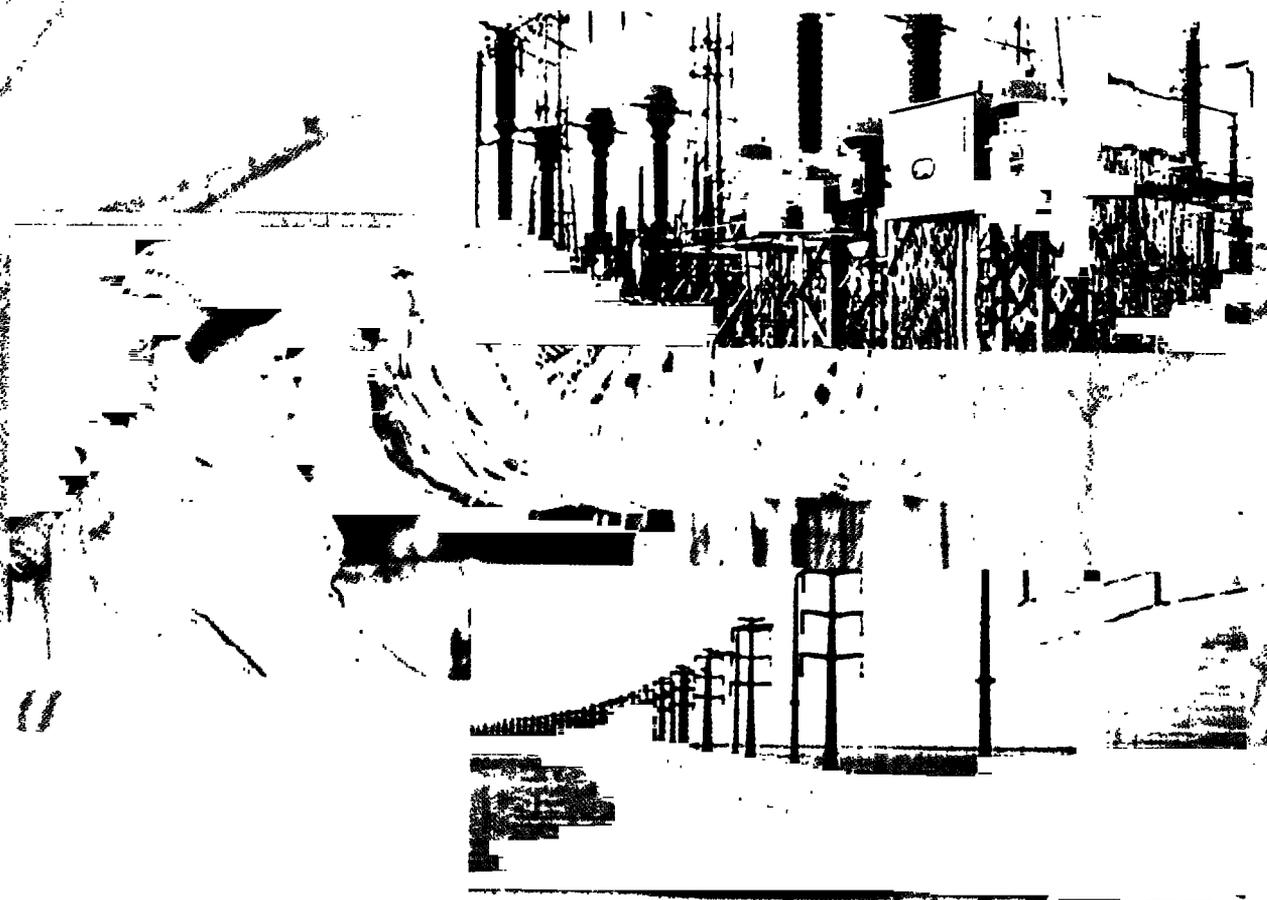


**PRIVATE SOLUTIONS FOR INFRASTRUCTURE
IN BANGLADESH**

30072



Private Solutions for Infrastructure in Bangladesh

June 2003

**World Bank and
Public-Private Infrastructure
Advisory Facility (PPIAF)**

<i>Policy-making, Planning, and Regulation</i>	63
<i>Recommendations</i>	64
6. Transportation Overview	69
<i>Issues Affecting Private Investment</i>	70
<i>Regional Integration</i>	71
7. Roads	73
<i>Market Structure: Public- and Private- Sector Roles</i>	74
<i>Performance</i>	75
<i>International Experience</i>	77
<i>Issues</i>	78
<i>Recommendations</i>	79
8. Railways	83
<i>Market Structure: Public- and Private-sector Roles</i>	83
<i>Performance</i>	84
<i>Policy-making, Planning and Regulation</i>	86
<i>Issues</i>	86
<i>Recommendations</i>	88
9. Ports and Inland Waterways	91
<i>Market Structure: Public- and Private-sector Roles</i>	92
<i>Performance</i>	92
<i>Private-sector Initiatives</i>	93
<i>Policy-making, Planning and Regulation</i>	93
<i>Issues</i>	95
<i>Recommendations</i>	97
10. Air Transportation	101
<i>Market Structure: Public- and Private-sector Roles</i>	101
<i>Performance</i>	102
<i>Policy-making, Planning and Regulation</i>	104
<i>Issues and Recommendations</i>	105
 Part III. Selected Cross-sectoral Issues	
11. Business Climate and Local Finance	107
<i>Business and Legal Environment</i>	107
<i>Mobilizing Local Finance</i>	108
<i>Recommendations for Developing Local Financial Markets</i>	110
Appendix 1. Telecommunications Facts and Figures	113
Appendix 2. Power	115
References	117

Acknowledgments

Private Solutions for Infrastructure in Bangladesh is one of a series of Country Framework Reports aimed at improving a country's environment for private sector involvement in infrastructure. Prepared at the request of the governments 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 areas.
- To assist policymakers in framing future reform and development strategies and potential private investors in assessing investment opportunities.

This report was prepared with support from the Public-Private Infrastructure Advisory Facility (PPIAF) and the World Bank. The PPIAF is a multi-donor technical assistance facility that seeks to help developing countries improve the quality of their infrastructure through private involvement. For more information about the facility, see the organization's Web site at <http://www.ppiaf.org>.

Clive Harris and Esperanza Lasagabaster led the team that prepared this Country Framework Report. It

is based on a series of background papers prepared by CPCS Transcom and on comments and collaborations by Tenzin Norbhu (telecommunications), Salman Zaheer (energy), Ian Alexander and Marc Heitner (natural gas), Khawaja Minnatullah and Ede Jorge Ijjasz-Vasquez (water and sanitation), and Binyam Reja (transportation). Comments were also received from Shamsuddin Ahmad, Khurshid Alam, Rajesh Pradhan, and Zahed Khan.

The report is organized as follows:

- Chapter 1 presents an overview of the challenges and opportunities relating to infrastructure in Bangladesh.
- Chapters 2 through 10 review the status of and propose reforms for the telecommunications, power, natural gas, water, and sanitation sectors, as well as the country's roads, railways, ports, and airports.
- Chapter 11 analyzes selected issues that are common across the various sectors and that affect the expansion of private-sector involvement in infrastructure.

Acronyms and Abbreviations

ADB	Asian Development Bank	DWASA	Dhaka Water and Sewerage Authority
		DWMB	Dock Workers Management Board
BCF	Billion Cubic Feet		
BDT	Taka (currency of Bangladesh)	E&P	Exploration and Production
BIWTA	Bangladesh Inland Water Transport Authority	ECNEC	Executive Committee of the National Economic Council
BIWTC	Bangladesh Inland Water Transport Corporation	ERC	Energy Regulatory Commission
		ERCA	Energy Regulatory Commission Act
BOI	Board of Investment		
BOO	Build-Own-Operate	FDI	Foreign Direct Investment
BOT	Build-Operate-Transfer	FY	Fiscal Year
BPDB	Bangladesh Power Development Board	FYP	Five-year Plan
BR	Bangladesh Railway		
BTRC	Bangladesh Telecommunication Regulatory Commission	GDP	Gross Domestic Product
		GOB	Government of Bangladesh
BTTB	Bangladesh Telegraph and Telephone Board	GTCL	Gas Transmission Company Ltd.
		HCU	Hydrocarbon Unit
CAAB	Civil Aviation Authority of Bangladesh		
CBOs	Community-Based Organizations	IBRD	International Bank for Reconstruction and Development
CIDA	Canadian International Development Agency	ICD	Inland Container Depot
CNG	Compressed Natural Gas	IDA	International Development Agency
CPA	Chittagong Port Authority	IDC	Institutional Development Component
CSE	Chittagong Stock Exchange	IDCOL	Infrastructure Development Company Limited
CWASA	Chittagong Water and Sewerage Authority	IIFC	Infrastructure Investment Facilitation Center
DESA	Dhaka Electricity Supply Authority	ILD	International Long Distance
DESCO	Dhaka Electricity Supply Company Ltd.	IOC	International Oil Company
DfID-UK	Department for International Development – United Kingdom	IPP	Independent Power Producer
DPHE	Department of Public Health Engineering	ISP	Internet Service Provider
DSE	Dhaka Stock Exchange	IT	Information Technology
DSK	Dushtha Shasthya Kendra	ITU	International Telecommunication Union

| Acronyms and Abbreviations |

JBIC	Japanese Bank of International Cooperation	PSP	Private-Sector Participation
JICA	Japan International Cooperation Agency	RAPPS	Remote Area Power Supply Systems
JMBA	Jamuna Multipurpose Bridge Authority	REB	Rural Electrification Board
		RHD	Roads and Highways Department
LGD	Local Government Division	ROT	Rehabilitate Operate and Transfer
LGED	Local Government Engineering Department	RPGL	Rupantarita Prakritik Gas Company Limited
		SEC	Securities and Exchange Commission
MCT	Multipurpose Community Telecenter	SOEs	State Owned Enterprises
MCF	Million Cubic Feet		
MEMR	Ministry of Energy and Mineral Resources	TCF	Trillion Cubic Feet
MLGRDC	Ministry of Local Government, Rural Development and Cooperatives	T&D	Transmission and Distribution
		TEU	Twenty Foot Equivalent Unit
MMCFD	Million Cubic Feet per Day	TGTDCL	Titas Gas Transmission and Distribution Company Ltd.
MOPT	Ministry of Post and Telecommunications		
MOS	Ministry of Shipping	UNCTAD	United Nations Conference on Trade and Development
MPA	Mongla Port Authority		
MW	Megawatt	UPI	Unit for Policy Implementation
		USO	Universal Service Obligations
NCB	Nationalized Commercial Bank		
NGO	Non-Government Organization	VMS	Voice Message Services
NH	National Highway	VOIP	Voice Over Internet Protocol
NLD	National Long Distance	VSAT	Very Small Aperture Terminal
NTP-1998	National Telecommunications Policy 1998		
		WLL	Wireless in Local Loop
OC	Operating Companies		
O&M	Operate and Maintain		
PBS	Palli Bidyut Samity		
PCD	Petroleum Concessions Department		
PCO	Public Call Office		
PDB	Power Development Board		
PGCB	Power Grid Company of Bangladesh Ltd.		
PPA	Power Purchase Agreement		
PPIAF	Public-Private Infrastructure Advisory Facility		
PSC	Production Sharing Contract		
PSO	Public Service Obligation		

improve infrastructure performance and help reach the ambitious coverage targets set by the GOB.

Increasing access to infrastructure services and improving their quality will be important factors in reducing poverty levels.

Infrastructure services are critical to reducing poverty and achieving the Millennium Development Goals (MDGs) in Bangladesh. Improved water and sanitation services, for example, reduce child mortality from waterborne diseases.

Voices of the Poor found that poor people viewed better roads, transportation, communications, energy, water, and sanitation services to be almost as important as health and education services.

Unreliable public-sector services have imposed significant costs and hindered the growth of the country's economy. Power shortages reduce industrial output by an estimated US\$1 billion per year and GDP growth by 0.5 percent per year. Congestion in the nation's ports costs the country in foregone exports. Concern exists that with the end of the Multi-Fiber Arrangement in December 2004, Bangladesh will be unable to maintain its market share of textile exports. Improving the country's transport system, along with other actions, will be essential to reducing product delivery times.

Bangladesh lags behind much of the South Asia region in extending infrastructure services to its citizens.

Most consumers in Bangladesh receive infrastructure services from public-sector entities that are inefficient, poorly managed, and

largely unresponsive to their needs. Bangladesh also sees low levels of coverage (see table 1). Even within the South Asia region, service providers' performance is largely below par. The country is further behind its main competitors in key sectors such as ready-made garments. For example, China has around 24 telephone mainlines per 100 people—a level of coverage about 30 times that achieved in Bangladesh.

National averages also mask critical differences in access to services between urban and rural areas. Although 60 percent of urban households have an electricity connection, only 22 percent of rural households do.

Most public-sector service providers show weak financial performance and inadequate investment.

The financial performance of most public-sector service providers is weak because user prices do not cover costs and operations are inefficient, especially in collecting payments from consumers. As a result, rather than being able to generate funds for future investment, these enterprises drain public resources. This problem is particularly severe in the electricity, water, and railway service systems.

Despite some encouraging increases during the last 2 years, electricity prices charged to households still cover only about 60 percent of estimated long-run

Table 1. Coverage of Infrastructure Services in Bangladesh

	Telephone mainlines per 100 people	Percent with access to electricity	Percent with access to piped water
Bangladesh	0.79	31	42
India	3.94	70	86
Nepal	1.34	15	81
Pakistan	2.9	55	70
Sri Lanka	4.4	55	58

Note: In the water sector, figures given are for Dhaka, Delhi, Kathmandu, Karachi and Colombo.

Sources: Telephones—International Telecommunication Union. Electricity—World Bank. Water—Asian Development Bank.

marginal costs (LRMC). The tariffs imposed by the Water and Sewerage Authorities of Dhaka (DWASA), which remain among the lowest in the world, also fail to cover operational costs, and the country's railways lose an amount equivalent to 25 percent of the annual investment funds provided by the government.

Public utilities' performance has been better in relation to telecommunications, natural gas, and the operation of the country's ports. The better performance of the Bangladesh Telegraph and Telephone Board (BTTB), Petrobangla, and the port authorities largely reflects market power rather than efficiency, and even in these cases investment has been inadequate. BTTB typically retains only about 50 percent of its surplus for investment, transferring the rest back to the government budget. As a consequence, ambitious expansion targets have not been met.

Government support for infrastructure has not targeted improving service access for poor people.

The GOB has provided much of the investment capital for infrastructure development. On average, allocations for energy and infrastructure under the government's Annual Development Plan have increased in recent years, while allocations for health and education have stagnated (Newbery 2001).

No systematic evaluation has been made of the incidence of benefit by income class in Bangladesh, but it is unlikely that the existing subsidies for infrastructure services serve the country's poor people. Only around 12 percent of the poorest quintile of households has electricity connections (Newbery 2001). By contrast, nearly all of the households in the top two quintiles of income distribution have electricity connections. The subsidized tariffs enjoyed by residential consumers appear to represent benefits that go mainly to the upper and middle classes.

The private sector has contributed substantially to extending infrastructure services to meet uncovered demands.

In the telecommunications sector, the four private cellular operators now exceed the public-sector provider in numbers of subscribers. Together, these four companies now have around 1 million subscribers, compared to 605,000 subscribers on the BTTB network. Innovative approaches like Grameen Telecom's Village Phone program have made phone service available in rural areas.

In the water and sanitation sector, a privately financed handpump program unique in the region had provided nearly the vast majority of rural households with access to groundwater. The handpump program sought to reduce the use of contaminated surfacewater; however, arsenic contamination of the aquifers tapped by many of these handpumps means that alternative safe sources now must be sought.

Apart from the handpump system, efforts to extend water and sanitation services to underserved areas include water vending in Dhaka, the efforts by nongovernmental organizations (NGOs) such as Dushtha Shasthya Kendra (DSK) to extend formal water services to urban slum areas, and the provision of credits by microfinance institutions for the development of water systems in rural and semi-urban areas.

In the power sector, Independent Power Plants (IPPs) supplied 22 percent of net generation in fiscal 2002. This percentage further increased with the Meghnaghat plant operating in combined cycle mode since November 2002. The most recent IPP tenders for Haripur and Meghnaghat have attracted some of the most competitive bids worldwide.

Some of these private-sector interventions have helped extend provision of services and have been admired in the region. But overall, Bangladesh has been less able to attract investment in private infrastructure projects than other South Asian countries.

A Largely Stalled Reform Agenda

Bangladesh has introduced some policy, regulatory, and management reforms in the infrastructure sectors. Changes have been most noticeable in the telecommunications sector, where competition now exists between the incumbent BTTB and new cellular entrants, and where a sector regulator was recently established. Most new power generation has been funded with private capital. Some progress has been made in reducing losses, and recent price increases for electricity have helped to improve the financial position of this sector.

In most other areas progress has stalled. Bangladesh lags behind its neighbors in South Asia in efforts to reform the infrastructure sectors. This situation is worrisome, as the region as a whole has seen halting efforts at reform in the face of resistance from vested interests who stand to lose from reform. Users of services would have to pay the costs of supply, and employees of service providers would lose opportunities for rent-seeking. Employees also are concerned about potential job losses. More generally, although reform efforts have been discussed in sectors such as gas, electricity, and water for some time, relatively few changes have been made. Even in telecommunications, where a progressive policy has been adopted, the slow rate of change has thwarted efforts to reach ambitious expansion goals.

Necessary Policy Changes

The current state of infrastructure services threatens the country's ability to achieve the targets laid out in the Interim Poverty Reduction Strategy. Bangladesh can no longer afford to postpone reforms in infrastructure. Without reforms, the gap in service provision between Bangladesh and its neighboring countries will continue widening, and opportunities for accelerating growth will dwindle. Expanding the quality and quantity of infrastructure services in

Bangladesh will require sustained reforms to pricing and delivery of services. Private-sector provision of infrastructure services offers numerous opportunities for innovation, customer responsiveness, efficiency, and accountability. Policy measures can both set the conditions for the sustainable expansion of services and facilitate the entry of private-sector providers.

Reforms will involve a reallocation of resources. They will be achieved only if broadly supported. Consensus-building will entail reaching out to the public, explaining the gains to be obtained by the country at large, and minimizing the hardships that reforms will likely impose on specific social groups.

Given the scope of some of the changes required, and given some of the difficulties already encountered in carrying out reforms, the GOB must articulate short-term and medium-term programs to address the key issues affecting the infrastructure sectors. At present fewer strategic investors are likely to be interested in acquiring water, power, and telecommunications operations in developing countries. However, investors have always regarded the policy and regulatory risks in Bangladesh as high and requiring substantial mitigation, so the country's challenge in attracting investors may not be substantially greater. Commercializing operations in these sectors with reforms that cover both pricing and payment discipline will help to reduce the perceived risks.

Bangladesh faces a challenging reform agenda. The country should begin by focusing on steps that can be taken in the next 1 to 3 years. Broadly, these steps are:

- Introducing private-sector provision of services in priority areas.
- Experimenting with new approaches to providing services in rural areas.
- Carrying out basic reforms in the governance and corporate structures of existing public service providers.
- Introducing and facilitating competition, including competition to provide service to new consumers and, where possible, existing customers.

Notes

- Pricing key services, such as water and electricity, in a way that more closely reflects the costs of service provision.
- Developing a consensus that favors reforms and addressing the concerns of those groups who will be negatively affected by these necessary changes.
- Improving the overall business climate.

1. <http://www.worldbank.org/poverty/voices>.

These steps are interlinked. Indeed, reforms in all areas will be necessary to facilitate sustainable service delivery through the private sector and substantially improve the country's situation. Detailed policy recommendations for each infrastructure sector are provided in chapters 2 through 10.

Part I. Overview

1 | Infrastructure in Bangladesh: Challenges and Opportunities

During the next 10 years, Bangladesh will face major challenges in expanding the coverage of key infrastructure services as it seeks to provide modern energy, telecommunications, and transportation services and safe water. The country's current levels of coverage are among the lowest in the South Asia region. One major challenge will be mobilizing the financial resources to effect the necessary changes. Prices for critical infrastructure services, particularly electricity and water, are below the costs of provision. The operational inefficiency of the main publicly owned infrastructure service providers exacerbates the situation.¹ Private management and capital can substantially expand infrastructure services in Bangladesh. The private sector has already made important contributions in some sectors. However, this potential is only likely to be fully realized if the country undertakes substantive reforms which in any case are essential regardless of whether services are provided privately, or continue to be provided publicly.

The Imperative for Reform

To meet the challenge of greater coverage, the Government of Bangladesh (GOB) will have to carry out policy changes that affect the pricing of infrastructure services and the governance and operations of these sectors. Undertaking reforms will make more financing available for reaching presently unserved rural and poorer areas. However, the country faces an increasingly difficult fiscal situation and has limited tax resources. Unless revenues from user charges for infrastructure services provide an increasing proportion of costs, accelerated coverage can be achieved only by reducing government expenditures in other areas, such as human development, or by allowing the quality of current infrastructure services to deteriorate.

Bangladesh has relied to some extent on subsidized financing from multilateral and bilateral donors for the development of national infrastructure. However, frustration at the slow pace of reforms has led many of these donors to withdraw or to reduce levels of support.

Private management and capital can substantially expand the coverage and quality of infrastructure

Bangladesh's level of tax revenue relative to GDP is under 10 percent, one of the lowest in the world (World Bank 2001). Public enterprises have increasingly contributed to the deterioration in the country's fiscal position: the consolidated deficit for public enterprises rose from 0.9 percent of GDP in fiscal 1999 to 3 percent of GDP in fiscal 2001.

services in Bangladesh. Indeed, the private sector has already made major contributions in different ways in telecommunications and water supply, and to a lesser extent electricity. However, this potential is only likely to be fully realized if the country undertakes substantive reforms which in any case are essential regardless of whether services are provided privately, or continue to be provided publicly.

This chapter reviews the present status of infrastructure provision in terms of coverage, efficiency of provision, the financial performance of the main service providers, and the social and economic costs imposed by poor infrastructure services. It then assesses the largely limited reform steps taken to date, and proposes the main areas in which action should be taken by the GOB of Bangladesh.

Improving the quality and quantity of infrastructure services will be important for reducing poverty.

Infrastructure services are critical to poverty reduction and the achievement of the Millennium Development Goals (MDGs) in Bangladesh. Access to modern and improved infrastructure services also can directly improve health and education outcomes. Improved water and sanitation services reduce child mortality from waterborne diseases.² They also support better education and health outcomes, for example by allowing more time for children to seek education and by improving access to health services.

Efficient and reliable infrastructure services are essential for economic growth and have a major impact on the investment climate. Unreliable public-sector service provision has imposed substantial costs on the Bangladeshi economy and hindered growth.

The impact of poor infrastructure provision is often magnified for small firms. In South Asia, most small firms tie up a significant amount of their capital in self-generation capabilities. This practice is almost unheard of among countries in East Asia (World Bank, 2001).

Power shortages reduce industrial output by an estimated US\$1 billion per year and GDP growth by 0.5 percent per year. Congestion in the nation's ports leads to higher shipping costs, reducing the country's competitiveness. With the end of the Multi-Fiber Arrangement in December 2004, Bangladesh may be unable to maintain its market share of textile exports. Improving the country's transport system, along with other actions, will be essential to reducing product delivery times.

Maintaining and increasing the growth rates that Bangladesh realized in the 1990s will be important if poverty reduction is to accelerate. The national Interim Poverty Reduction Strategy under preparation aims at a 7 percent growth rate. An important target is halving the incidence of poverty by 2015. The current state of infrastructure services will likely hinder the achievement of these goals.

The poor rank access to infrastructure as one of their most important needs and as a critical input into moving out of poverty.³ *Voices of the Poor* found that poor people considered better roads, transportation, communications, energy, and water and sanitation services almost as important as health and education services. In Bangladesh, studies have shown that per-capita expenditures average 6 percent higher in communities with electricity and 12 percent higher in communities with telephones.

Reliable basic infrastructure services help small farmers market their crops, encourage the development of non-farm income opportunities for the poor, and are associated with greater activity by credit providers, including microfinance institutions.⁴

Bangladesh has developed some successful approaches to providing infrastructure service.

Several of the approaches Bangladesh has developed for providing infrastructure services are admired by other countries in the South Asia region. These approaches include:

- Sustaining the efficiency of the rural power cooperatives, Palli Bidyut Samities (PBS), in

collecting bills and maintaining low levels of system loss relative to much of the region.

- Constructing independent power projects on schedule, at the lowest costs in the region, and free of major controversy as in India and Pakistan;
- Extending telecommunications services to rural areas through the Grameen Telecom village phone program and more generally through the rapid growth of private cellular operators, which now serve almost 1 million consumers, compared to the 600,000 main lines provided by the Bangladesh Telegraph and Telephone Board (BTTB).
- Providing the vast majority of rural households with access to groundwater through a unique, privately financed handpump program.⁵

These successful initiatives share some common features, such as effective governance of service providers, either through private management and ownership or genuine consumer ownership. Competition also has played a role in some of these initiatives.

