Promote privatization. Coordinate with environmental agencies to develop environmental standards.
Tariff Authority for Major Ports	Set tariffs at all major ports, including private licensees at ports.			

Source: World Bank staff.

of India has the authority to establish its own fund. Other agencies rely on the consolidated fund or, in the case of the Tariff Authority for Major Ports, the ministerial budget. Although regulatory agencies have generally been well-funded, there is a case to be made for establishing funding through a small charge on regulated companies. Providing for scrutiny of the regulators' budgets through the legislature and by auditors should ensure accountability.

Multi-Sector or Single-Sector Regulatory Agencies?

Different countries have arrived at different institutional structures for regulating their infrastructure sectors (table 7.3). Some countries with federal systems of government have opted for systems in which agencies at the national level handle a single sector, while commissions at the state level handle multiple sectors. Some small countries in the Caribbean and Central America have

Table 7.3 Alternative Approaches to Structuring Regulatory Agencies

Industry-specific (for example, electricity, gas)	Sectoral (energy, communications, transport)	Multiple
Argentina	Brazil (federal)	Australia (state)
Chile	Canada (federal)	Bolivia
India	Guatemala	Brazil (state)
Nicaragua	Colombia	Canada (state)
Peru	Hungary	Costa Rica
United Kingdom (telecommunications, water)	Mexico	El Salvador
Venezuela	United Kingdom (energy)	Italy
	United States (federal)	Panama
		United States (state)

Source: World Bank staff.

opted for multisector regulatory agencies. Other countries have adopted industry-specific regulatory agencies, most notably the United Kingdom (although it recently combined electricity and natural gas regulators).

There are several advantages to multisector regulatory agencies. These include sharing scarce human resources, particularly individuals with the experience to be regulatory commissioners, and lowering agency costs. The ability to cope with unclear sector boundaries (between electricity and gas, for example) is another advantage. Some argue that there is also a better chance of maintaining an arms-length relationship between the regulator and the regulated industry.

Multisectoral agencies have potential drawbacks as well. Some of these, such as a lack of industry-specific expertise, can be tackled by adequate staffing. One key implementation issue is the extent to which the pace of reform, and therefore the need for regulation, varies among sectors. This pace differs in the power and water sectors in some states in India. Some countries tackle this problem with legislation that establishes a regulatory authority and defines its main functions, selection of members, internal procedures, funding, and so on. Sector-specific legislation can then be used to define the role of the regulatory authority. In India there also may be questions about which level of government should provide services. This is particularly so for urban services, which would require adjustments to the scope of the agency's powers. (The 74th Amendment makes municipalities responsible for such services as water supply and sewage treatment.)

A multisector regulator would require a correspondingly larger budget. There may also be a need to ensure that sectors being restructured first (such as the power sector) receive the bulk of initial regulatory attention. Nonetheless, some consolidation of regulatory activities may be appropriate, perhaps at the sector level for energy (for example, electricity and gas) and at the state level for a broader set of sectors.

8 Infrastructure Finance: The Role of the Domestic Debt Market

Domestic sources will have to provide most of the additional funding for infrastructure. India's sustainable account deficit (by definition the amount of net foreign funding) is generally thought to be under 3 percent of GDP. The current account deficit has worsened in the last year to around 2.2 percent of GDP in 1998/99. Thus additional foreign funding is likely to be no more than about 1 percent of GDP annually.[1] Meeting demand from domestic sources would require creating a genuine marketplace for long-term, fixed-income instruments. At present the number of providers of long-term debt is limited, they have broadly similar incentives and investment patterns, and the regulatory system limits their willingness to provide financing for infrastructure projects. Developing a secondary market for debt is also constrained to some extent by existing taxes and regulations. These factors are reflected in India's relatively large primary debt market and its low level of secondary market trading.

Funding for Infrastructure

As originally interpreted, Section 10 (23) G of the Income Tax Schedule, which allows a tax exemption for gross interest, briefly increased the amount of infrastructure funding provided directly through the bond market. A more recent reinterpretation of this section allows a tax exemption only for net interest. This reinterpretation has meant that the bulk of infrastructure financing (95 percent) is once again provided through the loan market by banks and financial institutions. The recent growth in debt capital markets in India has been powered to a considerable extent by the increased investment activity of the banking sector, notably by government-owned regional banks. Due to the leveraged nature of the banking system, however, banks favor shorter term instruments with strong credits and greater liquidity. In addition to the limited upside incentives for and considerable downside repercussions of innovation among government banking officials, this preference for shorter term instruments may help explain why bankholding of government bonds exceeds the statutory liquidity requirements, currently 37 percent of assets instead of the required minimum of 25 percent.