Despite the success of these programs, most consumers in Bangladesh still receive services from poorly managed and relatively unresponsive public-sector entities. As a result, Bangladesh sees low levels of efficiency and coverage of infrastructure services. Even within the South Asia region, performance is by and large below par.

Bangladesh lags behind much of the region in extending modern infrastructure services to its citizens.

Bangladesh lags behind other countries in the South Asia region in terms of providing access to modern infrastructure services (Table 1.1). The country is further behind competitor nations in key sectors, such as textiles. For example, China's telecommunications sector provides about 24 telephone mainlines per 100 people, or about 30 times the levels achieved by Bangladesh. Power consumption in Bangladesh is only around 81kWh, compared to over 760kWh in China.

Table 1.1. Coverage of Infrastructure Services in Bangladesh

	Telephone mainlines per 100 people	Percent with access to electricity	Percent with access to piped water
Bangladesh	0.79	31	42
India	3.94	70	86
Nepal	1.34	15	81
Pakistan	2.9	55	70
Sri Lanka	4.4	55	58

Note: In the water sector, figures given are for Dhaka, Delhi, Kathmandu, Karachi and Colombo.

Sources: Telephones—International Telecommunication Union; Electricity—World Bank; Water—Asian Development Bank.

National averages mask important differences in access to services between urban and rural areas in power and telecommunications. Although 60 percent of urban households have an electricity connection, only 22 percent of rural households do.⁶ In telecommunications, Bangladesh has been much less aggressive than India has in rolling out Public Call Offices (PCOs). India has around one million PCOs in total, of which an estimated 40 percent are in villages, meaning that 80 percent of India's villages have PCOs. In contrast, only about 30 percent of villages in Bangladesh have telephone access. Even in urban areas, many people in slum areas have trouble getting official connections for water and electricity. Instead they pay more for unofficial connections provided by local criminals and racketeers.

Service is often unreliable and of a poor quality.

Systematic data on the quality of services provided in Bangladesh is not readily available. However, information is available on the quality of provision in some cases, as are consumers' opinions of service quality. A recent World Bank report, *Bangladesh: Urban Service Delivery*, found that depending on location, between 2 and 12 percent of electricity customers (8 percent in Dhaka) are satisfied. The people surveyed also mentioned that obtaining an electricity connection in a reasonable time generally requires paying substantially more than the official fee;

Box 1.1. Will Raising Water Tariffs in Bangladesh Hurt the Poor?

It is often argued that raising water tariffs hurts poor people. This argument often has little merit in countries such as Bangladesh, however, where service coverage in urban areas is low and largely confined to the middle and upper classes, and where service in the rural areas and slums is privately provided. Low tariffs contribute to the need for operating subsidies from the government to compensate for the utilities' financial losses and hinder investments in new capacity expansion. Low tariffs on water consumption thus result in subsidies to the middle and upper classes at the direct expense of service coverage expansion for the poor.

Lack of access to publicly provided services means that poor people end up paying much higher per-unit prices to private vendors. Slum dwellers in Dhaka were paying as high as BDT1 per bucket of 20 liters or BDT50 per cubic meter—roughly 10 times the rate charged to DWASA residential consumers. After Dushtha Shasthya Kendra (DSK) interventions, water costs of water have fallen to BDT37 per cubic meter but remain at 7 times DWASA rates.

Source: World Bank staff.

infrastructure services in Bangladesh do not go to serve the country's poor people. More generally, as worldwide experience has shown, public-sector service provision has not benefited the poor (Clarke and Wallsten 2001). In Bangladesh only about 12 percent of the poorest quintile of households are estimated to have electricity connections (Newbery 2001). However, nearly all of the households in the top two quintiles of income distribution in the country have electricity connections. The subsidized tariffs enjoyed by residential consumers thus represent benefits that go mainly to the upper and middle classes, despite the recent restructuring of electricity tariffs. Although the lowest-priced block has been reduced from 300kWh per month to 100kWh per month, the 100 to 300 kWh block remains subsidized.

DWASA has a flat-rate tariff for domestic consumers. As consumption increases, the total

subsidy received by the consumer increases (Brocklehurst et al. 2002). Most slum areas do not receive official DWASA supply, and residential tariffs are half of cost in DWASA.

Given Bangladesh's fiscal position and pressing needs for expenditures on health and education, increased resources for accelerated expansion cannot come from budgetary funds. Instead, they will have to come from user fees, more efficient operation of service providers, and more rational pricing policies.

Private-sector contributions toward meeting uncovered demands for infrastructure services have been substantial.

In telecommunications, private cellular operators now have more subscribers than BTTB does. Together, the four private companies reach about 1 million subscribers, compared to 605,000 BTTB subscribers. Innovative approaches like Grameen Telecom's Village Phone program have made phone service available in rural areas.

In the water and sanitation sector a number of efforts have been made to extend services to areas that lack them. Examples include the long-standing, privately financed handpump program; water vending in Dhaka; efforts by non-government organizations (NGOs) such as DSK to extend formal water services to urban slum areas; and the provision of credits by microfinance institutions for the development of water systems in rural and semi-urban areas.

In the power sector, independent power producers (IPPs) now supply more than 25 percent of net generation. This percentage is expected to increase with the commissioning of the 450 MW Meghnaghat plant in 2003. Although no detailed information is available, it is estimated that about 2 percent of the population receives supply from solar home systems and off-grid diesel generators.

Private-sector interventions have helped to extend services to some populations who were not receiving coverage from the public sector. But overall, compared to several of its neighbors in South Asia,

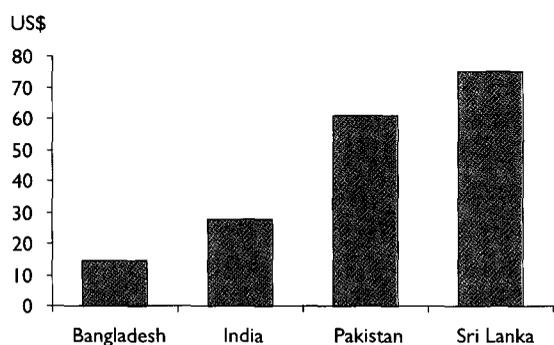
Bangladesh has been less able to attract investment in private infrastructure projects. From 1990 to 2001 the country saw considerably less investment per capita in infrastructure projects with private participation (Figure 1.3).

A Largely Stalled Reform Agenda

Bangladesh has introduced some policy and regulatory reforms as well as management reforms in the infrastructure sectors. Changes have been most noticeable in the telecommunications sector, where competition now exists between the incumbent BTTB and new cellular entrants, and where a sector regulator was recently established. In the power sector, most new generation has been funded with private capital. Some progress has been made on reducing losses, with some semi-urban feeders being transferred from BPDB to Rural Electrification Board (REB) management. A significant reduction in losses has occurred in the area of Dhaka under Dhaka Electricity Supply Company Ltd. (DESCO), with a private management contract in place. Recent price increases for electricity have also helped to improve slightly the financial position of the sector.

In most other areas, however, reforms have stalled. Bangladesh lags behind its neighbors in South Asia in efforts to reform the infrastructure sectors. This situation is worrisome because the region as a whole has seen halting efforts at reform in the face of resistance from vested interests. Such vested interests, such as users of services who would have to pay the costs of supply, employees of service providers who would lose opportunities for rent-seeking or who are concerned about possible job losses, and others who benefit from corruption and rent-seeking, stand to lose from reform. More generally, although reform efforts have been discussed in sectors such as gas, electricity and water for some time, relatively few changes have occurred. Even in telecommunications, where a progressive

Figure 1.3. Per-Capita Investment in Infrastructure Projects with Private Participation, 1990–2001



Source: World Bank staff.

policy was adopted, change has been slow, and ambitious service expansion targets have not been realized.

One perceived constraint to private-sector participation in infrastructure and utility services in Bangladesh has been lack of access to medium-term and long-term debt financing. Restriction to short-term credit has created uncertainty and has been seen to increase financing costs. Consequently, the GOB in conjunction with the World Bank, established the Private Sector Infrastructure Development Project. This project included a lending facility of more than US\$200 million, which was to be channeled through a newly established organization, Infrastructure Development Company Ltd. (IDCol). IDCol could provide long-term debt financing at market rates. The project also included a technical support center, the Infrastructure Investment Facilitation Center (IIFC), which was designed to facilitate transactions and provide advice on creating the right environment for private-sector participation. Additional significant donor support over an initial 5-year period was provided to IIFC by the Department for International Development (DFID) and the Canadian International Development Agency (CIDA).

After an initial positive impact, with IDCol providing financing for the Meghnaghat power generation project, the project pipeline dried up. Despite efforts by IDCol, some projects, like a major telecommunications

program, were delayed while others, like the proposed container terminal at Patenga, were caught in legal actions. IIFC has continued to seek appropriate private-sector projects, such as the Khanpur port project, and has also been involved in innovative actions like Remote Area Power Supply Systems (RAPSS). Given the absence of overall policy reforms, however, these two institutions are having but limited impact.

Bangladesh lags behind other countries in the South Asia region in the telecommunications, electricity, and natural gas sectors, and in the performance of its ports.

Telecommunications

Bangladesh was the last country in the region to set up a regulatory agency covering telecommunications. It is the only country to see major constraints on interconnection capacity between the incumbent provider and new entrants. Sri Lanka and India, which had aggressively promoted reform, have greatly expanded coverage and reduced prices as competition for consumers has spread. In contrast, BTTB's prices for new connections are among the highest in the world.

Electricity: Bangladesh still lacks a national regulatory agency for electricity, although this deficiency may soon be addressed. India and Pakistan have well-established regulatory bodies, and Sri Lanka is presently developing a multi-sector regulatory agency that will cover electricity as well other infrastructure sectors. India has privatized distribution in two states, and other states are attempting to follow this lead. Pakistan is also looking to privatize distribution in two major urban centers. Efforts to introduce new sector legislation in Bangladesh have stalled.

Natural Gas

Substantial private ownership of gas distribution companies in Pakistan and India has resulted in more

commercial operations than those of Petrobangla. Pakistan has a functioning regulatory body for this sector.

Ports

Sri Lanka and India have developed privately financed terminals that compete alongside the existing government-operated terminals.

Necessary Policy Changes

The current state of infrastructure services threatens the achievement of the targets laid out in the Interim Poverty Reduction Strategy. Bangladesh can no longer afford to postpone reforms in infrastructure. Without such reforms, the gap in service provision between Bangladesh and its neighboring countries will continue widening while growth opportunities dwindle. Expanding the quality and quantity of infrastructure services delivered in Bangladesh will require sustained reforms to both pricing and service efficiency. Private-sector service provision on both a large scale and a small scale offers opportunities for innovation, customer responsiveness, efficiency, and accountability. Ultimately, Bangladesh will benefit from policy measures that set the conditions for the sustainable expansion of services and facilitate the entry of private providers.

Because reforms will involve a reallocation of resources, they will be achieved only if they are broadly supported. Consensus building will entail reaching out to the public, explaining the gains to be obtained by the country at large, and minimizing the hardships that reforms likely will impose on specific social groups.

Given the magnitude of some of the changes required, and given some of the difficulties so far encountered in carrying out reforms, the GOB must lay out both short-term and medium term programs to address the key issues affecting the infrastructure sectors. Bangladesh is doing this at a time when fewer strategic investors are likely to be interested in

acquiring water, power, and telecommunications companies operating in developing countries. Arguably, however, the challenge Bangladesh faces in attracting investors has not increased greatly because the policy and regulatory risks in the country have always been regarded as being high and requiring substantial mitigation. Beginning to operate these sectors on a commercial basis, covering both pricing and payment discipline, will help to reduce the perceived risk.

Chapters 2 through 10 include detailed policy recommendations for each infrastructure sector. Here we present an overview of the main areas in which the GOB should implement reforms, focusing primarily on steps that can be taken during the next 1 to 3 years. Broadly, these steps involve:

- Introducing private-sector provision of services in priority areas.
- Experimenting with new approaches to providing services in rural areas.
- Carrying out basic reforms in the governance and corporate structures of existing public service providers.
- Introducing and facilitating competition, including competition to provide service to new consumers and, where possible, existing customers.
- Encouraging competition for government funds, particularly those targeted for subsidizing the expansion of services to unserved areas.
- Pricing key services, such as water and electricity, in a way that more closely reflects the costs of service provision.
- Developing a consensus that favors reforms and addressing the concerns of those groups who will be negatively affected by these necessary changes.
- Improving the overall business climate.

These steps are interlinked. Acting in one area without acting in the others is unlikely to substantially improve the situation.

These represent the minimal program required to accelerate the development of infrastructure in Bangladesh. More substantial and rapid reforms would bring increased benefits, but given the slow pace of reforms to date, the proposed program represents an ambitious goal. Failing to move forward with these reforms will continue to hamper the development of infrastructure in the country.

Priorities for private-sector participation

The GOB is already considering facilitating limited entry of private operators in rural areas in the power and drinking water sectors, the latter in conjunction with NGOs active in this field.

The government should also invite private-sector companies to offer telecommunications services other than cellular. In the ports sector, new entities can be created that will compete with the two port authorities.

In the near term, the government also should take the following actions:

- Privatize the distribution of natural gas within the country while developing a credible regulatory framework and cost-covering tariffs (see chapter 4).
- Institute private financing and management of part or all of the gas transmission network, requiring vertical separation of existing assets and the establishment of a credible regulatory framework (see chapter 4).
- Privatize urban systems in the power sector, starting with operations in Dhaka, again within a sound and credible regulatory framework (see chapter 3).
- Contract out cargo and other services at the Chittagong and Mongla ports (see chapter 10).
- Invite private-sector participation in rail services, including equipment, terminals and depots (chapter 9).

These represent the areas where there is probably the greatest potential for private-sector participation, for example natural gas, and the greatest need, for example urban electrical power given little improvement in recent years in public-sector performance. Privatization need not mean that the assets are sold; rather, it means that the private sector provides much of the financing and has full management control. A range of public-private partnerships can be considered, including arrangements that involve some government funding, such as subsidies to private companies to accomplish identified social goals.

Later on, the GOB might move to privatize BTTB and additional enterprises in the power and gas sectors. Private-sector provision of water and sanitation services in smaller towns also could be explored through lease or concession structures.

Carrying out basic reforms in governance and operations

While not a long-term substitute for more fundamental reforms, the government should undertake reforms in the governance and operations of existing service providers. Such changes should cover the basic organizational structure of some entities, enhancing their operational autonomy and improving their bill-collecting efficiency. These reforms should also clarify financial flows between these service providers and the government. The most important steps in carrying out these reforms would be:

- Making the BTTB a corporation, establishing it as a public limited company with an independent board of directors (see chapter 2).
- Implementing anti-theft legislation in the power sector, and enforcing payment of bills by consumers (see chapter 3).⁸
- Unbundling the existing power-sector companies into public limited companies concerned with the separate functions of generation, transmission, and

distribution, with outside, non-government directors on the board (see chapter 3).

- Continuing to transfer feeders to the REB, which has a better track record of bill collection than BPDB and DESA (see chapter 3).
- Unbundling Petrobangla into separate companies charged with production, transmission, and distribution, and providing these companies with greater management autonomy, including independent directors and managers (see chapter 4).
- Restructuring the Chittagong Port Authority (CPA) and Mongla Port Authority (MPA) as landlord ports, with a clear separation between management and overall oversight (chapter 9).
- Corporatizing Bangladesh Railways and giving it the authority to contract with private sector entities for service delivery (chapter 8).

The benefits of corporatization should not be overestimated. However, corporatization per se does not guarantee improved performance. If it is to succeed, corporatization must be backed by a genuine commitment to allowing entities considerable operating independence from the government. Although they represent powerful reforms, these steps should not be regarded as substitutes for deeper change, such as private participation.

In the energy sector, sector governance can be improved by creating an independent regulatory agency. As well as implementing the tariff frameworks for the gas and electricity sectors, this agency could have a role in monitoring and reporting on the performance of public and private entities operating in the sector. In India, although regulatory bodies have not been able to impose operational improvements in the poorly run state power companies, the regulatory process has greatly increased awareness of the companies' poor performance and the extent of financial losses and theft in the sector.

The telecommunications sector needs a level playing field for competition to develop and flourish.

Accordingly, the sector's regulatory body must be strengthened and permitted to operate independently.

Promoting competition in providing services

The telecommunications sector already sees active competition for new connections, but additional competition could be introduced in providing services, including long distance and international services. One key constraint that must be addressed is BTTB's inadequate provision for interconnection. It would seem appropriate to invest initially in interconnection rather than in a new government-owned cellular service provider. Existing policy restrictions that limit entry into the sector should be replaced with a transparent licensing program that facilitates new operations and competition. BTTB's planned entry into the cellular arena also causes concern, given its dominance in providing other telecommunications services. If BTTB enters this market, it should do so through a separate entity, and the Bangladesh Telecommunications Regulatory Commission (BTRC) should ensure that BTTB cannot favor its subsidiary.

India and Sri Lanka have enjoyed some success in allowing private-sector entrants into the ports sector to provide competition for existing government owned service providers. This strategy has offered consumers with more choices, allowed the entry of more efficient operators, and given the government-owned operators greater incentives for improving efficiency. This strategy should be pursued in Bangladesh.

Competition to serve existing demand will likely bring lesser benefits in other sectors. In the water and power sectors, competition for new connections should be emphasized. Streamlined procedures are necessary for allowing entry of private-sector service providers. The government should also consider allowing market determination of prices for supply in areas that are not presently served or under immediate consideration for service by existing service providers. Prices could be set using a

competitive bidding approach based on tariffs rather than following uniform national rates.

Encouraging competition for government funds

Current GOB support to the infrastructure sector is substantial, but much of this support effectively props up inefficient public-sector service providers. On the basis of present evidence, little support goes to the extension of services to the country's poor people. Relatively little transparency exists in the financial relationship between the government and some service providers, such as Petrobangla and BTTB. These entities generate surpluses, but the surpluses go in part to pay back debt incurred by the government.

The GOB should consider initiatives allowing for-profit private operators or NGOs to compete for government funds that target expansion to new service areas. One such example is the planned RAPSS program in the power sector. Under this program the government will provide subsidies on a competitive basis for the least subsidy required. This type of approach is also being considered in piloting the private provision of small-scale piped water facilities in rural and semi-urban areas. It should also be considered for the telecommunications sector. Where needed, a universal service fund to subsidize the roll-out of the telecommunications network in rural areas could be employed, rather than sole-sourcing the effort to BTTB as at present.⁹

Making pricing more rational

Setting prices to reflect the costs of providing services will be important to the success of reform efforts, particularly in the gas, power and water sectors. To some extent, rebalancing prices could increase revenues with protection still being afforded to some categories of consumers, for example those who consume less.

In the gas sector, the government should move toward establishing a transparent tariff framework in

of service plus a redundancy payment ranging from 13 to 27 percent, depending on length of service.

11. For information on the cost of a starting business and international comparisons, see <http://rru.worldbank.org/doingbusiness>.

12. The study involves a survey of 1001 firms with more than 10 employees in the following sectors: garments; chemicals and pharmaceuticals; electronics; food and food processing; leather and leather products; and textiles.

Part II. Sectoral Review

Telecommunications

- **Policy Objectives:** Expand teledensity to 3.3 percent by 2005 from the present levels of 0.8 percent; establish a competitive framework for providing services; increase private-sector participation in the sector; and develop a world-class telecommunications system for furthering information technology (IT) development.
- **Private-sector Participation:** Private ownership and operation of several companies providing cellular, radio-paging, Internet, data, and video-text services, and perhaps soon limited fixed-line services.
- **Key Issues:** Delays in carrying out National Telecommunications Policy (1998); restructuring of the Bangladesh Telegraph and Telephone Board (BTTB); lack of interconnection capacity between BTTB and private cellular companies; liberalization of international long-distance services; rebalancing of tariffs; and obstacles to universal access.

Bangladesh was one of the first countries in South Asia to allow private participation in its telecommunications sector. Initial licenses were issued in 1989 and private provision of services commenced in 1993. Since then, however, the pace of reforms has been slow, and the country has fallen behind most of its neighbors with regard to performance in this sector.

The Telegraph Act of 1885 and the Wireless Act of 1933 were the only governing tools for this sector until the government adopted its National Telecommunications Policy in 1998 (NTP-1998). The Telecommunications Act of 2001 repealed the Telegraph Act and the Wireless Act.

Bangladesh's NTP-1998 recognizes the power of competition in promoting improved sector performance. The government's delay in fully implementing the policy has, however, limited the entry of private-sector entities and delayed investment in the sector. As a result, the availability and quality of telecommunications services in Bangladesh lags international and regional benchmarks. An important objective of the national policy, establishment of an autonomous telecommunications regulatory commission was achieved recently with the creation of the Bangladesh Telecommunications Regulatory Commission (BTRC).

added about 700,000 subscribers. Grameen's success reflects the high level of demand for telecommunications services, even in rural areas, and the company's successful move to lease capacity on the fiber-optic network of Bangladesh Railways. Grameen used the leased capacity to establish a network covering a large part of the country. The other three cellular companies—City Cell, AK Tel, and Sheba Telecom—have added approximately 258,000 customers. AK Tel has ambitious expansion plans for 2003 and expects to grow its market share from the current 13 percent to approximately 30 percent.

All of the private-sector service providers have faced a severe constraint to further service expansion in BTTB's unwillingness to provide the necessary interconnection facilities. BTTB's unwillingness is rooted in the inadequacy of its network. Recently however, the cellular operators have agreed to fund approximately US\$2 million in transit-switching equipment in BTTB's network to improve interconnection capacity. All the cellular operators have interconnection agreements with each other. Grameen has leased excess capacity on its Bangladesh Railways fiber-optic network and can provide domestic long-distance services to its subscribers and those of other mobile operators when making mobile-to-mobile subscriber calls. These agreements have in effect created national long-distance competition to BTTB.

BTTB also has a license to provide cellular services but has not yet commenced providing cellular service. The granting of the license was conditioned on BTTB mobilizing its own funds for this operation and on the business being run as a separate subsidiary. In February 2003, the Executive Committee of the National Economic Council (ECNEC) recommended that mobile services be provided by a new government company.

No matter which government agency provides mobile services, doing so will require a significant allocation of scarce public resources. Moreover, public-sector entry into the mobile market will have to be conducted in a way that preserves competition. Such an approach must include:

- The public mobile business being subject to the same regulation by BTRC as other cellular operators.
- BTTB not providing preferential interconnection to the public mobile company.
- BTTB's fixed operation not cross-subsidizing the public mobile operation in any way.

Empirical evidence shows that incumbents owning a mobile operator leads to slower growth in the market. Competition measured by mobile operators not owned by the incumbent is positively correlated with increases in the per capita number of mainlines, payphones, and connection capacity, and with decreases in the price of local calls (Wallsten 2001).

Rural services

Rural services are limited in Bangladesh. At present the two fixed-line operators provide only about 26,000 rural mainlines. Telecommunications services provided by cellular companies are inaccessible to most of the rural population. However, some cellular operators like Grameen Telecom have initiated a Village Phone program to bring connectivity to the rural areas. Today the program provides services in 20,000 of Bangladesh's 68,000 villages.

Limited access to telecommunications in rural areas is greatly exacerbated by the very high cost of the connection charges, which make service unaffordable for a large proportion of the population. In November 2002, BTTB reduced the cost of connection from US\$353 to US\$171. Table 2.3 benchmarks access costs in Bangladesh to those of other countries in the region (International Telecommunication Union 2001).

India, which has experienced similar problems in providing telecommunications services to rural areas, has introduced the Public Call Office (PCO) as an alternative (see box 2.1). Implementation of specific policy initiatives stated in India's National Telecommunications Policy of 1994 and 1999 resulted in the successful use of PCOs to provide India's citizens with affordable access to telecommunications. India required all cellular service providers to meet

Table 2.3. Cost of Access

All amounts in US\$	Residential cost of connection	Business cost of connection	Residential monthly rental	Business monthly rental
Bangladesh	171	171	3	3
China	3	4
India	18	18	6	6
Indonesia	35	53	3	5
Malaysia	13	13	5	9
Nepal	28	28	2	2
Pakistan	83	83	5	5
Sri Lanka	175	175	3	5

Source: World Bank staff.

rural obligations as specified in their licenses and the state-owned incumbents—Bharat Sanchar Nigam Limited and Mahanagar Telecom Nigam Limited—aggressively recruited access resellers to operate the PCOs.

Other countries also have adopted innovative schemes to encourage private-sector participation in providing access in rural areas. For example, Nepal has plans to license a rural operator to provide services in the Eastern Development of the Region. The license will be awarded to the operator that bids for the lowest minimum capital subsidy to provide rural services. Many Latin American countries, including Chile, Columbia, the Dominican Republic, Guatemala, and Peru have also extended subsidies to private operators willing to enter rural areas. These subsidies have been bid out competitively to ensure that costs are kept as low as possible. Some countries provide up-front subsidies, while others pay once services are delivered, contingent on performance (see box 2.2). The GOB could also consider designing and implementing such schemes within an appropriate institutional and regulatory framework.

International service

With its current monopoly over international long-distance services, BTTB owns and operates three international gateway exchanges and four satellite earth stations for international connections.

Nonetheless, current capacity cannot meet demand, even though high international tariffs suppress demand and a significant volume of potential traffic is siphoned off by VSAT operators. Appendix 1 provides some further details on international service as well as on data and Internet services.

Other telecommunications services

In 2001, GOB declared its policy thrust on IT by announcing a series of fiscal incentives, including the dropping of all customs duty on IT equipment. However, little meaningful action was taken to improve the performance of the telecommunications sector that provides the essential infrastructure platform for the IT industry.

Box 2.1. From Teledensity to Tele-reach?

ITU has acknowledged that teledensity—the number of telephone lines per 100 people—may not be relevant as a policy parameter in a country like Bangladesh. Instead, ITU suggests, it is much more important to focus on *tele-reach* or *tele-access*, or the percentage of the population with access to a telephone. India provides a good example. With a teledensity of about 4, India has embraced the policy of putting priority on public telephones, particularly in rural areas. As a result, about 70 percent of India's population now has telephone access, thanks to a network of almost 1 million public call offices (PCOs). More than 400,000 PCOs are located in villages. Many of the PCOs in urban and rural areas also function as Internet kiosks. In contrast, Bangladesh has only a little over 4,000 PCOs (1 PCO per 32,000 people, compared to India's 1 PCO per 1,000 people). In Bangladesh, more than 70 percent of the population has no access to a telephone

Source: World Bank staff.

Box 2.4. Reform Experiences in the Region**Sri Lanka**

- Private telecommunications investments increased 25 percent annually, with more than US\$2.9 billion invested in Sri Lanka by the operating companies between 1996 and 2000.
- The number of new jobs created jumped from about 700 in 1996 to more than 3,500 in 2000.
- During the past 4 years, fixed-access telephony grew at more than 25 percent per year while mobile service providers' growth surpassed 50 percent per year.

India

- The network is growing annually at an average rate of approximately 22 percent for basic services and more than 100 percent for cellular and Internet services.
- Lines added to basic services during the last 5 years are one and a half times that of the last 5 decades.
- Access to a public phone is available in 86 percent of all villages.
- Foreign direct investment in the telecommunications sector exceeded US\$18 billion between 1993 and 2001.
- National long distance charges have dropped by more than 60 percent, cellular airtime charges are down by 90 percent, and international call charges are falling.
- Telecommunications infrastructure has provided one of the key foundations for India's IT industry, which generated more than US\$10 billion in fiscal 2002.

Source: World Bank staff.

each of these concerns and offers a perspective on what the realistic result of increased private-sector participation might be.

Other developing countries have shared some of the same concerns, but instead of holding back they acted positively and aggressively by introducing reform action plans that tackled the government's needs and those of the private sector (see box 2.5). The main winner in these situations was the general public, which benefited from expanded and better-quality services while tariffs dropped. A recent World Bank study points out that "more than 90 developing countries opened their telecommunications sector to private participation during 1990-98, with investment commitments totaling US\$214 billion."

What should be the GOB's ultimate goal for the country's telecommunications sector? Privatization of the system and networks to the extent that it can be

sector and the significant economic multiplier effect it can potentially generate, Bangladesh should initiate efforts to accelerate reform in the sector. The NTP-1998 and the Telecommunications Act of 2001 have provided a basic framework to move forward, but the country needs to develop a stronger will to do so.

The GOB has some fundamental concerns about expanded private participation in telecommunications. Among these concerns are the perceived loss of revenue to the government if privatization occurs; inadequate servicing of rural, uneconomic areas without government intervention; strong potential for labor unrest in conjunction with any discussion of BTTB downsizing or private-sector takeover; and loss of funds from customs duties if IT is adopted and more fully integrated into the system. Table 2.6 addresses

achieved. To this end, the first step in the process should be corporatization and commercialization of BTTB, with a goal of eventual privatization. However that alone will not solve all of the existing problems.

Restructuring of BTTB

The government has rightly recognized the need to restructure BTTB into a public limited company. This restructuring will allow a clear separation between the organization's policy-making and operating functions. It will provide BTTB with the autonomy and incentive to productively invest its profits back into building its network, while also improving its operational productivity. Restructuring should lead to the unbundling of various BTTB services, thereby helping

Table 2.6. Translating Threats into Opportunities

GOB concern	Probable results
GOB cannot afford to privatize BTTB because it needs the revenue.	With the opening up of all telecommunication services to competition and the eventual privatization of BTTB, the market will likely grow several times. Through increased taxes, GOB can expect to earn several times more than it currently receives from BTTB.
BTTB has a social obligation to serve rural areas.	This obligation is not well served by charging rural customers arbitrarily high connection fees that have no cost-of-service basis and are perhaps among the highest in the world. Doing so just chokes the growth of the market.
Privatization of BTTB is not feasible without support from its labor union.	With full competition, the telecommunications market, and consequently, the job market for telecommunications workers, will expand significantly, as has been seen in some of Bangladesh's regional neighbors.
Zero custom duty on telecommunications equipment.	Telecommunication services provide the basic foundation for IT services. Moreover, any revenue loss from zero duty on telecommunications equipment will likely be more than offset by revenues gained from a new telecom service tax.

Source: World Bank staff.

BOX 2.5 Restructuring Experiences in Sri Lanka and India

Sri Lanka

- The Sri Lanka Telecommunications Act (1992) provided for the conversion of the government department supplying telecommunications services into a government-owned corporation.
- The incumbent organization was transformed into a public limited company in 1996, before partial privatization in 1997.
- Lessons learned:
 - A government corporation can operate more efficiently than a department to satisfy demand and improve service.
 - The performance of a public enterprise remains hampered by public salary scales, investment approvals, and procurement procedures.
 - Only full privatization, together with suitable regulation, provides the necessary autonomy and

incentives to become consumer oriented and quickly expand services to meet unmet demand.

India

- Following the Telecommunications Policy of 1999, the government restructured the Department of Telecommunications (DOT), creating a separate Department of Telecom Services (DTS) and leaving the policy-making function with DOT.
- Later, because of resistance from senior management, the Department of Telecommunication Operations (DTO) was spun off from the DTS to formulate a corporatization strategy.
- In October 2000 DTO was corporatized with the establishment of the new Bharat Sanchar Nigam Ltd. (BSNL), with approximately 400,000 employees. BSNL was granted financial support to compensate for the cost of socially desirable projects.

Source: World Bank staff.

to ensure a more level playing field. It is critical that restructuring occurs before BTTB enters the mobile market.

The GOB's next steps should be to identify the best option for BTTB's restructuring and then define a clear timeframe within which to carry out its plan. Restructuring will involve, among other things:

- making the required legislative and legal changes;
- valuing and allocating assets and liabilities, including settlement of arrears;
- moving toward commercial financial accounting, including cost accounting;
- incorporating BTTB as well as its mobile subsidiary and any other subsidiaries;
- carrying out a full audit of BTTB and of the opening balance sheets of any corporatized entity or entities; and
- drafting of new competition-friendly licenses for BTTB and its subsidiaries.

BTRC's operational capacity and regulatory agenda

As a recently established institution, BTRC faces the twin challenges of creating a regulatory environment that favors competition while it builds its own capacity. Creating a strong institutional capacity will involve addressing human resources, finance, and infrastructure issues, as well as defining regulatory processes. BTRC will require assistance for capacity building. In this respect, it can be helped by examining the experiences of recently created regulatory agencies in neighboring countries that have faced the challenge of regulating a largely unreformed government-owned incumbent.

Because BTRC has scarce resources, it must maintain a strong focus on those issues that are most critical for long-term sustainable sector development: interconnection, licensing, tariff reform, and spectrum management. While focusing on the long-term issues, BTRC must maintain its obligation to address other issues that its stakeholders consider high priority matters. Such issues include VOIP and liberalization of the international gateway.

BTRC should be allowed to operate in a manner that gives its decisions legitimacy with all operators in the sector.

Political Independence

The regulatory authority must be at arm's length from regulated firms to avoid conflicts of interest. It must also be at arm's length from political authorities to reduce the influence of political pressures.

Financial Independence

The regulatory body should be exempt from restrictive civil service salary rules and budgetary processes.

Open Process

BTRC must design transparent regulatory processes that allow interested parties to put forward their views and to challenge and be challenged by others.

Transparency

BTRC should demonstrate that its decisions are based on observable data sources and replicable formulas.

Accountability

Decisions by BTRC should be reasoned and justified by reference to defined criteria, such as a list of regulatory objectives or guidelines, so that they can be effectively challenged.

Broader Representative View

The board of the BTRC is made up of commissioners who are telecommunications professionals but who have no prior experience as regulators. They are all former civil servants, and three are former BTTB chairmen or members. In future, the government should seek to establish a more diverse board membership that includes commissioners familiar with economics, the private sector, and consumer perspectives, and with expertise in IT. Such diversity will enhance the BTRC's professionalism and independence. In the interim, the BTRC should institute a mechanism that would allow for the establishment of advisory councils to provide advice on a wide range of market and consumer issues.

WTO Regulatory Reference Paper

In implementing a regulatory agenda, BTRC should be guided by the principles of equity and transparency articulated in the WTO Regulatory Reference Paper.

Optimizing and rationalizing spectrum management

No reliable database of spectrum licenses is currently available. Existing information on frequency assignments is incomplete and largely unstructured, which results in delays in assignments that inhibit private-sector investment. A rational spectrum-management system that would optimize the use of a valuable national resource is essential for an orderly telecommunications market. This need is becoming more urgent given BTRC's plans to introduce further competition in a number of wireless services.

BTRC must develop this database immediately, before a rational system of spectrum allocation can be designed. Next, BTRC should engage the private sector to handle spectrum management and control operations. BTRC recently signed an agreement with the Infrastructure Investment Facilitation Center (IIFC) to conduct the tendering process for outsourcing these operations. A model is being developed, and the activity is well on its way.

Rebalancing tariffs

The connection fees and tariffs being charged by the BTTB are not based on cost. Unfortunately, BTRC's authority to regulate BTTB's tariffs has been constrained by a ruling allowing BTTB to continue with its existing tariff-setting practices for the next 3 years. Tariff reform should be one of the BTRC's primary concerns once it assumes responsibility for BTTB's tariffs.

Licensing regime

BTRC has to establish a fair and transparent licensing regime that encourages growth in the sector. The licensing framework must be made more rational, including fee structures for ISP licenses in particular,

to ensure that the regime does not deter ISPs from providing nationwide services. The regime should attempt to provide a balance of incentives and obligations that will allow operators to extend viable services.

Interconnection

Establishment of a competition-friendly interconnection regime must be a high-priority effort. The network must be expanded as quickly as possible. Also, to ensure optimal use of national resources, existing excess capacities in the fiber-optic networks of the Bangladesh Power Development Board, Power Grid Corporation of Bangladesh, Gas Transmission Company Limited and other government organizations should be made available to all current and future telecommunications service providers in an alternate broadband network, on a mutually acceptable cost-sharing basis.

Encouraging competition in basic telecommunications services

BTTB has failed to meet pent-up demand for basic telecommunication services, so the market should be opened to competition. In country after country, competition has been observed to be the key to a successful telecommunications revolution. A half-hearted attempt was made about a year ago to introduce private-sector participation in basic services through a 300,000 WorldTel deal on a build-own-operate (BOO) basis, but the attempt stalled.

BTRC, through the IIFC, will study potential private-sector participation in public switched telephone networks (PSTNs) with a view to extend tele-reach and teledensity to selected areas through a process of franchising to private operators. Following the study, the BTRC, assisted by the IIFC, will tender the process to engage the private sector in identified market areas.

Introducing VOIP and Internet telephony

Given the limited number of fixed lines, Bangladesh can benefit from China's experience in using Internet-based technologies like VOIP and IP telephony to increase connectivity. It is worthwhile to examine whether China's successful experiment to increase connectivity at a phenomenal rate can be replicated in Bangladesh. This is a low-cost option that can be rolled out very quickly.¹

Improvement in tele-reach

In this information age, a significant increase in tele-reach in the shortest possible time is absolutely essential. Appropriate universal access policies and programs must be established and implemented as soon as possible.

Roadmap for action

Tables 2.7 and 2.8 presents a summary of the analysis of the telecommunications sector and a detailed action plan to carry out reforms.

Notes

1. Information on a series of case studies on IP telephony in China and several other countries is available at the ITU Web site: www.itu.org.

Table 2.7. Telecommunications Action Plan

Short term: Moderate competition (up to 1 year)	<ul style="list-style-type: none"> • Establish a competition-friendly interconnection regime. • Increase tele-reach through privately owned and operated PCOs and other means. • Declare VOIP to be legal. • Restructure BTTB. • Build capacity within BTRC to develop a credible regulatory framework. • Liberalize the international long-distance services market. • Outsource a rational spectrum-management system for BTRC.
Medium term: Enhanced competition (1 to 3 years)	<ul style="list-style-type: none"> • Bid out a license for an alternate broadband network that should build on existing capacities in the country, and provide network services to all telecommunications and IT service providers. • Follow China's landmark example and bid out a license for an IP telephony network, initially to serve rural areas. • Bid out new licenses for local and national and international long-distance service operators in urban areas who may use VOIP and other technologies. • Establish a domestic VSAT hub and domestic Internet exchanges. • Comply with the World Trade Organization Regulatory Reference Paper. • Put into operation a universal service obligations (USO) fund.

Source: World Bank staff.

Table 2.8. The Telecommunications Sector at a Glance

Current situation	Essential immediate policy actions
<ul style="list-style-type: none"> • Extremely low tele-reach and teledensity and, consequently, significant economic cost to the nation in terms of lost GDP and employment. • GOB lacks funds for necessary investment to improve connectivity. 	<p>The BTTB must first be restructured into a public limited company as the first step.</p> <p>The BRTC must be allowed to act as an autonomous and independent regulatory body with responsibilities for leading the development of a competitive telecommunications sector. It must be given the authority to:</p>
Broad policy option available	Expected long-term results
<p>The existing approach has failed. Where Bangladesh was among the first countries in South Asia to allow private-sector participation in the telecommunications industry, it has become the least advanced country in that area. GOB has no option therefore but to revisit its approach and turn to the private sector for their active participation in rectifying the situation. An enabling environment for full private sector participation (PSP) must be put in place immediately.</p>	<ul style="list-style-type: none"> • Issue licenses (unhampered) to new private sector operators in telecommunications services, including providers of network services and cheaper IP telephony services. • Unbundle the various telecom services provided by the dominant operator (BTTB), to ensure fair competition among all operators. • Put in place appropriate interconnection agreements among operators, based on a cost-sharing principle. • Put in place an appropriate cost-based tariff regime that allows industry to adequately maintain existing networks and systems while increasing capacity as needed. • Follow a rational spectrum-management system.
Basic premises for a policy approach	
<ul style="list-style-type: none"> • The nation's interest is being threatened by the existing structure, management, and policies of BTTB. • Competition in the telecommunications sector is imperative. It has proven to be the key success factor for most of Bangladesh's Asian neighbors. • The existing tariff structure is inappropriate and must be revised. • An appropriate action plan to optimize the use of existing infrastructure resources must be put in place. 	

Source: World Bank staff.

to about BDT38,860 million (US\$670 million).

Despite this growth, access to electricity and per capita usage remain low relative to the performance of some neighboring countries (table 3.1). About 80 percent of the urban population has access to electricity, but with varying levels of reliability and service quality.

Of Bangladesh's predominantly rural population (about 80 percent of the population), only 20 percent is connected to the national grid. Approximately another 2 percent relies on off-grid electricity, derived mainly from small diesel generators and solar home systems. Households and industry consume 41 percent and 47 percent of supply, respectively, with commercial, irrigation and other customers making up the balance. Table 3.2 summarizes consumption during 2001–02 for households, commercial users, industry, irrigation, and other users.

Institutional framework

State enterprises and the Ministry of Energy and Mineral Resources (MEMR) dominate the sector. The MEMR is responsible for policy-making and regulation. However, politically sensitive decisions, such as tariff setting, restructuring, and even organizational changes

within public utilities, are usually referred to the Cabinet of Ministers.

The MEMR oversees sector operations and makes important decisions such as large procurement decisions, tendering and investor selection for construction and operation of independent power plants, fuel policy, financing, and transfer of senior staff and other personnel matters. Under this structure, the state bears virtually all market, tariff, and payment risks for the sector, either directly through its sovereign guarantees or indirectly through ownership of sector enterprises. Except in its relationship with Independent Power Producers (IPPs), the state also bears all of the technical risks.

A Power Cell under MEMR was established in 1996 to help the government with policy-making, tariff formulation, and sector reform. The Power Cell is not a permanent body, which hinders its ability to attract and retain staff.

Power Generation

Total installed capacity amounts to 4,232 MW, with the BPDB being the dominant supply entity. In fiscal 2002, BPDB accounted for about 83 percent of total generation. During the same period, private sources—rapidly growing since 1999—accounted for 17 percent of total generation. Five IPPs now sell electricity to BPDB through long-term, government-guaranteed Power Purchase Agreements (PPAs).¹ State-owned Petrobangla supplies natural gas, the fuel used in generating more than 80 percent of the country's electrical power.

Table 3.2. Electricity Consumption (million kWh)

Fiscal 2002	HH.	Comm.	Ind.	Irrig.	Other	Total
BPDB	1,892	474	2,090	96	184	4,736
DESA	1,691	159	1,507	1	711	4,070
REB	1,660	219	1,649	357	10	3,895
Total	5,208	853	5,247	454	905	12,701

Source: World Bank staff.

Table 3.1. Bangladesh's Electricity Access and Usage Compared with Neighboring Countries

	Country population with access (percent)	Per capita usage (kWh per year)
Bangladesh	31	108
Cambodia	10	30
India	70	384
Nepal	15	47
Pakistan	55	337
Sri Lanka	55	244

Source: World Development Indicators 2001.

Power Transmission

The Power Grid Corporation of Bangladesh (PGCB) is now fully responsible for high voltage transmission as well as dispatch, having taken over all transmission and dispatch assets from BPDB and DESA. Created in 1996 under the Companies Act, PGCB is one of two state-owned power enterprises designed to be insulated from political pressure. BPDB holds the state's shares in PGCB, thus maintaining a dominant influence over its activities.

Urban Power Distribution

Also a government-controlled body, DESA was established in 1991 to distribute electricity in greater Dhaka by separating associated assets from BPDB. DESA now accounts for 46 percent of end-use electricity sales. As an experiment, in 1999 a small area serving about 8 percent of demand was hived off and the Dhaka Electric Supply Company (DESCO) was established to manage billing and collections in this area. DESCO has improved billings and collections over the last 4 years, reducing system losses from 46 percent to 23 percent and increasing collections from a low level to almost 90 percent.² Additional service zones were transferred to DESCO in early 2003 and DESCO is now responsible for distribution in North Dhaka. Eventually DESA itself is expected to be corporatized as a holding company with two to three additional distribution companies under it.

BPDB handles electricity distribution in all urban areas other than Dhaka, representing about 37 percent of total demand. BPDB is transferring small semi-urban load areas (less than 3 MW) to the REB. It recently separated distribution areas covering five towns centered around Khulna into a new Western Zone served by the Western Zone Distribution Corporation. The new distribution corporation will begin commercial operation when its rehabilitation is completed in a few years under an Asian Development Bank (ADB)-financed project.

Rural Power Distribution

The REB coordinates and facilitates the development of distribution systems in rural areas. Rural distribution systems are owned, operated, and maintained by a collection of consumer cooperatives called Palli Bidyut Samitis (PBS). At present Bangladesh has 67 PBSs. The REB approves the tariffs set by each PBS, with its objective being that average rates permit the PBSs to at least cover costs for operation, maintenance, depreciation, and financing. To ensure affordability of a basic level of consumption, cross-subsidies are permitted between consumer categories. The REB also negotiates prices for PBS supply purchases from BPDB, DESA, and—occasionally—small IPPs. The REB also owns 27 percent of the Rural Power Corporation, with the remaining 73 percent owned by nine PBSs.

Recent Policy Directions and Performance

The Electricity Act of 1910 is the primary legislation that governs this sector, but since 1995 a series of policy statements have been issued to guide its development. These policy statements are:

- Inter-ministerial Committee Report on Power Sector Reform, 1994.
- Private Sector Power Generation Policy, 1996.
- Policy Guidelines for Small Power Plants (SPPs) with private sector participation, 1998.
- Vision and Policy Statements on Power Sector Reforms, 2000.
- Three-Year Sector Reform Road Map and Interim Pricing Framework (May 2003).

The Vision and Policy Statements and 3-Year Road Map are the dominant instruments guiding sector reforms. They articulate goals that include:

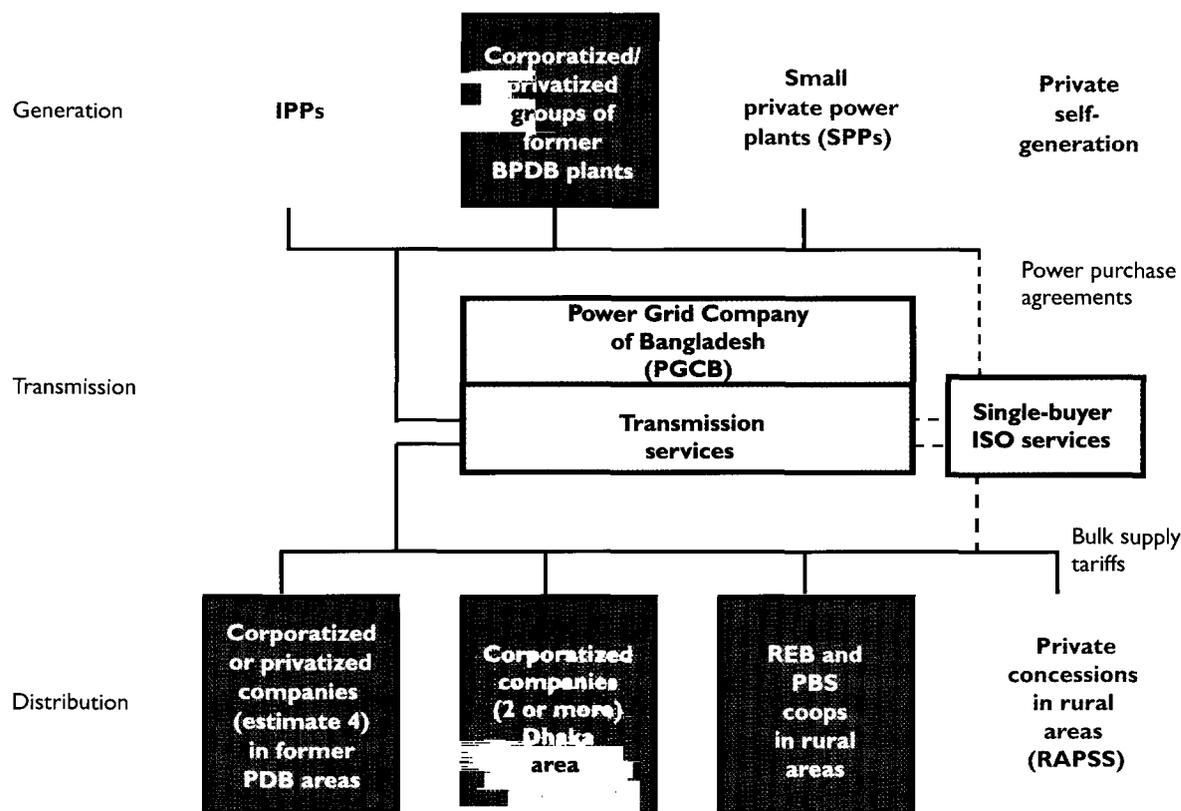
- Bringing the entire country under electricity service by the year 2020.
- Making the power sector financially viable and enhancing its efficiency.
- Improving the reliability of electricity supply.
- Using natural gas as the primary fuel for power generation.
- Exploring prospects for exporting electricity to augment and diversify foreign exchange earnings.
- Increasing private-sector participation to mobilize finance.
- Promoting competition among entities.

number of distribution and generation companies, the interface between future distribution companies and PBS, timing for departure from the single buyer model, and the future role of BPDB.

Several donors and financial institutions, including the World Bank and ADB, have been assisting various governments over the last 6 to 8 years to update the Electricity Act of 1910. In August 2002, the government decided to merge the reform legislation proposed for the electricity and gas sectors into a single proposal, the Energy Regulatory Commission Act (ERCA). Passed by Parliament in March 2003, ERCA establishes a combined energy regulator and provides it with the authority to issue licenses, ensure compliance with license conditions, and set tariffs.³

Figure 3.1 depicts the new structure that has been envisaged for the power sector. Various aspects of this structure are still being debated, including the optimal

Figure 3.1. Target Power Sector Structure, Phase I



Source: World Bank staff.