The government has attempted to encourage investment in infrastructure by offering tax concessions through other means as well. Under the provisions of Section 80 I (A) of the Income Tax Schedule, a five-year tax holiday followed by 30 percent deductions for companies is available for investments in all infrastructure sectors except telecommunications. However, it is uncertain whether this provision applies to new projects only or whether it can be applied to the extension and rehabilitation of existing facilities. Individuals receive annual tax credits up to Rs 10,000 for investing in infrastructure bonds.

The Impact of the Budget Deficit

The large public sector deficit crowds out private investment through high borrowing levels, which raise interest rates and risk premiums. Policy measures such as the statutory liquidity reserve and the cash reserve requirement and investment guidelines for provident funds and insurance companies also encourage funds to be invested in financing the deficit. Cutting the statutory liquidity reserve and cash reserve requirement without cutting the deficit will simply increase market borrowing by the public sector and crowd out private borrowing through even higher interest rates, which will particularly hurt long-term lending. The central government's deficit was estimated at 5.8 percent in 1998/99. This was higher than forecasted, but approximately the same as in the previous two years. The states' combined deficit has increased sharply in recent years and is expected to continue to do so.

Providers of Long-Term Debt Capital

The government announced in its 1998 budget two measures to channel long-term funds toward infrastructure. The first is the introduction of competition into the insurance sector. Promoting competition and allowing greater freedom in the insurance industry's investments would cut insurance costs. Lower costs would encourage use of insurance by the public, while stimulating the demand for sound long-term bonds. Legislation has recently been approved by Parliament to open up the insurance sector to competition, with foreign companies being allowed up to a 26 percent equity stake in an insurance company operating in India. The Life Insurance Company, the current state-owned monopoly supplier, is quite unusual because it holds little long-term, fixed-income investments. The company's investment portfolio is about $26 billion, making it the largest single investor in India. Accretions are around $6.5 billion per year. About 10–12 percent of annual accretions go toward infrastructure projects (including housing), primarily through loans. The Life Insurance Company typically buys debt issues to hold to maturity due to the lack of secondary market liquidity and the absence of alternative investments. The relevant legislation to open the market has yet to be passed.

The 1998 budget also allowed the provident funds to invest up to 10 percent of their incremental accruals in infrastructure instruments rated as investment grade by two rating agencies. So far, the provident funds are reluctant to invest in infrastructure and are requesting full guarantees. The public sector, noncompetitive nature of many provident funds, their often guaranteed rate of return, and limits on their investments all reduce the potential pensions for contributors and the potential demand for sound, long-term debt and equities from the private sector.[2] The imposed rate of return for provident funds binds the trustees to conservative investment strategies. They have been reluctant, for example, to accept equity investments.

Provident funds have a concentration of purchases in securities of five to seven years. These funds largely hold investments until maturity, creating a portfolio and excluding special deposits, with an average life of three to four years. The rationale for short maturity is that fund participants are generally required to withdraw their money when they change employment. They may also make withdrawals for certain purposes. The provident funds are prohibited from selling securities except to meet a cash shortfall.

Debt Market Functioning

India has a relatively large primary bond market, although it is still dominated by the public sector (box 8.1). However, activity in the secondary market is relatively limited. Improving the market infrastructure to introduce greater transparency and reduce fraud and amending certain aspects of the financial regulation system would increase activity in the secondary debt market and lay the ground for entrance of new investors.

Government Bond Repossession and Short Trading

Only banks and primary and satellite dealers are allowed to conduct repossession transactions.[3] All financial market participants are allowed to conduct "reverse repossessions."

Box 8.1 The Government Bond Primary Market

The government sells bonds and bills through 13 primary dealers, all controlled by government-owned financial entities. The schedule of auctions and amounts to be sold are not pre-announced or irrevocably fixed prior to auction. Bonds are also underwritten by the primary dealers and a group of satellite dealers. The Reserve Bank of India (RBI) occasionally revises the amount that is underwritten. Currently, 60 percent of bond auctions are underwritten.