Recent performance

With available capacity now at almost 3,800 MW with the 450 MW Meghnaghat plant operating in combined cycle mode since November 2002, the sector has sufficient capacity to meet at least base load demand from connected customers—reducing the load-shedding problems of a few years back. However, distribution systems need to be upgraded. Peak demand still exceeds supply, and BPDB faces problems with poor reliability of its power plants, largely because of design flaws and limited cash-flow for proper maintenance.

Power Generation

The IPPs, with cash-flow secured by their power purchase agreements and efficient operations, offer a promising example of what can be achieved to improve power generation with sound management, an appropriate contractual framework, and modern technology.

The two most recent IPP tenders (1998–99) for combined cycle gas turbine (CCGT) plants at Haripur and Meghnaghat were well-designed and competitively bid. They attracted some of the most competitive bids worldwide, with average life-cycle tariffs around 2.73 to 2.98 U.S. cents per kilowatt hour at a gas price of US\$2.4 per gigajoule. By contrast, earlier tenders, such as simple cycle plants at Khulna, Baghabari, Haripur, and Mymensingh, followed more limited bidding routes that may have contributed to their relatively high costs—for example, about 5 to 7 U.S. cents per kilowatt hour for gas-based operations.

Recent IPPs have been constructed in record time, typically within 3 years from financial closing and in even less time for barge-mounted plants. They also have maintained a high level of reliability.

Actual IPP generation costs also have been lower than the numbers initially tendered because the gas tariff has been smaller than originally expected. Unit costs for the two CCGT plants have also fallen (by about 100 percent) as they have transitioned from simple cycle operation to combined cycle operation.

On the downside, BPDB (the single buyer) is finding the indexation of purchase prices to the US

dollar and payments in foreign exchange to be onerous in the current regulatory environment. For example, in fiscal 2002, IPPs generated 22 percent of net total generation, but they also accounted for roughly 31 percent of BPDB's total operating expenses. With BPDB's revenues in local currency, no automatic adjustment of tariffs for changes in supply costs outside its control, high system losses, debt service, and nonpayment by end-users, BPDB's net losses amounted to about US\$110 million in fiscal 2002. Such losses severely constrain the utility's ability to commit to new power purchase agreements.

As a result, BPDB is in favor of a departure from the current IPP model toward one in which construction and rehabilitation of power plants would be done through joint ventures between BPDB and private partners. However, it is difficult to see how this approach would make projects cheaper, unless it essentially involved taxpayers bearing a larger share of the costs of these IPPs. A better alternative would be to ensure that tariffs increase to reflect rises in the cost of competitively-procured generation.

Transmission and Dispatch

The PGCB board is made up of non-government and private-sector representatives.⁴ Recruited competitively for a 5-year term, PGCB's management has done a commendable job of putting in place credible business plans and transparent accounting systems and human resource policies. Resistance by BPDB's labor unions, however, has challenged PGCB's ability to adhere to a merit-based system for contracting operational staff. As a result, the entity has relied almost entirely on BPDB's transmission workers seconded to PGCB. This situation also reflects staff reluctance to separate from the parent organization until funding for pension plans has been developed. The ADB is to finance these pension schemes and facilitate the transfer of operational staff.

PGCB's board support has allowed it to adhere to commercial principles and helped to insulate the company from the political influences faced by other state-owned enterprises. The company estimates that its tariff margin of BDT0.18/kWh (U.S. cents 0.3/kWh)

Need for additional investments

Total capital requirements for generation, transmission, and distribution were estimated in 1995 at about US\$6.6 billion (in constant 1995 prices) for the period 1996 to 2015. Roughly US\$1.0 billion of this plan has already been carried out with the construction of about 1,500 MW of generation capacity and expansion of the transmission and rural distribution networks.

If properly maintained, current capacity is sufficient to meet present (connected) demand. However, peak demand is expected to increase by at least 300 MW per year, which will require annual investments of US\$150 million. An equal amount will be necessary for transmission and distribution facilities. Table 3.5 indicates new capacity now under construction or planned.

Investments will need to be carefully sequenced so that they are made concurrently with (i) reductions in technical and non-technical losses; (ii) expansion in grids and off-grid coverage in rural areas; (iii) upgrades in PGCB's dispatch and load-management infrastructure and cost-effective extensions of its

Table 3.5. New Capacity Under Construction or Planned

Year	BPDB	IPPs
2002 ^a	—	450 MW
2003	210 MW	—
Undefined	—	450 MW
2004–07	1,000 MW ^b	—

a. As of October 2002.

b. Some of this capacity could be provided by IPPs.

Source: World Bank staff.

transmission network; and (iv) expansion of new generation capacity based on least-cost principles.

Overstaffing

With about 40,000 employees in the sector (23,000 in BPDB alone), bringing the skill mix and staffing levels to more optimal levels will be an important objective of sector restructuring.

Inefficiencies in urban distribution

The 2000 Vision Statement identifies the distribution system as the “weakest link in the industry.” Important problems in urban distribution and their probable causes are shown in table 3.6.

Although the reliability of urban supply needs improving, connected urban households enjoy a highly subsidized benefit that is still unavailable to 70 percent of the population. Consequently, their tariffs should be raised to cover costs, with subsidies targeted at low income customers or definition of a lower life-line block of 30 to 50 kWh per household per month so that poor households can afford basic service. Inefficiency and underpricing mean that the shortfall

Table 3.4. Reforms to Date

Increase in generating capacity	Generating capacity has doubled since the early 1990s.
Improvements in reducing systems loss	Average systems losses have improved from 40 percent to 30 percent over the past decade. (Of this improvement, about 5 percent represents self-consumption of the power plants.)
Commercializing the sector's state-owned enterprises	PGCB and DESCO were established as corporations.
Introduced private-sector participation through IPPs	Five privately operated generation facilities with 1,260 MW capacity have been introduced since 1998.
Two tariff adjustments during 2002	An average 8 percent increase in January and a 5 percent increase in August.

Source: World Bank staff.

in the return on BPDB and DESA assets has on average been about 1.6 percent of GDP.

Despite the DESCO experience, corporatization and private management are not yet proven as a way to improve distribution performance. However, some encouraging improvements have occurred over the last 4 years, with system losses falling from 46 percent to 23 percent, collection rates increasing to almost 90 percent, and almost full payment for the purchase of power and other operating costs.

Limited coverage and high distribution costs in rural areas

The expansion of services to rural areas merits special attention. Capital costs per customer for grid and off-grid electricity connection are higher than those in urban areas because of low population density and limited demand, as constrained by low economic activity. About 59 percent of the rural population of Bangladesh is estimated to be living below the poverty line, compared with about 50 percent of the population in urban areas.

The GOB, together with various development partners, is financing innovative schemes to expand electricity coverage in rural areas. Approaches include extension of the main power line and development of self-contained systems. The innovative Remote Area Power Supply Systems (RAPSS) has begun to build on the largely community-owned, grid-based rural electrification program by encouraging private providers to either build, own, and operate isolated systems or develop grid extensions. An authorization for developing the transactions for the first four areas was recently awarded.

Table 3.6. Urban Distribution System Problems and Likely Causes

Problem	Causes
Ineffective management	<ul style="list-style-type: none"> • Lower public-sector wages and limited performance-related incentives • Strong labor unions
High technical losses	<ul style="list-style-type: none"> • Undersized and overloaded equipment • System design shortcomings • Incoming power quality • Poor maintenance
High non-technical losses	<ul style="list-style-type: none"> • Illegal connections and tampered meters • High commercial risk customers (slums, other illegal constructions) • Poor internal controls, such as system metering • No bills issued, sometimes with collusion between customers and meter readers
Poor collections	<ul style="list-style-type: none"> • Payment requests not followed up on • Service not cut off if bill unpaid
Inadequate capacity	<ul style="list-style-type: none"> • Revenues insufficient for investment • Limited access to affordable financing
Poor reliability or service quality	<ul style="list-style-type: none"> • System design • Revenues insufficient for proper maintenance • Demand exceeds capacity
Poor financial condition	<ul style="list-style-type: none"> • Distorted tariffs and high household life-line. • High cross-subsidies; perverse incentives for collusion between customers and meter readers

Source: World Bank staff.

Need for tariff reform

Analysis by the World Bank indicates that the early fiscal 2002 tariffs of both BPDB and DESA were well below their respective costs of service, recognizing that these costs are inflated due to inefficient and corrupt practices.

Based on fiscal 2002 data, the most critical tariff issues include:

- Who should pay the high costs of inefficiency, theft, and corruption—customers or taxpayers?
- BPDB sales to DESA and the REB are below its wholesale cost of electricity.
- Severe cross-subsidies exist between industry and households (as shown in table 3.3).
- expansion of supply through well-tendered IPPs;
- expansion of rural access on a promising institutional foundation;
- reduction in system losses; and
- improvement in collections.

BPDB sales to the REB and DESA were priced at US cents 3.4/kWh (BDT1.96/kWh), or less than its average power cost of US cents 3.8/kWh (BDT2.22/kWh). Failing to tie prices to costs resulted in a loss of around US\$40m for BPDB. The power cost, however, should drop in fiscal 2003, with the combined cycle operation of the 450 MW Meghnaghat plant.

DESA purchased electricity at US cents 3.40/kWh (BDT1.96/kWh) from BPDB, transferred 23 percent of it to the REB, and billed only 67.5 percent of the balance at an average tariff of about US cents 5.40/kWh (BDT3.13/kWh). Despite this margin, DESA was unable to cover the cost of purchased electricity because of its high system losses.

Clearly, theft reduction, tariff rebalancing, and to a lesser extent, improved collections remain higher priorities than having end-users pay more for supply inefficiencies and corruption. However, a temporary tariff surcharge may be necessary to cover transitional inefficiencies until investments and structural reforms improve supply performance. Such a surcharge could also be necessary to cover debt service. BPDB's accumulated liabilities in fiscal 2001 already stood at US\$2 billion (BDT118 billion), of which half—about 1.7 years of sales—were current.

Recommendations

Successes have been identified in several areas of the Bangladeshi power sector. These successes include:

Recent policy statements by the GOB and passage of the ERCA are also encouraging developments. However, the performance of the sector also has been deficient in many areas. The following set of recommendations aim at (i) increasing efficiency in the sector and eliminating financial losses—by adjusting tariffs, improving collections and reducing supply costs; (ii) expanding coverage to unserved areas; and (iii) improving targeting of fiscal support, primarily to soften capital costs for expanding coverage.

These recommendations recognize that achieving the government's goals will require greater private-sector participation in the power sector within the context of an appropriate legal and regulatory framework. Public funds, including shrinking loans from development partners, will be insufficient to meet the large sectoral investments requirements (about US\$300 million to US\$350 million annually).

As has been shown in other developing countries, private investors can help turn around the performance of distribution companies, and private companies with proven track records should be invited to participate in the sector. For private funds to be secured, tariffs will need to cover costs. Finally, a competent and independent regulator together with an unbundled market structure, can protect consumers from monopoly power of suppliers and insulate investors from politicization of commercial aspects.

Actions to be initiated within the next 6 months are the creation of an empowered reform team to design the reform program and supervise the way it is carried out, and appointment, through a transparent process, of members and staff of a regulatory commission for the sector.

Create an appropriate regulatory agency

Now that ERCA has been passed with provisions to create and empower an independent regulatory body, the key challenges in creating an appropriate regulatory agency involve:

- drafting appropriate rules of appointment and compensation for the first three commissioners, (including the chairperson) and following these rules in the selection process;
- providing the commissioners with high-quality consultants to prepare the priority work program, help contract key staff, and begin preparing priority regulations; and
- providing full GOB support to bring sector enterprises under the regulatory authority of the Energy Regulatory Commission (ERC).

Global and regional experience in South Asia shows the enormous difficulty regulators face in establishing their authority over state-owned enterprises.

Unbundle existing sector enterprises

As articulated in the Vision Statement (2000) and Road Map (2003), the GOB should accelerate the separation of power generation, transmission, and distribution functions. To this end, the most critical steps are:

- defining the number of electricity distribution companies (EDCs) and generation companies that would be cost-effective in Bangladesh, and identifying benchmarks to enhance performance and competition among entities in the short to medium term;
- defining technical and commercial linkages between these entities and rural PBSs and other sector entities;
- developing a transition path from the single buyer model to direct contracting between eligible

customers, such as large industries or bulk consumers, and generators; and

- beginning to put in place the institutional and technical architecture to complete the unbundling.

The GOB's intention to make BPDB the holding company for all state assets, and to transform it into a corporation under the Companies Act, must be carried out with a clear understanding that this is a transitional arrangement to nurture the unbundled enterprises to maturity and privatization (where appropriate). The GOB should also ensure that conflicts of interest are mitigated. For example BPDB should not remain the owner of generation plants as well as the system planner and purchaser of power from state and private power plants. Specific mitigative measures should be spelled out in the Articles of Association of the holding company.

Improve governance of public enterprises

The risk of political interference in state-owned enterprises will likely remain high, and corporatization by itself may not succeed in improving commercial performance. The government, however, could explore various corporatization models for the unbundled sector enterprises as an interim step to privatization, when country and global market conditions permit. Transparent governance would provide the public and policy-makers with a better understanding of the rationale for private-sector participation and help manage stakeholder expectations. Elements of better governance may include:

- articles of association that clearly define the purpose of the corporation, its core operating principles, and the division of responsibilities among the owner (the GOB), board of directors, and management;
- audit committees established at the board level that would appoint, in a transparent manner, qualified

- firms to periodically review the corporation's accounts, internal controls and procedures, and performance;
- independent monitoring, evaluation and reporting of enterprise performance, possibly under the jurisdiction of the Energy Regulatory Commission (ERC); and
- regular publication of business plans and actual performance outcomes as evaluated by independent audit firms and the ERC.

Any program for improving governance in the area of distribution will have to:

- provide managers with greater control over staffing decisions, salaries, and performance incentives, and permit termination without compensation for corrupt practices;
- enforce anti-theft legislation that includes penalties of fines and jail time as well as disconnection for non-payment;
- offer incentives for customers to organize themselves to reduce payment risks or supply costs, for example by forming slum associations

and contracting in bulk or by opting for interruptible supply;

- remove all political influence in operational and investment decisions.
- adjust tariffs to cover the full cost of service to each customer category; and
- ensure full payment by public sector entities.

Enhance private-sector participation

Table 3.7 provides some comparative data on private-sector participation (PSP) in the power sector in Bangladesh, Pakistan, and India. Bangladesh has been as successful as the other two countries at attracting the private sector into power generation (and at better prices), but can benefit from India's and Pakistan's PSP experiences in distribution and transmission.

Commercialize urban electricity distribution

A high-priority objective should be to rapidly commercialize urban electricity services, recognizing

Table 3.7. Comparative Experiences in Power Sector PSP

	Distribution		Transmission	Generation	
	Grid	Off-grid		Existing	IPPs
Bangladesh	None to date	Mandates for first pilots given	None	None	Five transactions completed
India	Transactions completed in several states, e.g., Delhi and Orissa	—	2 transactions underway of the Build-Operate-Transfer type	Transactions completed in some states, e.g. Orissa	A few transactions completed
Pakistan	One transaction underway and a mandate for another in place	None	None; in the mid-1990s, a contract of the Build-Operate-Transfer type was canceled before project completion.	One transaction completed in the 1990s (Kot Addu). New mandate awarded for Jamshoro.	Numerous transactions completed in the 1990s

Source: World Bank staff.

that already-connected urban consumers enjoy benefits that are not available to the majority of the population living in rural areas.

If properly contracted and supported, private-sector entities can help solve the single biggest problem facing the power sector—high non-technical losses and non-collection of revenues. There is a lack of confidence that anything less than ownership change can solve this problem in a sustained manner. Well-structured privatization transactions will help attract qualified operators over the next 2 to 3 years, possibly in collaboration with reputable local firms. The GOB will need to demonstrate its commitment to enforcing the law and to meeting contractual obligations. Failed transactions in India (Uttar Pradesh and Orissa) and Georgia and successful transactions elsewhere have highlighted the importance of government commitment.

The GOB's preference for concessioning out small distribution areas—five for Dhaka city alone, with about 100,000 customers per company—raises several considerations for future development. If other urban areas follow this model, the government will need to ensure that it can effectively manage these public-private partnerships, and recognize that all distribution companies must become financially secure. Concessioning small distribution areas may also compromise economies of scale and raise transaction costs, increasing distribution tariff margins or reliance on budget subsidies.

Alternatively, an economically efficient number of distribution companies could be prepared for privatization. Under this approach, corporatization under public ownership could be an intermediate step toward privatization. The GOB should explore this alternative during the preparation of the concessions.

Expand rural electricity distribution

As envisaged under the IDA-funded Rural Electrification and Renewable Energy Project, the REB will facilitate expansion of off-grid electricity services through RAPSS while continuing to rely

primarily on PBS for grid extension. A competitive bidding process will define any subsidies that may be needed to leverage private investment. Any subsidies will be provided to the private operator on achieving specified coverage and service targets. The government is also considering grid expansion through RAPPs.

Periodic reviews of tariff policies for rural electrification will be necessary, allowing the development of flexible, demand-driven models that are based on self-regulation and ensuring that any tariff support is comparable to other government-supported schemes.

Invest in power generation

Financially secure distribution companies, supported by modern and transparent system operations covering dispatch, contracting, and financial settlements, will reduce investment risks in the capital-intensive generation business. More liberal export policies will also allow investors to allocate some investment risks to foreign consumers, thus alleviating direct or contingent liabilities of the GOB.

The GOB is considering modifications to the IPP model by introducing joint ventures between BPDP and the private sector. These changes would accommodate the government's desire to protect BPDB and end-users from foreign exchange risks. However, it is difficult to see how this approach can be taken without transferring risks from electricity users to taxpayers. The policy of using private financing for IPPs should be maintained, and greater efforts should be made to improve the overall financial sustainability of the sector. This approach would be more efficient than public investments in power generation. Creating a strong energy regulator will mitigate the perception that IPPs are overly protected at the expense of consumers and taxpayers.

Recognizing that most electricity will be purchased and sold by a state-owned single buyer for the next few years, the government or the future regulator should further streamline procedures to ensure least-

cost and transparent contracting. Increasingly, contracts should be based on outputs like capacity and quality of power rather than on inputs like type of fuel. Doing this will require strengthening the planning capacity of the system operator and its independence (especially from ownership in generation plants), and developing market-based risk-allocation systems.

Create a financial rehabilitation plan and carry out tariff reform

With easy access to competitively priced natural gas, Bangladesh is well-positioned to generate electricity at costs of less than US cents 3.0/kWh to US cents 4.0/kWh without sovereign guarantees, provided the risk-adjusted cost of private capital can be reduced through structural reforms and financial discipline. Sovereign guarantees could be needed, however, until investors gain confidence in sector reforms.

The current average tariff, based on actual billings in fiscal 2002, is about US cents 5.2/kWh (BDT3.0/kWh). This amount is not too far removed from the full cost of efficient supply. However, in the short to medium term, until technical and financial efficiency are raised to industry norms, some form of support—either through a tariff surcharge or explicit budget subsidies—will be required to meet continuing shortfalls.

This type of financial support should be explicitly linked to pre-agreed performance targets and supported by reforms at the enterprise level. It also should be linked to the establishment of credible and independent mechanisms to monitor and publicize performance, and to debt and arrears restructuring, with restructured liabilities being serviced by the tariff surcharge or budget subsidy. Early preparation and public discussion of a sector financial restructuring and recovery plan would help the GOB, consumers, taxpayers and development partners to determine which costs would be borne by customers and taxpayers, and which would be borne, to a limited extent, by donors.

The following generally accepted principles should be considered when adjusting user charges:

- Tariffs should cover reasonable and prudently incurred costs, with the average tariff for each customer category sufficient to cover supply costs for that category.
- Time-of-use charges should be introduced where feasible so that customers have incentives to manage their demand.
- Subsidies, if any are necessary, should be provided directly, first to consumers and second to suppliers, rather than built into the tariff structure.
- Cross-subsidies, if any are necessary, should be managed within the category to be subsidized, thus limiting the extent of price distortions.
- Procedures should be put in place to allow for regular adjustment of tariffs to reflect changes in externally generated costs, such as fuel or exchange rates.

As a first step, urban household tariffs should be made more consistent with rural household tariffs. The subsidized life-line level of less than 100 kWh per month can be reduced, as can the number of blocks, from five to two or three, simplifying billing and reducing collusion between suppliers and consumers. Prices for consumption above 100 kWh per month should be set at or above the average cost of low-voltage supply.

Tariff discounts and flexible service quality could be offered to consumers who organize themselves in a manner that reduces supply costs or payment risks. For example, residents of multistory apartments or slum dwellers could be charged lower tariffs if they contract for services in bulk, which would reduce metering and billing costs for the distribution company, facilitate disconnection for non-payment, and reduce payment risks.

Notes

1. The IPPs account for 810 MW of capacity, including 140 MW from the public-private Rural Power Corporation (RPC) plant at Mymensingh, with another 490 MW to be commissioned in 2002–03. Of this capacity, Meghnaghat will offer 450 MW (AES) of capacity and Baghabari 40 MW, in addition to the existing 90 MW of capacity (Westmont).

2. DESA holds the state's shares in DESCO, but some local private firms have been contracted to handle operation and maintenance, meter reading, and billing.

3. ERCA will also cover regulation of the downstream petroleum market, at least until sufficient competition allows the sector to be regulated by market forces.

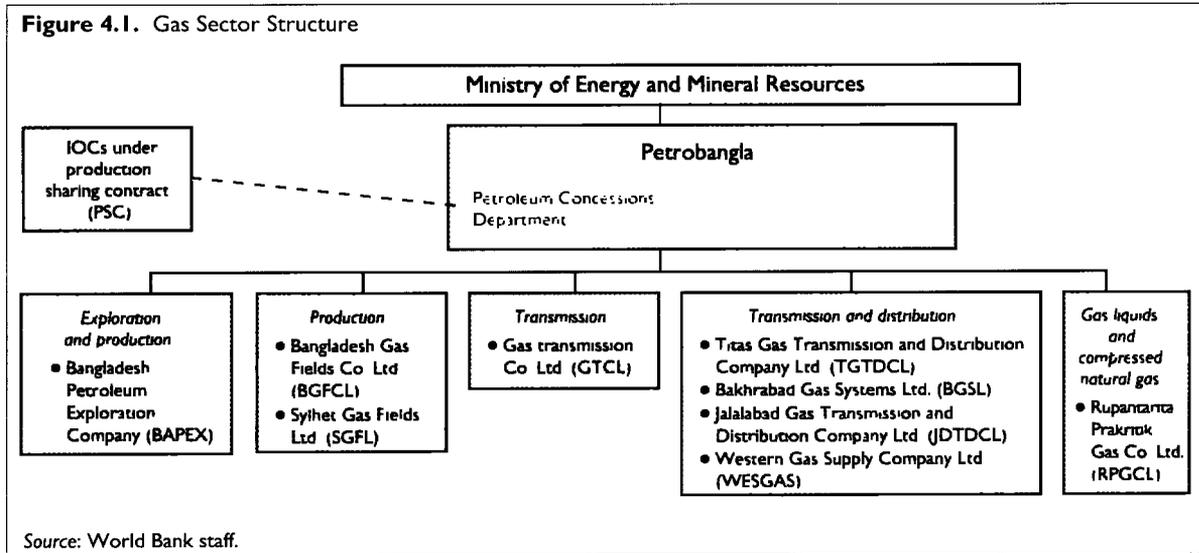
4. The Boards of BPDB and PGCB share the same chairman.

5. The proposed dispatch system would link a National Dispatch Center to an Energy Management System (EMS) and Supervisory Control and Data Acquisition (SCADA) System through various communications networks, including an optical fiber cable network.

6. Collection to gross generation ratio increased to 70 percent in fiscal 2002 from 65 percent in fiscal 2001 and 60 percent in fiscal 1995.

7. According to Bangladesh Urban Service Delivery—A Score Card (2002), depending on location, only 2 to 12 percent of consumers (8 percent in Dhaka) are satisfied with their service. Obtaining an electricity connection generally requires paying an amount substantially above the official fee; and customer grievance procedures are generally ineffective.

8. Bangladesh's tariffs are comparable to those in countries like India but higher than those in Europe and the United States of America, where retail competition has driven down prices.



Department of Petrobangla. This unit also regulates and administers E&P activity through the supervision of foreign oil companies. At present two IOCs—UNOCAL and Shell—are producing gas under PSCs.

Separately, UNOCAL, Shell, and two additional IOCs also are engaged in exploration PSCs.² However, over the past 3 years, new exploration activity has stopped while the companies await the GOB's decision on gas exports to India. Proven gas reserves are more than sufficient to meet domestic market requirements in the foreseeable future.

Performance

In its five-year plan for 1997–2002, the GOB set a number of targets for upstream and downstream operations through Petrobangla and private IOCs. The targets and achievements to May 2001 are summarized in table 4.1.