The underwriters work for a commission that is determined through a Dutch auction process. In this process, a commission level is set covering the full amount that the RBI wishes to be underwritten. All participants who bid at a commission level at or less than the cut-off rate (the weighted average of accepted bids and the amount of bids received) are awarded the amount for which they bid. The central monetary authority currently announces the cut-off rate. It does not publish the tail (the margin between the highest and lowest acceptable yield).

A portion of the auction may devolve to the RBI, in which case the yield at which bonds are allocated to underwriters bears little relation to the bids received. In addition, there is no rule to determine how much, if any, of an auction the underwriters will receive. The RBI also retains the right to sell fewer bonds than the amount announced.

The RBI's ability to determine the amounts assumed by underwriters and award paper at off-market prices when it chooses is likely to influence the behavior of market participants significantly. It is also likely that overseas investors, who see themselves as having an information disadvantage, would be deterred from participating in the Indian debt capital markets.

Banks and primary dealers may conduct repossessions and invest in the those of other banks or primary dealers. Repossession transactions are permitted only in central government securities and therefore cannot be made for corporate debt. Selling securities short, including government securities, is not permitted. The development of a secure dematerialized trading system for debt instruments would reduce the risk of fraud that the RBI worries will return if repossession transactions are permitted again. However, it may be difficult to develop a dematerialized system until stamp duties on secondary trading are removed.

Many market participants have highlighted the absence of a short-term interbank rate, such as the London interbank offered rate (LIBOR), for the Indian market. Borrowing from longer term floating rate instruments is currently indexed to the prime lending rate, which lending institutions can determine arbitrarily. A market index such as the LIBOR is the product rather than the source of a dynamic and competitive market. Removing impediments to the natural development of a free market in short-term money would encourage the creation of such an index. However, much money market activity is dominated by a small number of government-owned banks that share similar views on market direction.

The Impact of Taxes

Stamp duties are widely seen as one of the primary obstacles to developing an active secondary market in debt securities. The stamp tax on debt instruments, unlike equities, continues to be levied at the state level. The tax is charged on primary issuance and secondary trading. It varies by state and is sometimes high enough to preclude trading, while in some states it is 2 percent. The tax is charged according to where the issuing entity is located rather than where the trade occurs. Central government securities are exempt, creating a further bias in favor of government paper.

Since May 1997 foreign institutional investors have been permitted to open accounts that are completely dedicated to fixed-income investment. Foreign investors face a 20 percent deduction of interest paid and it has been difficult for them to avoid dividend withholding. This situation is unlike that of equity funds, which have been able to circumvent dividend withholding through Mauritius or Cyprus. Because a large proportion of foreign investors are not taxpayers, the 20 percent withholding is a significant disincentive to overseas investors.

Policy Recommendations: Developing a Genuine Market for Long-Term Debt

Passage of the Insurance Regulatory Authority Bill will allow competition in the insurance industry. This will benefit customers and increase the number of buyers of fixed-income securities. Phasing out guaranteed returns on provident funds, special deposits, and postal deposits also would eliminate some market distortions. Reforming the management of provident funds (by

appointing independent, private sector managers, for example) would ensure that the absence of a guaranteed rate of return will not be detrimental to participant interests. Such reforms would encourage investment in infrastructure. Greater freedom in portfolio choice also requires better regulation to avoid malfeasance.

Fully funded pension schemes would increase national savings and the demand for long-term debt, making more funds available for infrastructure. In the short-run, however, these schemes would crystallize the public sector deficit. Existing retirees would have to be paid from public funds, rather than from new worker contributions, which would instead go into fully funded accounts. Defined contribution allows fund managers to make investments with a higher expected return but greater volatility.