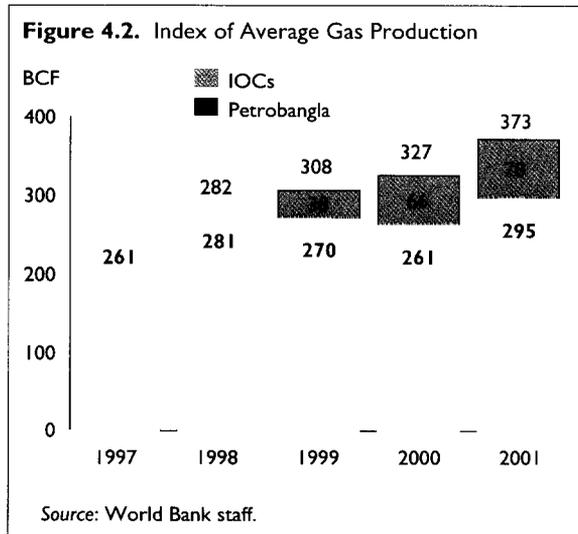
Petrobangla's performance in upstream activities has been dismal. In particular, it did not undertake any geophysical surveys or drill a single exploratory well. The private IOCs performed better. Petrobangla affiliates involved in gas distribution have achieved satisfactory performance according to a recent survey on the delivery of essential services (World Bank

2002). Urban consumers reported a high degree of satisfaction compared with other essential services.

Table 4.1 Achievement of Five-Year Plan Targets

Items	Target (1997–2002)	Achievement (to May 2001)
Exploration surveys (public)	3,000 line-km	—
Exploration surveys (private)	4,000 line-km	6,000 line-km
Exploration wells (public)	7	—
Exploration wells (private)	15 to 20	12
Development wells (public)	13 to 15	11
Development wells (private)	13	20
Transmission line	375 km	349 km
Distribution line	2,000 km	2,443 km
Customer connections	140,000	275,617

Source: World Bank staff.



Under the circumstances, the full incremental production target since 1997 has been met by the IOCs (figure 4.2). Petrobangla's production has remained quite flat over the period, while IOC production has increased, from nothing in 1997 to 78 billion cubic feet in 2001 (out of a total of 373 billion cubic feet). In 2001 IOC output represented 21 percent of total production.

In spite of increases in the consumer gas tariffs during the past 5 years, the average price for natural gas has declined in real (US\$) terms (figure 4.3). A more significant problem with gas tariffs is that they do not allow full cost recovery. The price of gas in 2001

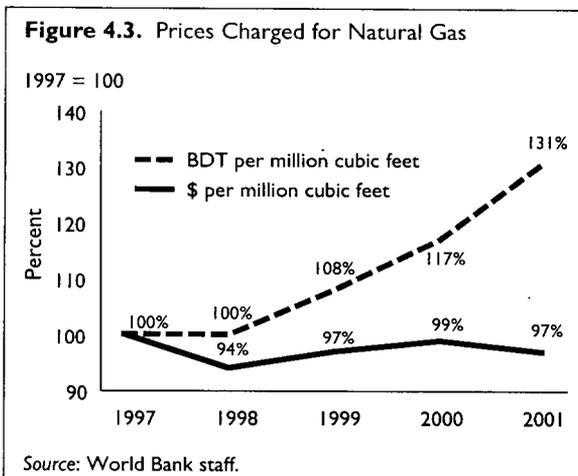


Table 4.2. Cost Recovery in 2001 (US\$ per million cubic feet)

User group	Charge	LRMC
End users	\$1.25 to \$1.42	\$1.71
Power generation	\$1.05 to \$1.16	\$1.55

Source: World Bank staff.

remained well below the long-run marginal cost (LMRC) according to government data (table 4.2). Underpricing of at least 17 percent was occurring for end-users and more significant underpricing was taking place for power generation.

Inadequate tariffs and the obligation to purchase gas from the IOCs at a price linked to the price of fuel oil have contributed to Petrobangla's dismal financial performance. The GOB also strips the IOCs of practically all of their cash reserves through compulsory dividends. As a result, Petrobangla is unable to operate and maintain its facilities in accordance with international norms and has not been able to carry out new investments. Moreover, Petrobangla has fallen behind in its payments to IOCs for gas supplies.

Petrobangla's overall system loss is roughly 7 percent, a situation that exacerbates the tariff problem. Considering that there is practically no loss in the large bulk consuming sectors (power and fertilizer) that account for some 75 percent of gas

Table 4.3. Comparative Characteristics of Gas Companies in South Asia

Company	Customers ('000)	Sales (mmscm)
Petrobangla (Bangladesh)	1,144	10,178
Sui Northern (Pakistan)	1,900	8,262
Sui Southern (Pakistan)	1,500	6,029
Gas Authority of India (GAIL)	n.a.	22,265
Gujarat Gas Company Ltd. (India) ^a	110	336
Mahanagar Gas Ltd. (India) ^a	100	153

a. Gujarat Gas Company Ltd. and Mahanagar Gas Ltd. are both state-level companies in India.

Source: World Bank staff.

consumption, the loss in the general industry, commercial and residential markets is of the order of 25 to 30 percent. This percentage is far too high; it should be in the order of 2 to 3 percent, which would result in an overall system loss of about 1 percent. A 1 percent overall loss would be comparable to moderately good performance for this sector as seen elsewhere in the region.

Petrobangla also suffers from a high—and still rising—level of accounts receivable, mostly representing amounts receivable from public-sector customers such as the Bangladesh Power Development Board (BPDB) and BCIC.

At an operational level, how do the sale characteristics of Petrobangla compare to other gas companies in the region? Table 4.3 provides some comparative information. The relatively high power-generation demand for gas in Bangladesh—about 50 percent of total sales—helps explain the high sales relative to the number of consumers when compared to gas companies in Pakistan and India.

Policy-making, Planning, and Regulation

Ultimate responsibility for the gas sector rests with the MEMR. It should be noted that in both the previous administration and the current one, the prime minister of Bangladesh also has assumed the duties of energy minister. The new government has not formally communicated its policy objectives for the gas sector, but it has taken a number of important decisions, including:

- Two gas tariff adjustments over the past year.
- Consolidation of the high-pressure gas grid currently owned and operated by three OCs into a single, common carrier.

- Appointment of separate national working committees to study Bangladesh’s gas reserves and the potential market for gas.

The committees have recommended limited export of natural gas to generate foreign exchange and enable payments due under earlier contracts, with the understanding that exploration activities would then resume.

Table 4.4 provides a breakdown of projected gas demand by principal consuming sectors—except for compressed natural gas (CNG) for vehicle carburetion—based on the GOB’s draft sixth five-year plan, covering 2002 to 2007. The draft five-year plan also contains an estimate of future gas supply, summarized in table 4.5. Comparing the two tables, a surplus is estimated throughout the forecast period, amounting to 223 billion cubic feet in 2003 but declining to 67 billion cubic feet in 2007. This assessment may well be optimistic given that shortages are already anticipated in 2004, largely because of insufficient investments in development drilling and gas infrastructure.

The core policy-related issues of the unofficial sixth five-year plan are:

- Significant continued PSP in E&P through private sharing contracts.
- PSP in the construction of transmission pipelines, particularly in the Western zone, under joint

Table 4.4. Gas Demand Forecast, by Sector

Category	Average gas demand (mmcf for fiscal year ending June 30)					Rate of growth percent p.a
	2003	2004	2005	2006	2007	
Power	573	602	646	691	753	7.1
Fertilizer	235	255	255	290	290	5.4
Industry	238	250	262	278	300	6.0
Commercial	17	18	19	21	24	9.0
Domestic	134	142	150	159	169	6.0
Total	1,197	1,267	1,332	1,439	1,536	6.4

Source: World Bank staff.

Table 4.5. Projected Gas Supply Capacity

Production companies	Gas production capacity (mmcf for fiscal year ending June 30)				
	2003	2004	2005	2006	2007
BGFCL, SGFL, and BAPEX	1,140	1,225	1,261	1,298	1,293
Shell and UNOCAL (PSC)	280	310	310	310	310
Total	1,420	1,535	1,571	1,608	1,603

Source: World Bank staff.

venture with Gas Transmission Company Ltd. (GTCL).

- Significant new investment in distribution lines to serve CNG refueling stations with requisite pressure (see box 4.1).
- Encouragement of local and foreign private investment in all phases of the CNG vehicular fueling business.
- Preparation of the necessary framework to attract local and foreign private investment to the development of marginal or abandoned gas fields.

The Plan made no reference to private sector involvement in distribution.

The main regulating body for upstream—exploration and production is Petrobangla, acting through its Petroleum Concessions Department. The Concessions Department monitors the performance of IOCs under production sharing contracts. MEMR recently established a Hydrocarbon Unit to conduct petroleum resource assessments, formulate national depletion policy, act as technical advisor in production sharing contracts, and manage a national database of upstream petroleum information. In the future, the Hydrocarbon Unit may be entrusted with management of upstream activities including promotion, contracting, and monitoring of IOCs.

Health, safety, and environmental issues are not regulated in either the upstream or the downstream. The Inspectorate of Explosives within MEMR bears some responsibilities in this area, but they mainly pertain to hazardous liquids.

No formal provisions have been established for economic regulation in the sector. Consumer gas tariffs are controlled by the GOB but no predefined adjustment mechanism or formula is followed. Tariffs are modified on an ad hoc basis from time to time based on financial and other considerations. Producer gas tariffs to be paid to the IOCs for production-sharing

contracts by Petrobangla are established contractually.

Until June 2002 the GOB was considering passage of separate regulatory acts for the electricity and gas sectors. At that time it was decided to move to a unified energy regulator and subsequent work focused on drafting such a bill. This culminated in the passage

Box 4.1. CNG for Vehicular Use

The Petrobangla Planning Division Forecast (in the GOB's draft sixth five-year plan) did not incorporate any assumptions regarding the consumption of natural gas in the form of CNG for vehicular carburetion. A recent study assumed a discrete CNG vehicle conversion program and estimated the amount of natural gas consumption this would entail (Lucas et al. 2002).

The Lucas report assumed the following vehicle conversions per year to CNG over the forecast period:

- 40 minibuses;
- 28 large buses;
- 3,125 taxis, cars and jeeps; and
- 8,250 autorickshaws.

Even with this ambitious program, the total cumulative CNG consumption by the year 2007 was estimated at only 4 billion cubic feet, or roughly 0.7 percent of the total gas consumption forecast for that year.

Source: World Bank staff.

of a new law in March 2003 establishing a Regulatory Commission for the Energy Sector. Once the commission is functioning it will take responsibility for tariff issues in the transmission and distribution segments of the gas sector.

Issues

The GOB must resolve several issues in order to promote PSP in natural gas, safeguard the public interests, meet the targets set out in the most recent five-year plan, and improve financial performance in the sector.

Improve Petrobangla's financial condition

The financial position of Petrobangla and its OCs is precarious. About 55 percent of Petrobangla's revenue is paid to GOB as excise duties, income taxes, and compulsory dividends. This requirement deprives Petrobangla of the resources necessary to operate, maintain, and develop its activities in a rational fashion. Moreover, Petrobangla's main client, the BPDB, is also functioning at a loss and accumulating considerable arrears to Petrobangla. Last, Petrobangla is being asked to provide funding for development of projects outside its normal scope of activities, such as a coal mine.

As long as Petrobangla remains in the public sector, it will not be able to operate on a sound financial basis. This situation has adverse ramifications, both for maintaining operations and meeting investment requirements. Poor supply quality and gas shortages both are likely to ensue.

Rationalize gas pricing and taxation

As a holding company, Petrobangla presently receives gas from the IOCs consistent with the provisions of the production-sharing contracts. The contractors' share of the profit gas is sold at prices linked to fuel oil prices

while the balance is free. The gas in turn is sold by the Transmission and Distribution (T&D) companies on Petrobangla's behalf, and Petrobangla compensates the T&D companies for their efforts. The T&D companies also buy gas from the producing OC, transmit it, distribute it, and sell it at prices set by the GOB. In addition, as stated above, the GOB levies high up-front taxation of 55 percent of sale revenues. A more transparent pricing and taxation framework is necessary, under which: (i) separate taxes would be levied on production, transmission, and distribution; (ii) the T&D OCs would buy gas directly from the IOCs and continue to buy gas from the producing OC; (iii) the margins for transmission and distribution would be known; and (iv) gas utilization taxes would be levied as warranted at the retail level such that final prices would not exceed the equivalent value of competing fuels on a netback value. The proposed pricing framework would offer certainty to consumers and investors, helping ensure that Petrobangla recovers the cost of gas and attains its financial objectives.

The GOB or the proposed regulator should incorporate financial objectives in the T&D tariff, such that companies can recover gas purchase and operating costs as well as financing costs for existing assets and any proposed investments. Doing this would also wean Petrobangla from its dependence on the government to finance its investment program, an appropriate strategy given the commercial nature of the gas business. Concerns about Petrobangla's ability to raise financing from the markets might prompt some consideration of meeting further investment costs through the tariff.

Such policies would reduce pressure on the GOB budget and contribute to the financial autonomy of Petrobangla and its affiliates.

Encourage operational autonomy and clarify lines of authority

The boards of Petrobangla and its OCs are composed exclusively of civil servants for whom the commercial aspects of the gas business are not a priority. These

directors are not independent. They often lack specific knowledge of the gas industry and experience in management, engineering or finance. Last, even if the boards were properly composed, instructions are given to managers from time to time which are only subsequently ratified through formal channels.

Consider exporting gas

The issue of gas exports has raised considerable debate in Bangladesh. With gas reserves in the vicinity of 16 trillion cubic feet—equivalent to some 40 years of production at current levels— Bangladesh could favorably consider exporting gas. Many exporting countries have lower equivalent reserves than Bangladesh. Although some analysis of the expected demand growth in Bangladesh should be considered, it appears that exports are feasible. It is important to recognize in this context that risk capital for exploration will only become available once the industry has the requisite level of confidence that, should they find gas, commensurate outlets will be available. At present this is not the case.

To facilitate the development of consensus about gas exports, it will be important to prepare gas export transactions in a highly transparent manner so that the public knows that all citizens will benefit from such projects.

The GOB should also take steps to ensure it has the tools, knowledge, and expertise to negotiate gas export ventures. Technical assistance would be required to undertake feasibility studies, examine various options, and help the GOB negotiate agreements that reflect international practice in this area.

Develop an inviting institutional and regulatory framework

To enable PSP in gas transmission and distribution, it is essential to develop a framework that will give comfort to investors, particularly regarding the pricing of services rendered. This can best be ensured

through a well-staffed independent Energy Regulatory Commission (ERC) that has the requisite unequivocal powers to determine prices, and whose orders cannot be overruled at the political level. The regulator's approval will also be required for major investment projects, thus ensuring that only high priority projects are given the go-ahead. Once established, the new Energy Regulatory Commission should start to help address this issue, but without further revisions the provisions in the ERCA may not be sufficient to grant investors the necessary comfort. An initial test of the Commission's robustness will be the way in which it is established once the first commissioners are selected—a process that is currently underway.

Restructure Petrobangla

At present two Petrobangla OCs are involved in upstream activities; three OCs are involved in T&D; one is in transmission; and one (BAPEX) is in exploration. With a view to improving governance and ultimately privatizing the sector, new independent companies must be created, each focusing on a single segment of the business. These new companies must operate at arm's length from each other. Such a restructuring will be critical if the sector is to operate on a competitive basis and be privatized at some point in the future, and the change will involve taking the following steps:

- Converting the two producing OCs into fully fledged E&P companies by transferring BAPEX staff to the two OCs.
- Consolidating the transmission system into one company operating as a common carrier (as recently announced).
- Creating distribution companies.
- Dismantling BAPEX such that some of its skills are transferred to the producing OCs and some to contractors providing services to the industry.
- Maintaining direct ownership of all new companies by the GOB so that each company is fully dedicated to furthering its own interests and upon

Privatizing the natural gas sector, however, does not imply that the GOB will no longer have a role to play in the sector. Rather, the GOB will be free to focus on policy and regulatory matters to ensure that the genuine social and economic interests of Bangladesh are fully addressed—a function that cannot be addressed effectively as long as the government also owns and operates the gas system.

The main steps that must be taken to facilitate private-sector investment include:

- Passing legislation that creates an effective and independent ERC that has the requisite power to make and enforce its decisions.
- Converting producing OCs into fully fledged E&P companies.
- Consolidating the transmission system into a single, common carrier.

- Creating distinct distribution companies out of current OCs.
- Establishing a framework that encourages PSP in gas processing and CNG distribution.
- Deciding on exports to India and developing a framework for private-sector investment in such a project.

Table 4.7 summarizes specific short-, medium-, and long-term steps for a natural gas action plan.

Notes

1. This chapter does not include the most recent changes carried out by the Government of Bangladesh (GOB) to improve governance and autonomy of Petrobangla.

Table 4.7. Natural Gas Action Plan

<p>Short-term steps (1 year)</p>	<p>Expand private initiatives</p> <ul style="list-style-type: none"> • Expand direct distribution of CNG to stations in Dhaka. • Carefully study the current pricing structure to develop a fair and equitable sharing among companies, consumers and the government while reflecting alternative fuel costs. Adjustments may need to be phased in over 3 years. • Establish an independent regulatory authority to ensure equitable and fair treatment of all private companies. • Change procedures and corporate governance arrangements to allow them to function as fully commercial entities.
<p>Medium-term steps (1 to 3 years)</p>	<p>Improve efficiency through contracting and concessioning:</p> <ul style="list-style-type: none"> • Strengthen the Hydrocarbon Unit of MEMR to assume the functions of promoting, supervising and administering private sharing contracts. • Examine the logistics and legal impediments to export gas to India with a view to developing this market over the next 5 years.
<p>Long-term steps (3 or more years)</p>	<p>Full concessioning and private investment:</p> <ul style="list-style-type: none"> • Consider privatization of all or parts of Petrobangla through concessions or the sale of specific assets to outside investors. • Open the exploration, gas production, distribution, and sales market to both domestic and international companies on a competitive basis with existing companies.

Source: World Bank staff.

2. Tullow Oil PLC acts as operator, Block 9 (with Chevron, Texaco, and BAPEX) and Okland Oil acts as operator, Blocks 17 and 18 (with Tullow and Rexwood).

handpumps are now widespread throughout the country, with an average of one handpump tube well serving 105 people.

However, the presence of arsenic in groundwater from shallow aquifers threatens to undo the remarkable success of the handpump tube wells. An estimated 30 million to 40 million people in Bangladesh are drinking water with arsenic levels surpassing 50 micrograms per liter. This amount exceeds the standard for safe cooking or drinking water but is still useable for cleaning and bathing. The arsenic problem effectively reduces the percentage of population with access to safe potable water from 97 percent to less than 75 percent.

Sanitation

Piped sewerage is available to less than 50 percent of the population in Dhaka. Chittagong and the pourashavas have no piped wastewater systems. Use of sanitary latrines in the rural areas is about 40 percent, which is considered high in South Asia.

Issues Affecting Private Investment

Currently urban water supply and sanitation services benefit from no significant on-going or planned private-sector investment. All investment is being undertaken by the public sector. The government's Five-Year Plan for 1997–2002 included an annual expenditure of approximately US\$92 million per year for development in the sector. Complete details of actual expenditure are not yet available, but it appears to have exceeded the planned target by about 25 percent, at an average US\$117 million per year.

Table 5.3 gives an indication of the increasing investments and subsidies the government has committed to water and sanitation services.

Future investment needs are even greater. For the present unserved population in Dhaka alone investments will amount to US\$336 million (US\$120 x 2,800,000), while for other urban areas an additional US\$1.92 billion (US\$120 x 16,000,000) will be required. In order to keep pace with urban population growth of about 5.5 percent per year, additional annual investment of US\$160 million (US\$120 x 5.5 x 24,000,000) will be required. The cost of providing piped sewerage will be approximately double that for piped water supply. Investment needs for the rural sector over the medium to long term of 5 to 10 years will exceed US\$500 million, depending on the pace of investment needed to deal with the arsenic crisis. In total, over the next 5 to 10 years, the sector will need about US\$2.5 billion to provide water-supply access alone and nearly US\$4 billion if drainage and sewerage are added.

Table 5.3. Annual Capital Investments in Water Supply and Sanitation

Years	Annual investments (1997 prices)		Service levels	
	BDT (millions)	US\$ (millions)	Water supply	Sanitation
	1973–78	24	0.5	25%
1978–80	54	1.1	—	—
1980–85	104	2.1	46%	6%
1985–90	140	2.8	—	—
1990–95	1,885	38.0	79%	35%
1995–97 (2 years)	2,851	57.0	—	—
1997–2002 (plan period)	4,609	92.0	—	—

Source: Infrastructure Investment Facilitation Center. *Water Supply and Sanitation Sector Paper*.

Low-cost recovery and high operational inefficiencies

The government does not have the resources to fill unmet demand and future needs in the country's rapidly sprawling urban centers. To finance investments, the government's policy states that water should be supplied "at cost," supposedly meaning full cost recovery. At present the policy is only an indication of the direction the government would like to take, as it is unlikely that the government will be able to attain this objective in the near future.

DWASA has increased tariffs since 1997 (except in 2001), but the size of each increase has typically been 5 percent or less. In mid-2002 tariffs charged to residential users were still BDT4.5 per cubic meter versus an approximate marginal cost of BDT11 per cubic meter.

Box 5.1. Will Raising Water Tariffs in Bangladesh Hurt the Country's Poor People?

It is often argued that raising water tariffs hurts the poor. This argument often has little merit in countries such as Bangladesh, however, where urban service coverage is low and largely confined to the middle and upper classes and service in rural areas and slums is privately provided. Low tariffs create a need for operating subsidies from the government to compensate for utilities' financial losses and hinder investments in new capacity expansion. Water consumption ends up subsidized for the middle and upper classes at the direct expense of service coverage expansion for the poor.

Poor people's lack of access to public services means that they wind up paying much higher per-unit prices to private vendors. Slum dwellers in Dhaka were paying prices as high as BDT1 per 20-liter bucket or BDT50 per cubic meter—roughly 10 times the rate charged by DWASA to residential consumers. Following DSK interventions, water costs have fallen to BDT37 per cubic meter but remain at seven times DWASA rates.

Source: World Bank staff.

By contrast, commercial users were paying tariffs as high as BDT15 per cubic meter. Tariffs between commercial and residential consumers will have to be realigned and the latter will have to increase significantly. The data in table 5.2 underscores the disproportionately low levels prevailing in Dhaka as compared to major cities in neighboring countries.

Just as importantly, water suppliers will have to radically improve their operations, maintenance, and financial management systems. Introducing a well-run financial and billing service will be a priority, because consumers should be prepared to cover costs but should not be expected to pay for suppliers' high levels of operational inefficiency. For example, 42 percent of the water treated by DWASA does not reach its customers or is received through illegal connections.

Policy-making, Planning, and Regulation

Overall policy development, planning, and investment identification is the responsibility of the LGD under the Ministry of Local Government, Rural Development and Cooperatives (MLGRDC). MLGRDC coordinates with the various executive agencies in the sector as summarized in table 5.1. Presently no distinct bodies are tasked with regulating the sector.

The National Policy for Safe Water Supply and Sanitation in 1998 set ambitious physical infrastructure targets for the sector, encouraged a major shift in the role of the public sector agencies from providers to facilitators, and fostered private involvement in urban water supply through build-operate-transfer (BOT), and other arrangements.

The government's ambitious long-term physical infrastructure targets are as follows:

- **Rural:** Ensure sufficient coverage for 50 users per tube well, one latrine per household, and one pond per village.

- **Urban:** Ensure access to safe drinking water in each household, easy access to a sanitary latrine, and access to liquid and solid waste disposal.

It is important to compare the government's target for rural coverage with the current average level of service of about 2.5 households per private or shared handpump. The larger number of households in the government's new criteria would mean potentially long collection times per household that might translate into reduced use of safe water.

To date no guidelines have been issued for the implementation of the 1998 National Policy. Both the regulatory and service delivery functions remain with the same departments and agencies. No serious attempts have been made to unbundle these functions, nor has the government demonstrated serious homegrown interest in establishing an appropriate regulatory framework to encourage private-sector participation. Efforts to implement existing regulatory powers to improve the delivery of water supply, tariff setting, and recovery of user charges also are weak. The highly unionized labor force continues to hold back reform.

The WASA Act (1996) was well-intentioned and sought greater commercialization within DWASA, but efforts to carry out its intent have been disappointing. CWASA effectively continues to operate under the WASA ordinance of 1983. The 1996 act contained the following provisions:

- Greater autonomy for DWASA through increased financial, operational, and administrative powers.
- Establishment of a board with majority of the members from the private sector.
- Recruitment of a professional chief executive.
- Introduction of management accountability by requiring DWASA to meet operational and performance targets.

Further delineation of the provisions of the act, especially regarding the role of DWASA's board on

policy and corporate planning matters, was required through appropriate rules and regulations but was delayed because of lack of coordination by the parent ministry. Although the act provided for greater management autonomy from the government, in practice all parties—the government, DWASA board, and DWASA management—have sought increased authority. There are indications, for example, that the board is not respecting the division between its responsibility for interpreting sector policy and management's responsibility for day-to-day operation.