Making the Debt Market Work Better

- *Simplify taxes to reduce distortions.* The current stamp duty on secondary market transactions in bonds penalizes trading, thus discouraging investors from purchasing longer term corporate securities and hindering efficient portfolio allocation by investors. Removing the stamp tax on secondary debt market trades would allow the establishment of a dematerialized settlement system for fixed-income instruments. Such a system would provide a reliable and secure settlement process and reduce transactions costs and the potential for fraud, which is still a significant obstacle to secondary market trading. If a secure dematerialized settlements system were created, a repossession market for securities could be permitted again, allowing traders to finance the inventory required for market-making. The ability to go short is essential to making efficient markets. It will also provide leverage for long-term investors, such as banks, helping them buy longer term securities.
- *Regulate the debt private placement market.* The current situation does not provide adequate protection to institutional investors. The private placement market needs to be regulated so that issues may be sold only to genuine and sophisticated institutional investors. Standards of documentation should be improved to provide a reasonable basis for making an investment decision. Defining the type of investors who can purchase private placements as those who can understand the risks is better than directly limiting the number of investors.
- *Support securitization.* Securitization has greatly facilitated funding for infrastructure projects in many countries. Legal reforms allowing for securitization without perfection of the security will advance securitization in India, as will facilitating special purpose vehicles and permitting provident funds and insurers to invest in securitized instruments and transactions. Securitization would require several parallel reforms. These include the development of appropriate accounting standards, a reduction in transactions costs related to stamp duties and registration, and clarification of the status (under the Income Tax Act) of a special purpose vehicle structured in the form of a trust.
- *Simplify and harmonize the RBI's debt auction procedures.* The government should consider using only one type of debt auction, allowing "when-issued" trading and "noncompetitive bids," increasing competition in the underwriting process by opening auctions to all investors, auctioning debt in specific amounts that are sold in full, and permitting interest rate "stripping" of government bonds. The government bond market sets the tone for the Indian fixed-income markets as a whole. Complicated and varied auction methods make it difficult to use the government bond market for risk-free benchmarks.

Notes

1. A smaller government deficit would indirectly make more foreign funding available for private infrastructure.
2. The rate of return can often be met by investing in government securities.
3. In a repossession transaction, a holder of a security enters into a transaction to sell that security for immediate delivery to a second party. At the same time the holder contracts to repurchase the security from the same party at a predetermined future date. The transaction seen from the perspective of the party purchasing the security for immediate transaction and agreeing to resell it to the same party for future delivery is known as a *reverse repossession*.

9 The Public-Private Interface

An increasing emphasis on private provision of infrastructure services is placing new demands on the public sector's contracting and supervision skills. This frequently results in putting projects out to bid after inadequate preparation. The need for greater interministerial coordination, at both the central and state levels, is also highlighted by private sector developers as a constraint—particularly in sectors such as power, where many actors are involved.

Contracting and Implementing Private Infrastructure Projects

Developers say that the large number of government agencies involved in implementing an infrastructure project in India leads to significant delays. A recent example is the expansion of private telecommunications services. The Ministry of Surface Transportation and various municipalities contested right-of-way for network roll-out, despite the licenses granted by the Department of Telecommunications giving private operators the same rights as those enjoyed by the department.

Institutional Structures: Single Window Clearances

To date, developers have by and large been required to obtain consent through their own efforts. There is nothing approaching a single clearance. Enron Corporation has reported that more than 270 different clearances were required for approval of the second phase of the Dabhol power project. Examples in other sectors are numerous. In Delhi 18 different bodies must give clearances for the location and height of transmission towers. There is an obvious need to reduce the required number of clearances and clarify the clearance process. Some state governments (for example, Gujarat and Rajasthan) have established specialist bodies for preparation of projects to be contracted to the private sector.

The central government this year proposed creating a Foreign Investment Implementation Authority. The authority would not grant clearances, but would assist investors in handling the government agencies and ministries that are required to provide clearance. The proposal, now before the cabinet, provides a role for the central government and for states, whose representatives would be involved in their state's projects.

Project Contracting and Preparation

There is increasing use of government agencies that have a more commercial outlook than the civil service

in developing and awarding privately financed infrastructure projects. In Tamil Nadu, for example, several agencies are charged with this responsibility, including the Tamil Nadu Infrastructure Financial Services Limited, the Tamil Nadu Industrial Development Corporation, and the New Tiruppur Area Development Corporation Limited, which was established solely for the Tirapur water project. Gujarat has recently established the Gujarat Infrastructure Development Board (GIDB), a specialized agency for the preparation of infrastructure projects to be contracted out to the private sector. Rajasthan has adopted streamlined procedures for infrastructure project contracting, through the creation of an Infrastructure and Investment Promotion Board at the ministerial level, which will grant government clearances, a Standing Committee on Infrastructure at the secretarial level, which will screen and approve projects to be concessioned to the private sector, and a specialist project preparation company, PDCOR Ltd., in partnership with financial institutions. PDCOR will identify which projects are financially viable, prepare detailed project reports prior to their being offered to the private sector via competitive bidding, and seek necessary clearances.