Recommendations

Having potable water supply and sanitation is vital to Bangladesh in both social and economic terms. The public sector does not have the resources necessary to maintain the existing network, improve service quality, and satisfy unmet demands. Operational and investment costs will have to be recovered from consumers who make use of the service through cost-covering charges. Additional support to the highly inefficient public bodies will not help the sector improve its performance, while scarce public resources will likely be misused. Accessing costly supplier credits as funding from multilateral institutions dries up in the distorted policy environment will only increase the burden of external debt payments while bringing limited social and economic returns.

Against these challenges, a multi-track reform approach is necessary. Reforms must focus, on the one hand on adjusting cost-recovery charges and exerting greater financial and commercial discipline on public bodies, and on the other hand, on creating a more favorable legal and regulatory environment for inviting greater private-sector and NGO participation in the medium and long term.

Align user fees to cost-recovery goals

The present situation of high operational losses and residential tariffs set well below full cost leaves the

DWASA, CWASA, and other public operators in an extremely weak financial position. Funding is insufficient to maintain the current distribution system, let alone allow for much-needed investments in new capacity. Public operators must rely on the strained government budget, while commercial users are forced to pay fees above marginal costs to subsidize residential consumers.

Reforming user fees for residential consumers, raises particularly sensitive issues. It has been argued that cost-recovery user fees would deprive the poor of a basic social good. Present policies have resulted in large subsidies to public operators that primarily serve the middle and upper classes, however, leaving the slums and fringe urban areas where poor people live unserved. As a result, poor people pay much higher prices to private vendors or suffer from health problems.

The government needs to develop a medium-term plan to realign user fees for commercial and residential users and bring the latter closer to marginal costs. Stronger measures should be undertaken to enhance the operational performance of public providers and rein in system losses as consumers cannot be taxed for the current high level of inefficiency.

At the same time, it is critical to improve the commercial performance of the urban water utilities. As a first step, collection of tariffs should increase as a precondition to improving the financial sustainability of the operations. Tariff increases will be useless without commensurate increases in collections.

To overcome strong political opposition to tariff increases for residential consumers, the government may want to consider a minimal, essential consumption level that would be subject to a lower tariff. Such a life-line approach would require full metering to each household to be effective. Alternative consumption subsidies for the poor can be explored (see text box). Regardless of the approach used, the subsidies should be transparent, well-targeted, and easy to carry out and monitor.

More rational user fees will be a prerequisite for attracting large-scale PSP to the urban areas.

Introduce management performance contracts

DWASA, CWASA and other public operators suffer from a lack of commercial orientation and a surfeit of government influence. In conjunction with a new regime for user fees, corporatization and management contracts may instill greater financial discipline and improve service delivery. The recent disappointing attempt to enhance DWASA's commercial performance indicates that such arrangements will not work unless:

- Government influence is reduced.
- Management of service providers is both empowered and held accountable.
- Clear performance criteria are established, such as water quality, loss reduction, and target collection rates.

Business plans and actual performance outcomes should be regularly published. Performance data should be based on the assessment of independent auditors selected in a transparent manner. Bonus fees, directly linked to improvements in technical and

Box 5.2. Setting a Life-line

Some countries, such as Colombia, have used residential areas as a simple proxy to target utility subsidies; other countries, like Chile, have used their more sophisticated social welfare systems to apply means-tested mechanisms. Countries with high poverty rates and inadequate utility coverage have focused on subsidizing coverage expansion rather than consumption, a model that might be more appropriate to Bangladesh's social circumstances.

Source: World Bank staff.

financial performance, could be paid to the private operators of the water utilities. Management contract should also include clear incentives for defining optimal investment plans designed to extend and improve services to the population with a cost-effective approach that reduces the financial resources needed to provide safe services to the urban population. (Chapter 3 provides a more extensive discussion of various measures to help improve governance of public enterprises and mitigate political influence.)

DWASA and CWASA are complex agencies. New management contracts should encourage the participation of international operators that have expertise in administering such large-scale agencies. Furthermore, the local private sector will have the opportunity to learn state-of-the-art technical and commercial approaches that can be later replicated in other urban areas.

Under some circumstances, performance-based management contracts may be extended to design-build-operate (DBO) contracts. Where substantial expansion and investment needs coincide, as they do in many medium-size cities, DBO contracts may bring together the necessary construction and utility operations expertise.

Infrastructure financing may have to continue to come from the government or from concessional sources until the regulatory framework is in place to support more advanced private-sector contracts. The private sector will not be interested even in limited performance-based management contracts if the government fails to show its commitment to a serious turnaround in the sector. This commitment should start with the approval of a new policy for user charges and other measures establishing penalties for illegal connections.

Develop a clear PSP Policy within a sound regulatory framework

Corporatization and performance management contracts are useful short- and medium-term

instruments. They will improve operational efficiency, but they will not, by themselves, bring much-needed financial resources to the sector—and the risk of renewed political influence will remain.

Attracting large-scale private financing and management expertise will require alternative arrangements like BOT contracts, concessions, and potentially even full divestiture. These types of long-term contracts demand a clear legal and regulatory framework that defines the roles, responsibilities, and risks of each party. The regulatory structure will need to allow for adjustments to user fees that are fair to both investors and customers. Private investors will need to rest assured not only that fees will cover the long-run costs of an efficiently run firm but also that they will be adjusted as costs rise because of external conditions. Accomplishing all this will entail the establishment of an independent supervisory agency that will help insulate user fees from political factors. Alternatively, supervisory responsibilities could be assigned to an agency in another sector, such as the projected supervisory agency for the power sector.

Address critical water supply and sanitation issues facing rural areas

The arsenic contamination problem is threatening to undo the great success of the last couple of decades—extending access to safe drinking water to 97 percent of the rural population. Alternative delivery mechanisms to the shallow tube wells must be developed. One possible alternative is small-scale piped-water networks that tap into sources of safe water (or, when necessary, make use of centrally organized water treatment facilities).

A village piped-water supply network would be more complicated to operate and maintain. It would need to be economically designed to achieve low operational costs at the level of service that each household is willing and able to pay, and it would need to be run in a financially viable manner. All these conditions point to the private sector as a potential partner in the solution of the arsenic crisis and the

expansion of piped-water services to rural towns and villages. PSP can bring speed and efficiency to the shift to piped-water supply and potentially bring additional financing. It would be in the interest of private-sector entities to ensure sustainability of the systems and provide adequate levels of service to their customers.

In an estimated 50,000 villages, more than 40 percent of the handpump wells are contaminated with arsenic. Initial estimates indicate that the resources needed to replace these wells with safe piped water can be as high as US\$2.45 billion. The effort will require multiple sources of financing because the fiscal burden associated with the necessary high levels of grant financing will be difficult for the government to absorb, particularly in a short period of time. A transparent and targeted subsidy policy is needed to ensure that the poorer members of rural communities are served by the piped systems (at a service level with an affordable operational and maintenance cost). At the same time, the effort must support the mobilization of funds from other sources, such as private capital or loans from the financial sector.

A financial approach that brings together different sources of financing, including grants, concessional loans, private equity, and commercial loans, can lead to tariffs that are affordable to rural households of different income levels.

As new technologies are considered, it will be important to ensure that the new delivery systems will be responsive to rural consumers. Bangladesh's experience with rural cooperatives managed by the Rural Electricity Board (REB) and with major NGO activities in areas as diverse as educational services and microcredit, suggests that the country has capable local organizations. The piped-water systems introduced in the Bogra area by the Rural Development Academy (RDA) indicate the potential of such systems. The valuable experience of NGOs currently operating piped systems can be used in

applying this approach to supply safe drinking water to more areas of the country.

By far most of the people in rural areas continue to use unsanitary latrines—if they have them at all. At 1 percent growth per year since 1993, coverage expansion will still leave 45 percent of the rural population without adequate sanitation in 2015. Accelerating coverage growth is the most critical policy issue for sanitation. If the growth rate is doubled to 2 percent, 70 percent of households could be reached by 2015.

Many NGOs have experienced remarkable success in promoting sanitation. Several villages have even attained total sanitation coverage without any external subsidy. The magnitude of the national challenge may seem to dwarf these projects, but the key lesson from these small-scale successes is that progress is possible. With proper adaptation of the lessons from the small pilots, it will be possible to reach or even surpass 70 percent coverage by 2015.

Notes

1. Secondary, medium, and small towns can be categorized as follows: 4 city corporations; 58 district-level municipal towns; 199 *Upazila*-level municipal towns, and 261 *Upazila* centers.

Table 6.1. Division of Transportation Sector Modal Shares

Year	Passengers				Freight			
	Billion passenger-km	Distribution			Billion ton-km	Distribution		
		Roads	Rails	Inland waterways		Roads	Rails	Inland waterways
1985	35	65%	20%	15%	4.8	48%	17%	35%
1989	57	68%	17%	15%	6.3	59%	11%	30%
1993	66	75%	12%	13%	9.0	61%	7%	32%
1998	72	73%	13%	14%	10.0	63%	7%	30%

Source: Planning Commission, Bangladesh Integrated Transport System Study (June 1998).

fund maintenance of existing facilities as well as fund sufficient capacity expansion to meet rising demand.

Private sector transportation services have long been available, particularly using the roads and waterways. However, until 1999 no private investment had occurred in transportation infrastructure. Over the past 3 years this situation has changed. The government of Bangladesh (GOB) has begun to appreciate the viability of private investment in certain circumstances. For example, the Bangladesh Inland Water Transport Authority (BIWTA) has invited private investors to develop a container terminal in Narayanganj. Operation and maintenance of the Jamuna River Bridge is in the hands of a private consortium, and Bangladesh Railway (BR) has encouraged private investment in passenger train operations. These success stories have had a common, key feature. In each case, private-sector interests and resources were fitted with a project that has a revenue stream and a cost base that allows profitable operations.

In the road mode, operation and maintenance of the Jamuna River Bridge is in the hands of a private consortium. Bangladesh Railway has encouraged private investment in passenger train operations.

The key element of these success stories is fitting the private sector with a project that has a revenue stream and a cost base that allows profitable operations.

The current drafting of a land transport policy will aim to assist decision makers in (i) determining appropriate land transport expenditure levels; (ii) providing legal and regulatory requirements, and a framework for institutional development; and (iii) clearly identifying private and public roles in land transport.

Issues Affecting Private Investment

Attracting private-sector investment in transportation projects can be complicated by issues relating to:

- institutional inertia;
- regulation;
- regional integration; and
- trans-Asia linkage.

Institutional Inertia

The strong hierarchical structure of transportation departments leads to senior management instability. The senior bureaucrat often holds his or her position for less than a year. Given their brief tenure, even reform-minded senior managers are unlikely to achieve significant change during their terms at the top. Lower-level managers can delay decisions until the reformer retires and is replaced by a less reform-

focused administrator. Strongly vested interests within government departments mute initiatives and entangle proposed changes in paperwork.

Significant opportunities for private-sector participation (PSP) are present in all transportation modes, but particularly in seaports, inland water terminals, airports, and railway operations. Opportunities also present themselves for specific investments in limited-access roads and toll bridges. For the country to benefit from these opportunities, strong central government direction is needed.

Regulation

The degree of need for regulation in the transportation sector varies from subsector to subsector. All transportation modes continue to need regulation to ensure public safety, and it is probably best that this need continue to be addressed by the appropriate line ministries. With regard to commercial regulation, however—particularly when the private sector engages in long-term concessioning—an alternative approach is necessary. In this setting, the issue of a credible, independent regulator emerges. Such a regulator must be free of undue political interference or potential conflicts of interest, particularly if the government chooses to retain some operations in competition with the private sector. The latter issue may develop, for example, in the port sector or with the Civil Aviation Authority.

Designing a transparent and effective regulatory framework for long-term transportation concessions will be a challenging task. The long-term nature of the contracts, together with ambiguous distinctions between public and private risk and changing macroeconomic and political environments make transportation concessions especially difficult.

Transportation concessions worldwide have experienced problems with traffic projections, in part because of unanticipated macroeconomic slowdowns. Such complications often trigger regulatory disputes, particularly if concessionaires' financial hardships

become a motivation to renegotiate or otherwise modify the terms of their contracts.

Fundamental issues, such as the appropriate split of commercial risk across the public and private sector, are typically reopened when unexpected economic downturns lead to the renegotiation of concession agreements. Beyond macroeconomic risks, any concession program faces some risk of policy reversion from the changing political environment. In this atmosphere, private-sector investment may seem too risky. Designing a regulatory system that can withstand changing circumstances must be a part of the GOB's reform agenda to promote PSP in the transportation sector.

Regional Integration

The issue of regional integration in transportation has been widely debated. At present, Bangladesh prohibits the movement of foreign trucks and rail wagons on Bangladeshi territory. All foreign cargo is transshipped, at designated border stations, to Bangladeshi trucks or domestic rail wagons for transportation onward. Despite continued dialogue among concerned countries, very little progress has been made toward a mutually beneficial solution.

Little capital investment is needed to secure transit traffic, which makes it an attractive option to pursue for private investment. Limitations on transit traffic development include capacity constraints on the BR, the need to transship broad-gauge traffic to meter gauge in order to reach the northeast, and limited highway capacity. Road traffic would need to be bonded; thus, only sealed vehicles or containers would be viable.

Recent technical assistance funding from the Asian Development Bank (ADB) to assist with setting up an integrated regional rail system has been suspended pending GOB agreement on corporatization of Bangladesh Railways.

The seven states in northeast India are linked to the rest of India by a narrow land corridor. Trade from these "seven sisters" represents potential traffic for the

port of Chittagong. The distance from Agartala in Assam to Calcutta, the nearest Indian seaport, is more than 1,400 kilometers (km). By comparison, the distance between Agartala and Chittagong is less than 400 km. Limited traffic does move by water between Calcutta, Narayanganj, and Karimganj, and by a combination of barge and truck routes linking Calcutta, Narayanganj, Sherpur, and Karimganj.

Movement of Nepalese goods through Bangladesh by road or rail is governed by a bilateral transit agreement between the two countries.¹ Bangladesh and Nepal are separated by approximately 76 km of Indian territory.² The current transit agreement between Nepal and India provides for Nepalese trucks to move on Indian roads from a point in eastern Nepal to the Banglabanda border station in Bangladesh. There the goods are inspected by the Bangladesh Customs authorities and transshipped to Bangladesh-registered trucks for movement to Mongla port or, occasionally, to Chittagong port. Transshipment of goods to and from Bangladesh trucks creates significant delays and inefficiencies that could be easily overcome, particularly as Nepalese traffic represents a potential market that is desperately needed to revitalize Mongla port.

Trans-Asian railway and Asian highway initiatives

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) is actively involved in promoting the expansion and development of the Asian Highway and Trans-Asian Railway as a part of an integrated sea, land, and air transportation system to facilitate regional and international trade and tourism. The proposed railway and highway networks will cross Bangladesh en route to destinations in West Asia, Southeast Asia, and North Asia.

The southern corridor of the Trans-Asian Railway is one of three Asia-Europe rail land bridges studied by UNESCAP as part of the Asian Land Transport Infrastructure Development (ALTID) project, which was endorsed by the 48th UNESCAP Commission Session in Beijing in April 1992. This southern corridor extends from Turkey through Iran to include Pakistan, India, Bangladesh, China, Myanmar, and Thailand. Despite considerable interest from India and Bangladesh, the ALTID initiative is affected by the ongoing bilateral transit concerns plaguing the neighbors.

Chapters 7, 8, 9, and 10 of this country framework report deal with each of Bangladesh's transportation sectors: Roads, Air Transportation, Railways, Ports, and Inland Waterways. Each chapter looks at the conditions and problems that are specific to the mode of transport being discussed and identifies opportunities for increased private-sector participation and government action.

Notes

1. Transit Agreement between the Government of the People's Republic of Bangladesh and His Majesty's Government of Nepal, signed April 2, 1976 and renewed automatically every 5 years unless otherwise agreed.

2. This figure is cited by the Nepalese Deputy Chief of Mission in Dhaka. Bangladeshi sources report that the transit distance through India is only 56 kilometers, including 3 kilometers from the Indian border post of Phulbari to Banglabanda in Bangladesh.

Roads

Policy Objectives: Expand capacity and quality of the national and state highways network.

Private-sector Participation: Minimal private-sector participation with involvement to date only in some toll collection; build-operate-transfer projects and operate-and-maintain concessions under consideration.

Key Issues: Structuring of privately financed deals and operations and maintenance must be seriously addressed.

In Bangladesh, as in most developing countries, the national road and highway network is the transportation mode used most intensively by passengers and for movement of goods.

The unique topographic and demographic conditions in Bangladesh are instrumental in the continuous growth in the road transport subsector, particularly in the rural areas. Much of the countryside is a flat flood plain, and rural population density is high. As a result, an unusually large number of small rural roads have developed to connect remote villages with arterial roads and the national highway system.

Road transportation has flourished, recording an average annual growth rate of 6.2 percent for passengers and 6.3 percent for freight from 1985 to 1997. Within the transportation sector road transportation's modal share also increased, from 65 percent to 73 percent and 48 percent to 63 percent respectively, mainly at the expense of the railways.

Development of the sector is inhibited by several impediments. One obstacle concerns the severe lack of quality road-building materials in Bangladesh, which has resulted in poor quality road construction and maintenance. Recurrent flooding, high intensity rainfall, and a high incidence of tropical cyclones further challenge the construction and maintenance of a reliable road system.

The roads subsector also remains subject to outdated regulations, primarily through the Toll Act of 1851 and the Highway Act of 1925. Legislative initiatives to improve this situation are underway, but none has yet been approved. These initiatives include the New Highway Act (now pending approval and publication); a set of highway rules (gazetted but not yet fully put in place); a Motor Vehicle Ordinance (drafted); and a National Land Transport Policy Paper (being drafted).

sector capacity within Bangladesh to eventually undertake more aspects of road development and operation.

Issues

Although significant obstacles hinder the construction, operation, and maintenance of roads in Bangladesh, significant and measurable success has occurred in recent years in upgrading and rehabilitating major roads through the national road network. The major issues facing the roads sector are relatively few, but they are significant in magnitude.

Funding needs for road maintenance

The government continually under-funds routine and periodic maintenance of the road network. RHD estimates that its road network alone has a maintenance backlog of US\$480 million (Ministry of Communications, 2001). Finding available resources and the institutional commitment to adequately maintain roads will be a major challenge.

During the past decade, the maintenance backlog has steadily decreased because of a number of donor-supported maintenance projects. Similar donor-supported projects would have to continue for another decade, however, before the backlog could be reduced to manageable proportions. No assurance exists that such assistance will continue. In recent years RHD has greatly increased its annual expenditure on road development, at an average rate of 15 to 20 percent a year. RHD has significantly increased the capacity of its road network, but funds devoted to maintenance have not kept pace. During the same period, maintenance funds increased only at a rate of 3 to 4 percent a year.

Establishing a road fund is frequently suggested as an appropriate mechanism to provide funding for sustainable road maintenance. The theory behind a road fund is to bring the roads sector into the marketplace and operate roads on a fee-for-service basis. The most appropriate mechanism is by incorporating a direct charge through duties, tolls, or

Box 7.1. Pitfalls of Toll Road Experience in Thailand

- Inflated traffic projections
- Limited legal or regulatory framework
- Unclear rate-adjustment mechanism
- No standard agreements or regulations
- Overlapping responsibilities among agencies

Outcome: Multiple projects suspended, court cases pending, low rates of return, fractured and incomplete network.

Source: World Bank staff.

taxes on fuel prices. The funds collected from fuel levies can be deposited into a commercially managed road fund dedicated solely to road maintenance. Currently direct charges collected from road users go to a general revenue fund in the GOB. In Bangladesh estimates are that less than 40 percent of money collected from road users is spent on the maintenance of roads. Equally as important, a substantial amount of revenue that should be collected is not.

On the negative side, dedicated road funds limit the government's range of policy options: money set aside for the road system can be used only on the road system. China has examined creation of a road fund, but reluctance to raise fuel taxes significantly has delayed any action. Likewise, Indonesia has studied the option of a road fund for more than 10 years, but as yet has not acted on the recommendations.

Road equipment pools

Both RHD and LGED make government road equipment available for private hire at rental costs averaging 50 percent below commercial rates. For contractors to pre-qualify to tender for contracts with RHD and LGED, it is mandatory that they have sufficient equipment available from their own resources to undertake a particular project. Private contractors often turn to RHD or LGED for equipment rentals, at the subsidized rental rates, covering 10 to 15 percent of the required fleet. Contractors that are able to rent the equipment are then shortlisted, creating an

uneven playing field among private-sector contractors who must compete for public assets to win a tender.

Training needs and human resource development issues

Serious deficiencies remain apparent in the skills mix, adequacy of staffing, and general motivation of personnel in both road organizations. The predominant skills available among staff in RHD and LGED are in traditional highway engineering disciplines like soil mechanics, hydrology and drainage, bridge and structural design, mechanical equipment repair, and rehabilitation. Nonetheless given the sheer size and complexity of the road program managed by the two organizations, even in these areas the available pool of skilled staff is insufficient.

More worrisome is the severe lack of available staff with skills in project, financial, and resource management; in project planning and budgeting; in environmental engineering with applications to roads; and in procurement and contract management. In-house trainers also are needed to handle necessary training in both organizations.

Need for creative financing options

Contracting out routine and periodic highway and road maintenance to the private sector is a viable strategy. Work could be based on performance specifications, rather than payment per line item of work accomplished. Such a program would probably have to begin in a small way, on a trial basis, to ensure that the performance concept is understood and is capable of being used within the Bangladesh system.

Establishing tolling of high-volume roads can only be carried out within the context of a controlled-access motorway or expressway or at natural barriers like large bridge crossings or tunnels. It will be many years before significant high-volume controlled-access roads will be able to function in Bangladesh.

Recommendations

Although the GOB has advocated PSP in the roads sector, little concrete effort has been made to prepare an environment to attract private-sector interest. Several actions must be taken to reposition the roads sector to attract PSP and investment.

Create an environment conducive to PSP

The new Highway Act will provide a basis for opening up the roads sector to private-sector participation. Similarly, the new Land Transport Policy constitutes a step in the right direction by offering policy on transport expenditure levels, regulatory and institutional requirements, and guidance as to the roles of private- and public-sector entities. The GOB needs to pass the Highway Act, finalize the Land Transport Policy, create model agreements and documents, and develop a fully transparent legal and regulatory framework for PSP.

To this end a cabinet-level document that coherently sets out PSP policy in the roads sector is required. This policy should:

- Link the road-transport issues of revenue generation and investment with the government's overriding strategy to promote economic development and reduce poverty.
- Define the role of each governmental agency, particularly between competing sectors and between agencies within the same sector.
- Establish and define those areas and conditions where private investment is encouraged and set out guidelines to be followed.

Identify PSP options

The GOB must examine PDP alternatives seriously, including the introduction of O&M concessions and options such as the various forms of BOT and tolling

in high-volume roads as leverage for new development. The review of O&M concessions now under consideration should be accelerated and approved.

Divest equipment

To pre-qualify to tender for contracts with RHD and LGED, contractors must demonstrate that they have sufficient equipment available from their own resources to undertake a particular project. Contractors who do not have the equipment should be allowed to rent from the government at market rates. Because the government should ultimately ease itself out of the equipment market, it should make no new purchases. The same is true of government-owned ferries. Ultimately, complete divestiture to the private sector should be pursued.

Establish a road fund

To rectify the maintenance backlog RHD needs to refocus its financial and human resources to the task of road maintenance. LGED faces the same maintenance backlog as RHD and should concentrate its resources to the task of road maintenance in order to further encourage rural development.

Funds are urgently required for on-going maintenance of the country's more than 220,000 km of roads. The GOB should study options for financing the maintenance and management of all road assets in Bangladesh and investigate the possibility of establishing a road fund based on user charges. The system of charges would need to be applicable to conditions in Bangladesh. The fund should be managed by an autonomous corporation, with a board representing both the private and public sector, under

the authority of an independent chairman. The independence of the fund is critical to avoid the government raiding the fund. Using modern road maintenance management systems to allocate funds, the corporation would then seek out PSPs to carry out much of the required road maintenance activities. Consultants have been hired under the IDC-3 project to design such a road fund.

Strengthen technical and managerial capability

To meet the most important human resource needs of RHD and LGED, training in engineering disciplines need not be emphasized. Rather, training should be concentrated in planning, programming, budget control, environmental aspects of highway operations, and so forth.

Table 7.3 outlines the primary short-, medium-, and long-term steps involved in this action plan.