One of the most important capabilities is the proper identification and assignment of risk for a project. In states such as Gujarat, Rajasthan, and Tamil Nadu, which have undertaken many transactions, there is increasing awareness of the concept of risk analysis in projects involving the private sector. However, no comprehensive risk matrix or similar methodology is in place, although the use of special financial and legal advisors does help remedy the problem.

Sharing Risks between the Public and Private Sectors

Governments worldwide that are seeking private investment in infrastructure hope to reduce their financial exposure. But in many cases—and India is no exception—governments are asked to bear residual risks associated with these projects, which can amount to substantial contingent liabilities. These include exchange rate risk, nonpayment by public sector purchasers, expropriation, and low demand. The danger of the government assuming these risks is that it blunts the private sector's incentive to screen projects rigorously. In addition, governments are usually not good at accounting and budgeting for contingent liabilities.

There is growing concern about the level of contingent liabilities that state governments incur. Thus far these liabilities have been predominantly for state-owned public enterprises. However, with an increasing number of privately financed infrastructure projects, further liabilities will be incurred. Reporting on the levels of guarantees is relatively sparse, although it is recorded in comptroller and auditor general reports on state finances and evaluated by the major rating agencies. Gujarat recently set a Rs 11,000 crore cap on the amount of outstanding guarantees from 1998/99 onward. Several countries, including New Zealand, Colombia, and the Philippines, have been publishing information on their contingent liabilities. Most approaches initially relied on reporting maximum levels of liability and some estimate of the expected value. More advanced techniques for quantifying the risks involved have been used in Colombia and the United States.

Table 9.1 Summary of Principal Legislation

Law	Purpose
Land Acquisition Act (1894, amended 1984)	Acquisition of land for public purposes.
	The 1984 Amendment included a list of public activities. The Amendment also allowed land to be acquired by the government for firms for specific purposes.
Forest Conservation Act (1980)	Permission of the central government is required for converting forestlands to nonforest purposes.
Indian Forest Act (1927)	Framework for forest management.
Environment Protection Act (1986)	Umbrella legislation for environmental protection.
Wildlife Protection Act (1972)	Regulation of trade in wildlife and their products; establishment of a network of protected areas (National Parks and Sanctuaries).
National Highways Act (1956, amended 1997)	Specific provisions related to land acquisition for highway purposes.
National Highways Authority of India (NHAI) Act (1988, amended 1998)	The Amendment gives NHAI authority to acquire land and to entrust this function to others on its behalf.

Source: World Bank staff.

Environmental and Social Impact Legislation

Many infrastructure investments have substantial environmental and social impacts. Land acquisition and the subsequent displacement of people residing on that land, use of natural resources such as surface and groundwater, and harmful discharges from facility operations are obvious examples. Several pieces of Indian legislation aim to regulate the use and acquisition of land. This legislation makes distinctions on the basis of the locations of a proposed development and on whether it will use protected areas such as forests or coastal zones (table 9.1).

The Ministry of Environment and Forests is the government's central agency for planning, promotion, and coordination of environmental and forestry programs. The ministry uses environmental impact assessments as the basis for its decisions on each project. Numerous court appeals to overturn ministry rulings led to the 1997 creation of a special appellate body, the National Environment Appellate Authority, which is currently headed by a retired Supreme Court judge. The authority has the right to decide appeals on clearances (or rejections) of projects granted by the ministry.

Legislation Regarding Rehabilitation and Resettlement of Displaced Persons

The displacement of populations for large-scale developments has been an ongoing problem in India. Because the government has neither a national law nor a policy on this subject, the Ministry of Rural Areas and Employment is devising both. Generally, specific policies designed to fit a particular situation are often adopted. In many cases private companies are responsible for implementing rehabilitation and resettlement with relatively little direct involvement from concerned state governments. The states of Karnataka, Maharashtra, and Madhya Pradesh have general legislation on rehabilitation and resettlement. Rajasthan is also developing a resettlement policy. In all three states the legislation addresses primarily resettlement issues related to water resource projects, with provisions allowing the government to apply the legislation to other projects at its own discretion. The definition of people affected by the projects includes those not displaced physically but affected as a result of land acquisition. The definition does not usually cover people who are displaced but have no legal title to the land.

Policy Recommendations: Efficiency and Transparency in Contracting Infrastructure Projects to the Private Sector

Several countries have attempted to improve the efficiency of public sector contracting by establishing special government agencies and enacting overarching legislation on the granting of concessions. India has a political tradition in which states and the central government have different roles in the infrastructure sectors and involved ministries have a reasonable degree of autonomy. The proposed Foreign Investment Implementation Authority may improve coordination between states and the central government in handling foreign investments in infrastructure.

State governments could consider establishing a body that provides a one-stop shop for private developers and investors to interact with, as is being implemented in Gujarat. This body would be responsible for contracting and obtaining necessary clearances. The key would be to ensure that the body coordinates effectively with public sector agencies, including the State Electricity Board, the Public Works Department, and municipal bodies that provide water services. The central government will continue to provide some clearances, and the Ministry of Environment and Forests will provide the bulk of environmental clearances for infrastructure projects. The Supreme Court has established several such bodies, both for the nation and for specific zones, indicating the court's concern about the ability to enforce the country's existing environmental legislation.[1]

Reporting and Valuing Contingent Liabilities

There is growing concern about the potential level of contingent liabilities that state governments are incurring as more infrastructure projects reach financial closure. As the number of privately funded infrastructure projects increases, there will be a greater need for state governments to monitor their contingent liabilities systematically. State governments now report guarantees to the state legislature. However, "letters of comfort," which are not legally binding but represent a strong statement of commitment, are not required to be reported.[2] The government of Andhra Pradesh does report these "softer" contingent liabilities. In addition to measuring their

liabilities, public agencies need to create liquid funds that will allow agencies to meet liabilities as they arise, rather than wait for the next annual budget cycle.

Auditing Public Support to Private Infrastructure Projects

Given the substantial support that public-private infrastructure partnerships are likely to receive from the government, India should work toward establishing capabilities to audit the award of these projects. The goal would be to assure the public that the government had achieved value for its money. A public sector agency would undertake project design, contracting, and negotiation. The agency also would provide documentation on why award decisions were made. In the United Kingdom, the National Audit Office supplements its own skills with those of professional advisors, including lawyers, investment bankers, and accountants. Skills within government units in India could be augmented through a similar system.

Notes

1. In addition to the National Environmental Appellate Authority, the court established several ad hoc regional bodies, such as the Loss of Ecology Authority for the State of Tamil Nadu and the Environmental Impact Assessment Authority for the National Capital Region.
2. For example, the government of Gujarat granted a letter of comfort to the Gujarat Torrent power project.

PART 3. POLICY RECOMMENDATIONS

10 Overview of Policy Recommendations

There has been some progress since the infrastructure sectors were opened to private investment. But a deepening of reforms will be required if the private sector is to make a full contribution to meeting India's infrastructure needs.

Telecommunications

Strengthen the regulator's role

- Amend legislation so that TRAI has clear authority over interconnection and all tariffs for service provision in the sector.
- Develop clear policy guidelines that the Telecom Regulatory Authority of India (TRAI) can observe when making rulings to reduce the scope for ad hoc, after-the-fact intervention by the central government.
- Strengthen TRAI's role in influencing opening of sector and introduction of new service providers by giving it a formal role in the licensing process and the introduction of new service providers.

Open telecommunications markets

- Liberalize long-distance voice and data services without delay.
- Establish standard qualification requirements for opening fixed services and allowing qualified new players to enter.
- For long-distance and local fixed services, set license fees at low levels that recover the costs of regulation alone.
- Initiate the liberalization of international services.
- Introduce new entrants to cellular, concomitant with the proposed migration of existing license holders to a revenue-sharing regime.
- Lift the restriction on Internet telephony—because it is difficult to enforce, hinders competition in the sector, and prevents consumers and service providers from benefiting from technology convergence.