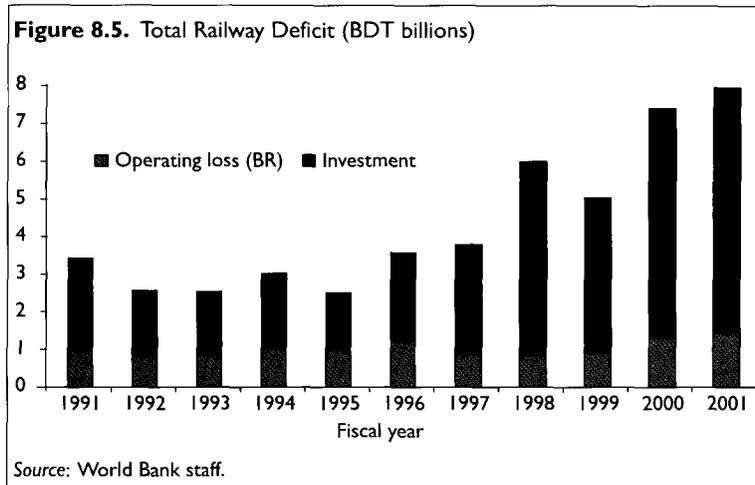
Table 7.3. Action Plan

Short-term steps	<ul style="list-style-type: none"> • Approve and enact the new Highway Act. • Actively participate in the formulation of a new Land Transport policy in line with the draft document prepared by IDC-3. • Approve plans to establish operations and maintenance concessions for: Bhairab Bridge (DFID); Bonpara-Hatkamrul (IBRD); and the Rupsha Bridge and Khulna Bypass (JICA). • Raise equipment rental rates to commercial levels and stop procuring new equipment. • Approve privatization of RHD ferry operations and establish a plan and implementation time line for private-sector takeover of operations and maintenance of ALL RHD ferry operations.
Medium-term steps	<ul style="list-style-type: none"> • Divest equipment pools and workshops of RHD and LGED to the private sector. • Establish a strategic planning framework and long-term plan for the sector. • Prepare model concession agreements for BOT, O&M, and so forth. • Provide a well-drafted and transparent legal and regulatory framework that includes: <ul style="list-style-type: none"> (i) Formalized, competitive, and transparent bidding procedures (ii) Adequate dispute-resolution procedures.
Long-term steps	<ul style="list-style-type: none"> • Encourage active and vibrant private-sector participation in building, maintaining, and operating highways.

Source: World Bank staff.

deficit, which factors in operating subsidies plus investments, is shown in figure 8.5.

Since independence the railway has been a high consumer of government resources, out of proportion with its share of the transport market. Over the past 5 years alone, the accumulated government investment in the railway including operating losses plus capital expenditure has been US\$500 million (about BDT30 billion).



Policy-making, Planning and Regulation

The Ministry of Communications is responsible for railway transport policy. Legally BR is directed to act commercially and is free to set freight tariffs, to sign private freight contracts, and to exercise full authority to add and cancel trains and services. In practice, however, BR does not exercise any significant commercial power. It is reluctant to direct more resources to profitable freight services and even more reluctant to press for required increases in passenger tariffs for fear of public and political backlash.

Issues

The highest priority for BR is to demonstrate that it has a contributing role to play in the future transportation system of Bangladesh and that it can hold its market share.

Competition

BR has not yet faced competition from modern high-capacity trucks, but this is only a matter of time. The railway does face competition from modern buses, however, and it is not doing well, especially in upper-class passenger services. BR must increase its tariffs to compensatory levels or continue to rely on

government subsidies, but to hold even its present market share, it must also achieve dramatic increases in efficiency. Accomplishing this will inevitably demand improved service and offer new opportunities for private-sector involvement.

Regional integration

The opening of the Jamuna Bridge and the extension of the broad gauge system to Dhaka allows rail traffic to move efficiently between Dhaka and points in India. Four border points are open for rail traffic with India: Darsana, Rohanpur, and Radhikapur in the west and Shabazpur in the northeast near Assam. The northern links to Nepal and Bhutan are not open. Improved integration and the development of transit traffic is limited by institutional and policy barriers.

Restructuring of Bangladesh Railways

BR has embarked upon a comprehensive Railway Recovery Program supported by the Asian Development Bank (ADB) to increase efficiency and reduce cost. The reform program includes creation of a new corporate entity for BR. This initiative is meeting strong resistance from railway staff and management, primarily because of a long-standing preference to maintain public-service staff conditions. However, the Ministry has now produced a draft Railway Act. The act is

being reviewed by the ADB as a possible precursor to reinstating the suspended technical assistance and pending loan agreements. The draft act is seen as a positive indication of the Ministry's renewed commitment to structural change in BR.

Labor redundancy

The overwhelming negative consequence of radical restructuring is labor reduction. BR was relatively successful in reducing its staff to the current level of 37,000 through a golden handshake incentive plan. However further reductions to the more reasonable future target of around 20,000 workers will impose a heavy burden on many families and communities. Other successful railway retrenchment programs, such as those in South Africa and Brazil, have relied on training, coordination with other labor support agencies, commitment to enterprise development, and community development support (see box 8.1). These or similar approaches will certainly be needed in Bangladesh if BR is to achieve its goal.

Options for private-sector participation

Private-sector participation (PSP) opportunities in BR include potential unitary concessioning of the whole of BR; selected concessioning of individual services or lines; increased contracting out of services; and joint venture operations. The successful fiberoptic telecommunications joint venture can be used as a guide to developing future private-public partnerships with BR.

Radical change to BR has been resisted for many years, however, and complex options will not be

successful. In the short to medium term, potential options for private involvement in BR activity must be simple and pragmatic. Possible options include:

- Construction of new lines and provision of equipment in the Joydebpur–Narayanganj (Dhaka) corridor.
- Commercialization of BR's non-core real estate assets.
- Concessioning of branch lines in the northwest.
- Renewal of 18 Air-Conditioned (AC) coaches and five power cars under a rehabilitate, operate, and transfer (ROT) contract.
- BOT procurement and operation of 30 new AC passenger coaches to provide two pairs of AC trains.

Box 8.1. Brazil: Federal Railways Concessioning and Staff Retrenchment Program

Before concessioning the Brazil Federal Railways (RFFSA) to the private sector in 1997–98, the Government of Brazil adopted an elaborate staff rationalization program to streamline operations and minimize the social impact of the change. After a detailed assessment, the Brazilian government set a goal of reducing RFFSA employment from about 42,000 persons to 20,000 persons. Staff reductions would be achieved through three programs: incentives for early retirement, incentives for voluntary separation among employees ineligible for early retirement, and—only if necessary—involuntary separation. As many as 11,771 workers participated in the early retirement program, compared with the government's initial projection of 5,000 workers.

The voluntary separation program, which targeted workers ineligible for early retirement, offered payments ranging from 4 months to 12 months of salary, depending on tenure, together with training and outplacement services. RFFSA ultimately had to lay off 385 workers involuntarily to meet its staff reduction targets, but those workers also received compensation packages. A survey conducted in 1998–1999 found that 57 percent of the separated employees were working. Of these workers, 57 percent had their own businesses. Among survey respondents, 33 percent were no longer in the labor force and 10 percent were unemployed. At the time of the survey, the unemployment rate in Brazil surpassed 10 percent, so a 10 percent unemployment rate among former RFFSA employees is encouraging.

Source: World Bank (2002).

While acceptable to BR staff, none of these projects addresses the fundamental issues of improving BR's financial position and improving efficiency to maintain traffic. More significant structural changes remain necessary.

Recommendations

BR has the potential to provide cost-effective and efficient service to passengers and freight but only with a strong and sustained commitment to commercial efficiency. World experience has shown that transport operators are inefficient instruments through which to administer social policy. Given the coincident pressures of growing competition and the heavy need for capital investment to provide rational and commercially responsible service, there appear to be no options other than to dramatically increase the role of the private sector in the provision of railway service in Bangladesh.

Core constituencies, including ministry staff, labor unions, BR staff, and passengers, have expressed little support for change. However, reforms are ever more pressing as the GOB cannot continue to finance the hefty BR deficits and as BR continues to suffer from donor fatigue. The German and Canadian governments, longtime supporters of BR, have withdrawn support and ADB support has been offered pending commitment to structural change in BR.

The GOB should focus on changing the regulations that impede development of regional traffic; facilitating private sector participation; developing a comprehensive plan for handling staff redundancy and its social impact; and deciding with the BR on a fair and responsible level for payments of those public-service obligations deemed to be in the public interest but not commercially viable. Table 8.11 summarizes the short-, medium-, and long-term steps the GOB can take to improve railway performance.

Increase operational efficiency

BR must increase its operational efficiency in terms of traffic units per employee by at least 100 percent over the next 3 to 5 years. This increase will bring the railway's performance about even with the current performance of Pakistan's railway and about 60 percent of India's. Accomplishing this level of improvement will require:

- Complete staff commitment to the new targets. BR must act in a commercially responsible way and reduce or eliminate non-commercial services, adjust tariffs to market levels, and build up its profitable services.
- Prompt installation of a traffic-costing system to reflect the commercial emphasis of operations with greater focus on freight traffic (containers) and reduced focus on unprofitable passenger traffic.
- Aggressive use of outside contracting and private investment and partnerships in terminals, freight consolidation, and new equipment.

Create a separate corporation

Although some short-term changes can be introduced to improve the railway's operations, the GOB will have to address deep structural issues in the longer term if BR is to become an efficient organization. The creation of a corporate entity with the legal right to further concession any part of its service is an essential first step from which other structural changes can then follow.

Establish a performance agreement

Traffic rationalization should be accompanied by a performance agreement between BR and the GOB to clearly specify their roles and responsibilities, including financial responsibilities toward public-service obligations. The installation of a full traffic-costing system will provide both BR and the GOB with hard numbers they need to develop a meaningful performance agreement.

Table 8.1. Railway Action Plan

Short-term steps (1 year)	<p>Corporatize and commercialize:</p> <ul style="list-style-type: none"> • Create a BR corporation separate from the GOB. • Open BR lines to international equipment from India, Nepal and Bhutan. • Implement a full traffic-costing system. • Draft and sign a performance agreement between BR and GOB and commit to dramatic efficiency improvement by cost based market pricing, contracting out services, forming joint ventures and opening operations to private investment.
Medium-term steps (1 to 3 years)	<p>Improve efficiency through contracting and concessioning:</p> <ul style="list-style-type: none"> • Encourage private investment in terminals, unit trains, contract maintenance (shops and infrastructure), and depots; • Aggressively target new profitable traffic and reduce unprofitable service. • Enter into full concessions for specific services (terminals, train operations, freight forwarding, ticketing, and so on). • Implement performance agreement with GOB. • Develop an action plan to minimize the social consequences of staff reduction.
Long-term steps (3 years and over)	<p>Full concessioning and private railway operations:</p> <ul style="list-style-type: none"> • Use experience from medium term efforts to agree on a concessioning model, either horizontally structured with open access or a unitary, vertically integrated structure. • Draft necessary legislation for full privatization of BR including establishment of regulatory authority if needed. • Draft staff reduction action plan and establish effective outplacement and staff redundancy payment structure. • Concession core railway operations and dispose of non-core assets.

Source: World Bank staff.

Cultivate private-sector partnerships

In the medium term, widespread commitment to partnership with private-sector entities will highlight the benefits of this approach and diminish resistance to privatization. This approach will emphasize:

- Private ownership of equipment such as unit trains, and of terminals and depots.
- Contracted maintenance and operations services, which will create a body of capable companies and staff outside BR who understand and are committed to efficient railway service.

Granting of full concessions for specific services and physical operations will give BR and the GOB

further working experience in drafting and negotiating concessions.

Full, system-wide concessioning

The GOB's long-term plans should include concessioning railway operations to private investors to develop, maintain, and operate the railway on a long-term, 20-plus year basis. The major issues in accomplishing this goal are fair and adequate treatment for existing staff; retention of the option for the government to expand the railway infrastructure; and willingness to pay the railway a transparent subsidy for second-class passengers. Land, equipment, and facilities not required by the railway operators should be retained and sold by the GOB.



9 | Ports and Inland Waterways

Policy Objectives: Expand port capacity through new projects; increase existing port efficiency; tap the transportation potential of the inland waterways system; secure private financing for activities in the sector.

Private-sector Participation: Limited involvement in Chittagong and Mongla ports; extensive involvement in inland waterways.

Key Issues: Productivity and investments in port capacity are needed so that Bangladesh can maintain rapid export growth in an increasingly competitive global market and effectively compete in the aftermath of the Multi-Fiber Arrangement; inland transportation bottlenecks complicate port expansion; resistance to private-sector participation by various interests, which discourages private investment.

Bangladesh has only two gateway ports, the Chittagong Port Authority (CPA) and the Mongla Port Authority (MPA). In 2000 these two ports together handled about 20 million tonnes of cargo, of which 87 percent were imports. Chittagong, the larger of the two ports, handles more than 80 percent of total sea-borne traffic and 25 percent of container traffic, representing approximately 490,500 twenty-foot equivalent units, or TEUs. By 2017 forecasts project that this container traffic will increase by 300 per-cent, to an amount well in excess of the port's capacity.

The average annual growth rate for all traffic in the 1990s was about 6 percent per year, with container traffic growing at about 19 percent per year. Traffic growth at Mongla, on the other hand, is currently constrained by poor inland transportation links.

The Ports Act of 1908 and Port Rules of 1966 make up the principal legislation governing the port subsector. There have been no updates of these acts, but recently the government of Bangladesh (GOB) issued several port policy statements and guidelines that focused on increasing private-sector participation (PSP). These policy statements and guidelines are not binding, however, and attitudes toward PSP vary according to the agency and personalities involved. For example, there is general reluctance to introduce enhanced PSP at the Chittagong port, but similar resistance is not evident at the Mongla port.

Bangladesh also has 3,600 km of navigable waterways in the dry season, and almost 6,000 km in the rainy season. The system consists of eleven major inland river ports that transport passengers as well as substantial cargoes (about 5.6 million tonnes).

Market Structure: Public- and Private-sector Roles

The Ministry of Shipping (MOS) is responsible for both the seaports and the inland waterways. The two seaports, Chittagong and Mongla, are operated through autonomous port authorities—the CPA and the MPA—with the chairmen being senior naval officers.

Limited private-sector involvement exists in the provision of stevedoring and other cargo-handling services at Chittagong and Mongla ports, and in providing ancillary services such as equipment maintenance. Stevedoring companies are required to recruit their workers from the Dock Workers Management Board (DWMB) at both Chittagong and Mongla ports. In addition, independent foreign and Bangladeshi operators provide container shipping on behalf of a variety of mainline carriers on a slot charter basis serving the two major hubs of Singapore and Colombo.

Ports on the inland waterways system are owned and operated by the Bangladesh Inland Waters Transport Authority (BIWTA), which also maintains and conserves the waterways, provides pilotage, aids navigation, regulates private passenger services, and provides hydrographic and other services. The Bangladesh Inland Waters Transport Corporation (BIWTC) provides ferries across rivers and between the mainland and offshore islands, and offers cargo and passenger services within the inland waters system. Its total complement of equipment includes 179 commercial and 52 auxiliary vessels, of which 30 vessels have been chartered to private operators. However, the great majority of vessels—including a fleet of passenger launches—are privately owned and operated. The passenger launches vary in size. Some of the vessels are rated to carry more than 400 passengers.

The inland waters system is the most popular long-distance transportation method for the poorest members of the population. Affordability issues may require subsidization of inland ports.

With the exception of a number of small and possibly illegal *ghats*, no privately operated ports exist on the inland waterways system. The private sector does, however, provide labor services for loading and unloading cargoes at BIWTA port facilities. Cargo handling concessions are let through an annual public auction process.

BIWTA and BIWTC have a measure of independence, but operating and capital expenditures must be approved by the Ministry of Finance and staffing is subject to the authority of the Ministry of Establishment.

Performance

Neither Chittagong nor Mongla has ship-to-shore gantry cranes and productivity is very low. All containers are moved by ships' gear. Ship waiting time is significant. Vessels arriving at the outer anchorage typically wait 3 to 4 days before gaining access to a berth. Productivity at the container terminal in Chittagong port is about 100 to 105 lifts per berth per day, well below the productivity factors suggested by UNCTAD of 230 lifts per day with ships' gear. As a result, turnaround time for ships is high, at 5 to 6 days, rather than the average of 1 day in more efficient ports.

Some containers are carried by rail from Chittagong port to an Inland Container Depot at Kamalapur in Dhaka. Because of customs regulation and lack of transport capacity, however, more than 80 percent of containerized cargoes are stuffed or destuffed in port and transported inland in small trucks. This practice further decreases the efficiency of container movement for both imports and exports.

Port tariffs have not increased in 15 years, but CPA is in good financial condition and can expect continued traffic and revenue growth because it has a virtual monopoly. CPA's capital reserves are also healthy, but this partially reflects cutbacks in spending on capital improvements, equipment replacement, or even equipment maintenance. Even though the port is not experiencing financial losses, its inefficiencies still represent a cost to the economy of Bangladesh. The

long waiting times and foregone trade opportunities have an economic cost.

MPA has enjoyed modest net profits over the past 10 years, totaling approximately US\$3.7 million (BDT200 million) each year but without recent growth. Unlike CPA, Mongla's net profit is largely due to interest income, without which the port operates at a loss.

In 2001 MPA and CPA each experienced a significant drop in profits of about 90 percent. MPA's drop in profits may have been due at least in part to the government's removal of responsibility for the Benapole dry port from MPA. Benapole had previously represented a major source of income to MPA. The change, although detrimental to the financial position of Mongla port, was logical because Benapole's dry port had little logistical connection with the activities at Mongla.

Neither CPA nor MPA receives any government subsidies. Both ports are financially self-sufficient and in a strong cash position.

Tariff levels at CPA and MPA are high compared with other ports in the region and globally. Tariffs are also highly complex, to the point that even port officials have difficulty fully understanding them.

CPA and MPA enjoy a measure of independence, but operating and capital expenditures for both ports require Ministry of Finance approval, and staff matters are subject to the authority of the Ministry of Establishment. It appears that the Ministry of Shipping has little to do with the budgetary or personnel process at the ports.

BIWTA has lost money in the last 5 years. These losses reflect public policy requirements to keep travel costs on the inland waterway system as low as possible. The policy is intended to assist poor people, who rely on this system for long-distance travel. To compensate for these losses, the GOB provides subsidies to BIWTA to meet capital and recurrent costs. This poor performance has resulted in continuous government support in the form of equity injections, debt, and debt-equity conversions. In early 2002 BIWTA significantly raised some of its tariffs.

Still, the tariff increases do not reflect the rise in costs over the past two decades.

Although profitable, BIWTC also receives government subsidies of US\$90,000 (BDT5 million) per year to operate ferry services to the country's offshore islands.

Private-sector Initiatives

The GOB has initialed a Build-Operate-Own (BOT) agreement with Stevedoring Services of America (Bangladesh), to develop a US\$250 million container terminal at Patenga Point in Chittagong. However, a court injunction was issued against the signing of the final agreement.

Construction of the container terminal at the new moorings site in Chittagong port appears to be moving forward. The CPA also has approached IIFC to facilitate the preparation of bidding documents for operation of this new terminal on landlord principle.

The GOB also intends to offer a BOT for private-sector development of an inland water container terminal at Narayanganj, about 10 km from Dhaka. The terminal will handle containers transported along the inland waterways between Dhaka and the Chittagong and Mongla ports. Bid documents are now in development, and a call for prequalification of bidders is imminent.

In the case of Mongla, a business plan is being prepared that addresses issues concerning the appropriate future PSP level in the development and operation of that port.

Policy-making, Planning and Regulation

The Ports Act of 1908 and Port Rules of 1966 constitute the core legislative and regulatory framework for this sector, but neither piece of legislation provides any basis for private-sector participation in the country's seaports or inland waterways.

Existing port policies in Bangladesh are not contained in any one code or document. Port policy appears to be in a state of evolution, and several documents have been prepared by the Ministry of Shipping (table 9.1). Many of the recommendations in these documents have yet to be carried out and attitudes toward private-sector involvement in port activities vary according to the government agency and personalities involved.

Should the Private Sector Participation Policy for the Shipping Sector of Bangladesh become a binding document, however, carrying out its recommendations will actively encourage private-sector participation in the ports and inland waterways. The proposed draft policy addresses both increased private-sector contributions to port development and operation and the future structure and administration of the port authorities. The basic thrust of the policy is that the

private sector should be the primary developer within ports, and the government should only become involved in projects that are deemed to be in the public interest, but that have drawn no interest from the private sector. Indicating participation by private-sector entities would be required in projects submitted in the Ministry's annual estimates. The draft policy also proposes restructuring the port authorities in line with the more commercial landlord model. Under this model a government-appointed board would employ a port manager—a significant change from the current model under which the board chairman is the chief executive, and the board members are senior department heads. The reorganized authorities could be made subject to performance contracts with the GOB.

Table 9.1. National Port Policies

Policy	Year	Impact
Privatization of ports	1999	The recommendations of this document have sometimes—but not always—been taken into consideration so this document cannot be considered binding in all instances.
National Policy for Ports, Ocean Shipping, and Inland Water Transport (Drafts 1 and 2)	1999	This document reflects Bangladesh's port reform strategy and deals with all areas for which the ministry is responsible.
Guidelines for Private Sector Participation in Port Development	2000	Because of lack of privatization initiatives to date, it is impossible to test whether or not these guidelines are considered binding.
National Shipping Policy	2000	Although this document encourages PSP, it does not commit the port authorities to such a course, and there is no legislation providing specifically for GOB undertakings to transfer their operations to private-sector investors.
Private Sector Participation Policy for the Shipping Sector of Bangladesh (Draft)	On-going	With the assistance of the Infrastructure Investment Facilitation Center (IIFC), a committee of the Ministry of Shipping has prepared a draft.

Source: World Bank staff.

Issues

The two biggest issues that must be addressed as the GOB considers future development of the CPA, MPA, and inland waterway ports are growing demand and the need for restructuring. Labor issues, the need for intermodal connections, and passenger safety also need to be addressed.

Growing demand for port services

Demand for port services in Bangladesh will continue to increase. Current capacity at Chittagong port will not satisfy the growing demand; CPA is already working above its capacity, creating considerable congestion and delays at the port. Mongla port has no direct transportation links with the rest of the country, so carriers have been discouraged from calling at the port. A road linking the two ports is under construction, and there are moves to establish an inland water transportation system for containers travelling between Mongla and Dhaka.

Although a rail link to Mongla port is unlikely to be installed soon, railroad access would render the port more attractive. Draft problems along the channel of the Pussur River limit the size of vessels that can access Mongla, and the long river transit further inhibits traffic. The latter problem is somewhat offset by the long waiting times for berth access at Chittagong, at least for as long as such problems continue at the larger port. On the positive side, MPA has a significant amount of land that can be developed for new facilities.

Congestion in the ports is exacerbated by the current practice of providing priority berthing privileges to Bangladeshi-flagged ships. Normal industry practice is to treat all vessels equitably. Foreign vessels, which carry approximately 85 percent of all container cargo, must wait longer for access to container berths because of this rule. Anticipating long waits, most freight lines use their least efficient vessels to service Bangladesh, thereby adding to the inadequacy and high cost of the system.

CPA's inefficiency is widely recognized but little has been done to rectify the problems. Moreover, even with rapidly increasing traffic, facility development has been inadequate. A rule of thumb in the port industry is that expansion plans should begin when demand reaches 60 percent of capacity. On this basis, development of at least one new container terminal at Chittagong should be well advanced by this time.

Need for restructuring

No separation of the development, operating, and regulatory roles of the port authorities currently exists. This serious organizational flaw introduces conflicts of interest and confusion in managing these distinct activities. Their regulatory role impedes the port authorities' ability to function as fully commercialized entities, while their operational roles tend to compromise their impartiality as regulators.

Current thought in the port industry is that there is a need for regulatory bodies to be established, independent of operating organizations. A more practical solution may be for the port authorities to remove themselves completely from direct responsibility for certain commercial activities, such as ship services and cargo handling. By allowing the private sector to take over these kinds of activities the port authorities will be better able to carry out regulatory functions in these areas. In effect, this approach would transform the CPA and MPA into landlord ports.

Activities such as the determination of port tariffs and other matters that could present conflicts of interest could be assigned to an independent regulator, or perhaps to a national port council, always on the basis that flexibility and expediency in decision-making are essential in dealing with industries as dynamic and volatile as international trade and shipping.

However there is very little interest, particularly at CPA, to engage in the privatization of existing facilities. The India and Sri Lanka model of private-sector development of all new container terminals (in

close proximity to existing facilities) is likely to be more politically attractive.

The situation is similar with respect to the Inland Waterways. The operational and regulatory roles of BIWTA are not separated. Considering the extent to which these bodies are involved in operational activities, this lack of separation presents a significant organizational flaw that makes the waterborne transportation system vulnerable to conflicts of interest.

Labor issues

The unions in the ports of Bangladesh are strong and, at Chittagong in particular, they are aggressive in defending their rights. The unions oppose privatization and the development of new container facilities that would reduce the demand for labor. Labor opposition led to the recent cancellation of a planned Asian Development Bank (ADB) port efficiency study.