Clarify universal service obligations

- Assess what genuinely constitutes noncommercial service.
- Reimburse the Department of Telecommunications through the New Telecom Policy fund proposed to encourage expansion into noneconomic areas. Base this reimbursement on the excess costs that the department is incurring to meet its universal service obligations, not on its cellular license fee.

Allocate the spectrum efficiently

- Relocate defense and security use from parts of the commercially attractive bands and provide suitable compensation. Consider auctioning the spectrum, particularly in areas where there are constraints on its availability.

Power

Privatize the power sector

- Make distribution the priority for privatization. Corporatization, while a necessary starting point, is unlikely to produce the conditions required for improving performance and stopping the theft of power.
- Introduce comprehensive legislation that transfers state electricity board assets to successor companies, outlines the new industry structure, and creates a regulator with appropriate powers as the starting point for privatization.

Create strong regulatory agencies to ensure that tariffs reflect costs

- Create these regulatory agencies through legislation rather than government notification.
- Grant a wide range of powers to regulatory agencies through this legislation, including licensing, resolving disputes among service providers, and regulating their quality of service, in addition to setting tariffs.
- Curtail the scope for ad hoc policy interference through the legislation.

Encourage power reform through central government support

- Require beneficiary states to undertake these reforms through further support from the central government to private power projects—for example, from the Power Trading Corporation.

Urban Water and Sewer Systems

Introduce private participation into urban water systems

- For sustainable improvement in performance, allow full management control to the private sector (including the authority to hire and fire workers and the ability to provide incentives for good performance).
- Phase in price increases over time to match improvements in water availability and better quality—and to allow a transition from the current low prices.
- Include targeted government support to finance revenue gap, with explicit targets for reducing them over time, or provide capital investments to match private sector resources.
- Provide a policy framework so that informal water providers can continue to provide services to the poor.
- Address water resource and allocation issues, particularly in water-deficient areas.

Establish a regulatory framework

- Ensure the continuity and stability of the contractual environment, to aid private participation in the water sector.
- Give to an independent agency the role of overseeing concessions to insulate tariff and investment decisions from political interference.
- Allow municipalities to grant contracts and licenses, but give powers of enforcement and monitoring to a state regulatory agency.

Institute central government policies to compare performance of water systems and enhance fiscal support for municipalities

- Develop a benchmarking scheme to help stimulate public debate by comparing the technical and financial performance of water systems in towns across India.
- Enhance fiscal support for municipalities attempting to reform water distribution.

Roads

Monitor and gradually reduce public support for private road projects

- Review the need for certain forms of public sector support for roads, such as covering senior debt in the event of a concessionaire default, following the first phase of successful concessions. In addition, develop public sector support mechanisms that are well targeted and easy for the government to monitor.

Establish incentive structures and demand risk in road concessions

- Consider establishing a system for the government to award projects on the basis of the lowest present value of gross revenues at a concession auction. The concessioning authority would set toll and discount rates, and the concession would not have a fixed term but would end when the concessionaire earns what it bid.
- Establish a measurable value of the concession to simplify issues related to compensation for early termination.

Consider other countries' approaches to public support for privately funded road projects

- *Shadow tolls.* A capacity payment is made as long as the concessionaire complies with certain key technical or social parameters. The capacity payment can be sized to cover a certain proportion of the project's fixed costs. Or it can be a variable payment based on actual usage by vehicle type (the greater the weight on the variable payment, the lower the government's exposure to demand risk).
- *Toll road utility.* Project financing is converted into corporate financing once several projects are operating successfully.

Ports

Restructure the ports sector

- Develop a new institutional structure for the sector, separating policy, regulatory, and commercial functions clearly and providing a nexus for central and local interests.

Include the following elements in this new structure

- *Corporatized Port Trusts*—with private and public operating companies conducting commercial activities related to ship services and cargo traffic management and handling.
- *National Ports Council*—to determine national port policy and strategic planning objectives, and define main sector regulations to be enforced by the Port Authorities. The council would comprise representatives from the Ministry of Surface Transportation (MOST), the Ministry of Railways, and the Ministry of Environment and Forests (MOEF), mayors of port cities, and Port Authority managers.
- *Port Authorities*—autonomous public institutions that enforce navigation safety measures and environmental protection regulations, monitor concessions, lease contracts governing private sector activities in the port area, and market the port facilities to attract new investors.

Improve interministerial coordination

- Improve cooperation between such actors as Indian Railways, the Container Corporation of India, and the Central Warehousing Corporation.
- Improve the interface between railways and ports, possibly using agreements at Jawaharlal Nehru as a model, to eliminate long delays in cargo transfer.

Address labor practices at the major ports

- Realign the workforce consistently with modern traffic and cargo handling requirements.
- Allow private operators to adjust their workforce to actual operational requirements over time if the private sector is called in before this issue is resolved.
- Provide retraining, voluntary retirement, indemnity payments for voluntary departure, and a temporary workers' pool as needed.

Establish efficient award criteria for concessions

- When competition in the market is strong, the government would take bids on the highest price paid for the assets or shares of the enterprise being privatized, the highest concession fee (one-time), or the highest net present value of discounted revenue streams over the concession period to accrue to the government.
- When competition in the market is weak or nonexistent, the government would be alert to the risk of rent-seeking behavior, and therefore take bids on the basis of the lowest tariff charged to consumers

Airports

Undertake a wide-ranging privatization of operations at existing airports, in addition to concessioning out greenfield sites to the private sector for development

Shift the functions of the Airports Authority of India away from operations and focus on its policy, planning, and statutory functions

Create a separate independent authority to handle economic regulation for the sector:

- Define the authority's powers clearly to ensure that it concentrates on areas where competition is restricted. This would include oversight of the terms and conditions of leases and concessions.
- Continue to have the Directorate General of Civil Aviation handle technical and safety aspects.

Developing Infrastructure Regulatory Bodies

Establish regulatory independence through clearly defined provisions in legislation

- Clearly separate the policy role and reduce the scope for ad hoc policy interventions by government in the decisions of regulatory agencies.

Place the creation of an independent regulator within a broader restructuring of the sector

Fund regulators from sources outside the regular government budget

- Consider establishing funding for regulatory agencies through a small charge on regulated companies.
- Provide for scrutiny of the regulators' budgets by the legislature and by auditors to ensure accountability.

Consider establishing multisector regulatory agencies at the state level

Developing a Genuine Market for Long-Term Debt

Institute pensions and insurance reform

- Pass the Insurance Regulatory Authority Bill, which will allow competition in the insurance industry.
- Phase out guaranteed returns on provident funds, special deposits, and postal deposits to eliminate some market distortions.
- Reform the management of provident funds to ensure that the absence of a guaranteed rate of return will not be detrimental to participant interests and to encourage investment in infrastructure.
- Establish fully funded pension schemes to increase national savings and the demand for long-term debt, making more funds available for infrastructure.

Make the debt market work better

- Simplify taxes to reduce distortions. Remove the stamp tax on secondary debt market trades to allow the establishment of a dematerialized settlement system for fixed-income instruments.
- Regulate the debt private placement market to provide adequate protection to institutional investors.
- Institute reforms to promote securitization.
- Institute legal reforms to allow for securitization without perfection of the security, facilitate special purpose vehicles, and permit provident funds and insurers to invest in securitized instruments and transactions.
- Develop appropriate accounting standards and clarify the status (under the Income Tax Act) of a special purpose vehicle structured as a trust.
- Simplify and harmonize the Reserve Bank of India's debt auction procedures.

Improving Efficiency and Transparency in Contracting Infrastructure Projects to the Private Sector

Consider establishing a one-stop shop for contracting

- Establish a single state government body responsible for contracting and obtaining necessary clearances and for interacting with private developers and investors.
- Ensure that the body coordinates effectively with public sector agencies, including the state electricity board, the Public Works Department, and municipal bodies that provide water services.

Report and value contingent liabilities

Create liquid funds that will allow public agencies to meet liabilities as they arise, rather than wait for the next annual budget cycle

Audit public support for private infrastructure projects

- Have one public sector agency undertake project design and contracting, negotiating, and providing documentation on why award decisions were made.
- Supplement the skills of central government units with the skills of professional advisers, including lawyers, investment bankers, and accountants.
- Work toward establishing capabilities to audit the award of public-private infrastructure projects to assure the public that the government has achieved value for its money.

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