Overstaffing and lack of management control over the workforce is a major problem. On a daily basis, Chittagong port employs 18,400 people to handle cargo. This is five times the number of people that should normally be required for a port with Chittagong's throughput. Current labor hiring practices at the ports must also be addressed. Private stevedoring companies currently are required to recruit their workers from the DWMB, which is headed by the Chairman of CPA.

Rationalization of the port sector will require major changes in labor practices. Inevitably, this will mean a reduction in the number of jobs. At Mongla, the DWMB has reduced staff by approximately 1,600 jobs, targeting labor that accepted "golden handshake" deals. A total of US\$700,000 (BDT40 million) was allocated in the budget for the retrenchment of staff.

Connection with other modes of transportation

Bangladesh Railways (BR) operates the daily container rail service between Kamalapur ICD in

Box 9.1. Regional Private Initiatives in the Port Sector

Experience elsewhere in South Asia with regard to improvements in port performance can be instructive. Private operators have developed new terminals in India, Pakistan, Myanmar, and Sri Lanka, all generating significant increases in productivity levels. For example, handling productivity rates at private facilities in Bangkok and Colombo are 35 and 38 moves per berth per hour, respectively.

When private terminals have been established adjacent to publicly operated terminals, the public operations also have shown moderate productivity improvements, as in Sri Lanka.

Source: World Bank staff.

Dhaka and Chittagong port. However, both rail and road capacity are limited by chronic equipment shortages. Furthermore, lack of capacity and adherence to customs regulations mean that 80 percent of containers are stuffed and destuffed at the ports. Thus, the most significant advantage of containerization—its suitability for intermodal operations—is lost. Such activities also result in increased pilferage at the ports.

Passenger safety

A perennial problem in the inland waterway passenger sector is the sinking of vessels with inevitable loss of life. In most cases, overloading of vessels has been a major contributing factor. Official inquiries into sinkings indicate an urgent need for improved supervision of launches on the part of BIWTA and the Department of Shipping. These agencies also must ensure that no unauthorized changes take place in the design or configuration of passenger vessels.

Benefits can be gained from the following recommendations, but only if the GOB and the agencies responsible for this sector approach these reforms with consistent resolve.

Recommendations

Reform is urgently needed to encourage PSP to meet the growing demand for services. Although the port system is not incurring financial losses, it is imposing a heavy cost on the economy in terms of foregone trade opportunities. Moreover, the approaching end of the Multi-Fiber Arrangement is increasing concerns about how to maintain the current international position of Bangladesh's ready-made garment exports. As quotas are removed for key competitors like China, an efficient port system will be one of the critical pillars to ensure that Bangladesh retains, and

eventually increases, its export competitiveness.¹ Table 9.2 presents an action plan that represents a roadmap for the future.

Encourage private investment

The present inadequate container terminal capacity at CPA and MPA significantly reduces the competitiveness of Bangladeshi exports and the cost of imports. The GOB should find a resolution to the development of the Patenga container terminal and should continue with CPA's plans to develop the New Moorings container terminal.

Table 9.2. Action Plan

Short-term steps	<ul style="list-style-type: none"> • Proceed with development of the Khanpur Inland Container Terminal project as a BOT development. • Encourage and advocate private investment in the Patenga and New Moorings Container Terminal Projects. • Finalize and adopt the Private Sector Participation Policy for the Port Sector. • Review and modernize customs procedures to encourage inland movement of containers. • Develop and implement a marketing strategy and action plan for Chittagong and Mongla Ports. • Implement change management and privatization sensitization programs for port labor.
Medium-term steps	<ul style="list-style-type: none"> • Corporatize Chittagong and Mongla ports as fully independent entities. • Adopt the landlord model for operation for both port authorities. • Prepare a labor profile including skills mix and requirements and develop staff retention and redundancy programs. • Replace the present DWMB-based hiring system with more modern practices for hiring dock labor. • Restructure BIWTA along the landlord model, with operations of terminals and all new developments being transferred to the private sector and leaving BIWTA as a regulating body. • Turn BIWTC's loss-making passenger and cargo services over to the private sector.
Long-term steps	<ul style="list-style-type: none"> • Transfer all cargo handling operations to the private sector through leasing of existing and new terminals, including Kamalpur ICD. • Adopt a policy whereby the development and operation of new terminals will be carried out by the private sector. • Encourage the exploitation of the extensive inland waterway system for the efficient movement of containerized traffic.

Source: World Bank staff.

The GOB must also complete and issue a clear and comprehensive policy governing the inclusion of private developers and operators in the ports sector.

Other operations presently carried out by the port authorities, such as tug services, provision of equipment, and warehousing, as well as all non-core activities, should be transferred to the private sector. Other activities, such as maintenance, engineering, design, and security should be contracted out. The future role of the port authorities should be in planning and regulation, with the possible exception of the regulation of tariffs.

The GOB should consider inviting PSP in BIWTC's ferry services, provided proper safeguards are put in place to ensure continuity of service. This effort might involve small subsidies for ferries serving the offshore islands. In this context, concessions bids should be on the basis of the lowest required subsidy.

Initiate marketing and education campaigns

The CPA and MPA should increase their marketing activity. At present, neither port makes any effort to attract shipping lines or other users. Increasing marketing efforts will lead to inter-port competition and better service for the port user. Such efforts can bear positive results only if they are part of a broader plan to enhance port performance.

Allow for autonomous arrangements

Considering the flexibility that is required in today's port industry, the government should grant CPA and MPA greater autonomy to execute contracts, subject to approval of annual business plans by the government and the rulings of an independent regulator.

The government should adopt the landlord model in operating CPA and MPA. This change will entail privatizing existing commercial activities, such as ship services and cargo handling, and leaving the CPA and MPA to carry out regulatory functions in these areas.

Facilitate necessary staffing adjustments

Both port authorities should reduce their staffing to normal levels comparable to other ports in the region. Reductions in staffing should be carried out over a number of years, and workers should, as much as possible, be encouraged to leave employment voluntarily through inducements such as "golden handshakes" or other incentive programs. A common international guideline for staff sizing of landlord ports is an average of one employee for every 100,000 tonnes of cargo handled (Fourgeaud 2000).

To regain management control of the workforce and to support the privatization of cargo-handling operations, the GOB should replace the present DWMB hiring system with direct hiring of workers from a labor pool by the employers under conditions agreed in collective bargaining between representatives of the ports' employers and the workers.

Restructuring BIWTA

Although the private sector dominates the operation of inland water vessels, BIWTA provides and operates all public inland water ports and terminals.

The government should restructure BIWTA to address its functions as port authority and enabler of inland waterways navigation. BIWTA should continue to have oversight responsibility for dredging of channels, hydrographic services, and placing and maintenance of navigational aids, but these functions, and possibly pilotage, should be contracted out to the private sector. BIWTA also should continue to be responsible for inland waters vessels classification and conservancy services. At minimum the ports administration division—where most revenue would be derived—should be self supporting. In the long term the organization's objective should be to become completely self sufficient.

Notes

1. Bangladesh ready-made garment exports increased from US\$0.64 billion in 1990 to US\$4.86 billion in 2001 and now constitute the country's most important export.

sector interest in the venture. The main reasons for the lack of interest included very low existing air traffic, the GOB's restrictive policy toward future operations, and the expectation that the GOB would impose artificially high aircraft fuel costs on potential new airline operators.

These two attempts by the GOB to encourage private investment in air transportation were both destined to fail, primarily because of the government's unwillingness or inability to liberalize its protective policies. During the search for a strategic partner for Biman Air, the GOB was unwilling to give up the notion that a minority stockholder with limited rights would be interested in investing in a government corporation. The search may have progressed better had the GOB aggressively stated from the beginning that it sought to establish a new public limited corporation (joint venture) to operate the airline. Similarly, during the search for a private operator for Chittagong Airport, the government remained preoccupied with protectionism. Its policy was to protect Biman Air's air route structure and the inflated price of aircraft fuel. The venture would have been much better served had the government offered appropriate incentives to make Chittagong Airport a profitable undertaking, attracting outside operators to manage this new US\$100 million facility.

Policy-making, Planning and Regulation

Globally private-sector entities increasingly are assuming responsibility for airport infrastructure development and management and the provision of airport services. These changes are occurring within a regulatory framework provided by governmental civil aviation authorities. Likewise, privatization of state-owned airlines has become a worldwide trend. In Bangladesh, however, CAAB continues to dominate the air-transportation industry and the government's wholly owned airline, Biman Air. The country's air-transportation system also is concentrated under one

administrative entity, the Ministry of Civil Aviation and Tourism.

The independent roles of Biman Air, CAAB, and the Ministry are further clouded because the Minister is the chairman of Biman Air and the chairman of the CAAB sits on the board of Biman Air. Furthermore, by custom the chairman of the CAAB and the senior member of the board also are officers of the Bangladesh Air Force and seconded to their roles at the CAAB.

The CAAB is the designated government agency responsible for regulation of the country's air transportation system, air traffic control, and air safety within the borders of Bangladesh. CAAB also is responsible for all airport planning, construction, maintenance, and operations of airports. Such widespread powers allow the agency to dominate the regulatory and operational aspects of air transportation in the country. CAAB is in the business of running all air transportation facilities, as well as being the regulator and enforcer of all codes and regulations.

Issues and Recommendations

Separate CAAB's regulatory and operational functions

Consideration must be given to first defining and then separating CAAB's regulatory and operational responsibilities in the air transportation system. When an organization that is clearly involved in operations also is responsible for regulation, the situation inevitably leads to conflicts of interest. Such conflicts can easily result in mismanagement and safety issues, both on the ground and in the air.

Once its regulatory and operational functions are separated, CAAB must be reconstituted as a new government organization. CAAB should retain only regulatory and enforcement functions and the GOB should proceed to privatize the remaining airport operational functions. Clearly, CAAB would be most receptive to divesting its operational responsibilities in

order to concentrate its energies solely on regulatory and safety issues. Unfortunately, inertia at the ministerial level is preventing the necessary reorganization and divestiture. The key will be to take the initial step of commissioning an independent study to lay out the details, framework, and time line for CAAB's reorganization. Although the agency would participate willingly, the initiative for taking this first step must come from the cabinet level. Table 10.3 depicts how these functions could be distributed after this major reorganization.

Reassess the strategic partnership for Biman Air

Biman Air must improve both its management and its level of service to compete successfully in the global airline marketplace. Currently the airline has an aging fleet, little access to international passenger networks, limited information technology (IT) resources, an increasingly dissatisfied customer base, and few opportunities to increase its revenue. The only

reasonable strategy Biman Air can pursue to survive is full integration with another international air carrier.

The GOB should immediately review its policy on divesting only a minority share of Biman Air in its search for a strategic partner. The Ministry of Civil Aviation and Tourism must be willing to transform Biman Air into a public limited corporation, give up governmental control of the airline, and allow Biman Air to freely seek a strategic partner under the best commercial terms available in the marketplace.

Address the high cost of aircraft fuel

The GOB's policy of tightly controlling the importation, distribution, and sale of aircraft fuel results in the cost of jet fuel in Bangladesh being two to three times the cost of fuel in Singapore or Thailand. Although the government is trying to encourage private companies to enter the air transportation business in Bangladesh, it also supports policies that make the operation of jet aircraft uneconomical. To encourage private-sector participation in airline operation—and to ensure creation of a level playing field, particularly

Table 10.3. Distribution of Functions by Organization following Reorganization

Organization responsible	Operational services and facilities	Traffic handling services and facilities	Commercial activities
Civil Aviation Authority of Bangladesh	<ul style="list-style-type: none"> • Air traffic control • Police and security operations • Fire and emergency services 		
Biman Bangladesh Airlines		<ul style="list-style-type: none"> • Passenger handling 	
Other GOB agency		<ul style="list-style-type: none"> • Customs and immigration 	
Private sector	<ul style="list-style-type: none"> • Maintenance (buildings, pavement, aircraft) • Operations of other facilities 	<ul style="list-style-type: none"> • Aircraft parking ramps • Baggage and freight handling • Hangers • Fuelling services 	<ul style="list-style-type: none"> • Shops (including duty-free shops) • Restaurants • Car parking • Catering

Source: World Bank staff.

with regard to the other modes of transportation in Bangladesh—the GOB should immediately review the cost of aircraft fuel purchased by carriers.

Prepare a policy for private-sector participation in air transport

Despite the lack of a clear and coherent policy statement encouraging private sector participation (PSP) in the air transportation industry, domestic private airline operators have emerged to provide services to the public. To further encourage similar private initiatives, the government should prepare a policy for PSP in the air transportation sector. Once

devised, the policy should be proclaimed from the highest level of government. An action plan that includes a time line for accomplishing the various steps, should accompany the policy statement. Table 10.4 summarizes important elements of such an action plan. Obvious elements of this declared policy should be that the government agrees to stop subsidizing Biman Air's operations and agrees to permit domestic air tariffs to be controlled by the marketplace.

Table 10.4. Air Transportation Action Plan

Short-term steps	<ul style="list-style-type: none"> • Determine optimum divestiture/privatization plan for Biman Air • Commercialize Biman Air based on financial concept of cost recovery • Review cost of air fuel, charges applied to industry; prepare plan for revision of tariffs • Separate regulatory and operational functions of CAAB
Medium-term steps	<ul style="list-style-type: none"> • Implement privatization options recommended for Biman Air • Prepare PSP policy to include: <ul style="list-style-type: none"> – End of subsidy to airline – Tariff reform
Long-term steps	<ul style="list-style-type: none"> • Carry out the policies that have been developed

Source: World Bank staff.

Part III. Selected Cross-sectoral Issues

11 | Business Climate and Local Finance

Several reforms and liberalization policies have been carried out in the last decade in many economic sectors to enhance Bangladesh's competitiveness. The government of Bangladesh (GOB) also has instituted legal reforms to encourage foreign investment. With a few exceptions, the country places no restrictions on foreign direct investment. The Foreign Private Investment (Promotion and Protection) Act of 1980 provides for:

- Non-discriminatory treatment between foreign and local investment.
- Protection of foreign investment from expropriation by the state
- Guaranteed repatriation of proceeds from sales of shares and profits.
- No limitation on equity participation (100 percent foreign equity is allowed).

Business and Legal Environment

Bangladesh is a member of the Multilateral Investment Guarantee Agency (MIGA) and the Overseas Private Investment Corporation (OPIC), entities that offer guarantees to foreign investment.¹

Despite some liberalization reforms, significant challenges remain to improve the business

environment for private investment. The most important constraints are summarized below.

The extent of corruption and the regulatory burden

As underscored in a World Bank study on governance, corruption plagues the delivery of public services, whether the context be obtaining a business license, registering a property, or importing goods (World Bank 2002). Private firms also complain of red tape and a multitude of permissions that they must obtain in order to start and operate a business. For example, starting a business takes a minimum of seven steps.²

In 1989 the Investment Board was established with the mandate of providing one-stop services to investors. Even so, foreign investors often had to move from one ministry to another to obtain necessary permissions. Under new leadership, the Investment Board has made progress recently in promoting investment opportunities in Bangladesh.

The judicial system

The operation of the courts is also perceived as being slow and of poor quality. Potential investors have raised concerns about the courts' ability to enforce laws in an unbiased and independent manner.

Labor issues

Low labor costs in Bangladesh make the country an attractive investment site. Unfortunately, frequent *hartals*, or general strikes, cause temporary shutdowns of the country and contribute to losses in productivity. *Improving the Investment Climate in Bangladesh* (2003) further analyzes constraints faced by the private sector.³

Mobilizing Local Finance

The capacity to mobilize local finance constrains private-sector participation in infrastructure development. In the medium term, the largest greenfield projects will have to rely on a mix of local and foreign finance. Local finance has played a role in smaller projects. It will need to play an even greater role to foster service coverage expansion, particularly in rural and urban areas not yet reached by public-sector providers. Service expansion will demand a more efficient financial system, especially greater development of the embryonic capital market. Growth in the capital market will open new possibilities for financing more complex and larger-sized transactions.

The Infrastructure Development Company Ltd. (IDCoI) can also facilitate financing of infrastructure projects in the short term. However, it cannot substitute for efforts to enhance the mobilization of local savings and long-term development of local financial markets.

Local financial markets

Bangladesh's financial markets are small and dominated by the banking system (table 11.1). At the end of 2001, banking system assets reached about BDT1.1 trillion, or 47 percent of gross domestic product (GDP). National commercial banks and specialized development banks held 58 percent of the system's assets, and private banks held the remaining share. Lending is primarily short term and is constrained by short-term deposit mobilization. Only about 20 percent of deposits have maturities of 1 year or longer. With maturities on most deposits under 1 year, banks are constrained in their ability to become involved in long-term finance.

Lending rates are high. Inefficient financial intermediation, a high level of non-performing loans,

Table 11.1. Bangladesh: Financial System Structure

	Number of institutions (end-December)				Total assets (Dec. 2001)	Percent of GDP ^a
	1998	1999	2000	2001	BDT millions	
Banks	39	49	49	51	1,276,517	46.8
State-owned	9	9	9	9	742,247	27.2
Nationalized commercial banks	4	4	4	4	591,527	21.7
Specialized development banks	5	5	5	5	150,720	5.5
Private commercial banks	30	40	40	42	534,270	19.6
Insurance companies	32	32	62	62	35,790	1.3
Finance companies	19	22	26	26	18,763	0.7
Microfinance institutions	n.a.	n.a.	586	624	37,882	1.4
Securities markets	n.a.	n.a.	n.a.	n.a.	65,520	2.4

a. Based on gross domestic product for 2001–02.

Sources: Bangladesh Bank; Department of Insurance (Ministry of Commerce); Securities and Exchange Commission; and Credit Development Forum.

corruption and a legal and judicial framework favoring debtors all contribute to the high lending rates. In addition, National Savings Certificates offer an artificially high interest rate and drive up funding costs.⁴

Although finance companies have been licensed only since 1995, they have rapidly grown in number. In 2001 there were 26 finance companies operating in Bangladesh (table 11.1). Their activities remain minimal within the overall market, at roughly 0.7 percent of GDP; but these entities are searching for new business niches in the financial market. The microfinance sector has expanded rapidly during the last 15 years to attain the highest market penetration in the world. Four microfinance institutions (MFIs)—ASA, BRAC, Grameen Bank, and Proshika—dominate this market.

Capital markets

The capital markets in Bangladesh are underdeveloped. The combined market capitalization of the two stock exchanges—Dhaka Stock Exchange and Chittagong Exchange—reaches only about 2.4 percent of GDP. Securities traded on the two stock exchanges are still cleared and settled manually. Work is ongoing at the Central Depository Bangladesh Limited to implement an automated service that will initially function in parallel but will eventually replace current materialized arrangements. In time, automation should contribute toward market development.

Presently no secondary market exists, even for government debt. Efforts are underway to develop a corporate bond market for collateralized loan and lease obligations to be issued by banks and finance companies. Trading in bonds could begin in 2003.

Institutional investors

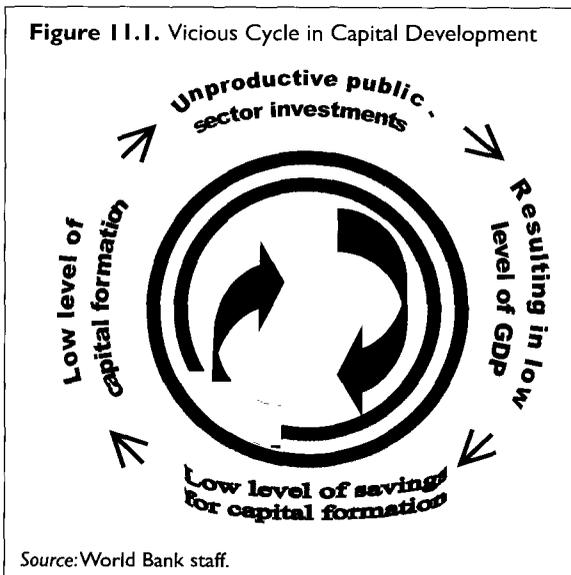
Institutional investors, a potentially important source of demand for long-term debt, are also just beginning to develop. Insurance companies have a limited market penetration. Insurance company assets represent

only 1.3 percent of GDP. Private pension and provident funds, primarily sponsored by employers, also offer limited coverage, but no data is available on their size or performance because they are unsupervised. State banks and public enterprises probably hold the largest pension plans.⁵

Institutional investors generally have allocated a large share of their portfolios to the artificially priced National Savings Certificates. To the extent that these investments have been allocated to poorly performing projects like inefficient infrastructure projects, they have resulted in a misallocation of scarce national savings and crowded out long-term private finance. Figure 11.1 depicts the vicious cycle of inefficient intermediation of savings and low capital development. As of mid-2002, only individual investors will be able to acquire new National Savings Certificates. Still, the paucity of alternative instruments persists.⁶

How are private infrastructure projects financed?

At present the financial markets are unable to contribute substantially to infrastructure financing except for smaller projects. Besides internal funds,



private infrastructure projects have obtained some funding from banks, finance companies, and MFIs. For example, as of 1998 five MFIs—ASA, BRAC, BURO, Grameen Bank, and SSS—had disbursed US\$36 million for water supply projects and US\$13 million for sanitation projects. MFIs have also been involved in small-scale rural electricity projects.

In the country's few large-scale private projects, such as those in the gas sector, foreign equity financing has become a dominant funding source. IDCol was established to overcome some of the local finance constraints. IDCol has received funding from multilateral institutions to lend long term at market rates. For example, IDCol supported the financing of the Meghnaghat power generation project. But IDCol's project pipeline nearly dried up as projects were delayed or tangled in legal action.

Recommendations for Developing Local Financial Markets

Important reforms are necessary to facilitate the deepening of local capital markets so that they can play a role in financing private-sector participation in infrastructure projects, initially small- and medium-size projects and eventually more complex projects. To that end, several steps are recommended.

Bangladesh has a basic legal framework within which capital markets can operate, but enforcement is weak. The country's Securities and Exchange Commission, which is responsible for the transparent and orderly functioning of securities markets, is seriously understaffed. To effectively carry out its mandate, the institution needs more resources and strengthened enforcement powers.

International accounting standards are being adopted in Bangladesh. Most of the standards that are relevant for the financial system should be in place soon. However, more stringent and forceful adoption

of these accounting standards is necessary to ensure that financial information is reliable and to give investors greater market confidence.

A coherent public debt management system should be established, and the development of a secondary public debt market should be facilitated. The GOB should issue an information circular encouraging secondary market trading. Such a circular will help to overcome the market's perception that trading in government securities is not allowed. The circular also should explain the GOB's regulations for conducting such transactions.

A liquid secondary market debt could reduce the cost of public debt and help create a reference yield curve for pricing private fixed-income securities. Securitization can be an important vehicle for infrastructure financing. Therefore, the GOB should promote the legal and regulatory framework that will facilitate these transactions.

The development of institutional investors, particularly insurance and provident funds, will boost the demand for long-term financing instruments. The regulatory amendments issued in July 2002 allowing greater investment freedom on private securities were a positive step. They must be complemented with a strengthening of supervision to avoid malfeasance.

Private provident funds, largely governed by the Trust Act of 1882, need to come under a proper regulatory and supervisory framework to ensure the sound intermediation of long-term savings and to encourage their further growth.⁷

Notes

1. MIGA, a member of the World Bank Group, provides investment guarantees against losses arising from the risks of currency transfer, expropriation, and war and civil disturbances. MIGA only guarantees new investment, privatization, and financial restructuring. OPIC, an agency of the United States government, promotes greater

investment interest for its members by providing loan financial and investment insurance to foreign investors.

2. Additional information on the cost of starting a business and international comparisons are available at this Web site: <http://rru.worldbank.org/doingbusiness>.

3. The study involves a survey of 1001 firms with more than 10 employees in the following sectors: garments; chemicals and pharmaceuticals; electronics; food and food processing; leather and leather products; and textiles.

4. Performance across the system varies widely, with private commercial banks depicting a much healthier profile. Some private banks are earning substantial returns on equity and returns on assets as they benefit from the inefficiencies of the large national commercial banks.

5. State enterprises suffering financial distress are not properly funding these plans.

6. The market remains distorted, and banks mobilizing deposits must still compete with National Savings Certificates.

7. Private provident funds must register with the National Board of Revenue for tax purposes but they are not subject to any supervision concerning their financial performance.



Appendix 1.

Telecommunications

Facts and Figures

Telecommunications facts and figures of interest include information on international services, data and Internet services, electricity service reliability, and overall performance within the sector.

International Services

Currently the number of international circuits is inadequate. BTTB projects that some 1,500 circuits will be added during the next five years. The satellite earth stations have expansion capability but no equipment is available to install for providing dedicated high-speed links to Internet service providers (ISPs) for users with heavy data communications needs. A Memorandum of Understanding (MOU) for the construction of a 3,200 kilometer undersea fiber-optic cable has been signed. When commissioned, the undersea cable system is supposed to link Bangladesh with Singapore and beyond, and it is expected to greatly relieve the present bottleneck in international traffic. Success of this project is now doubtful, however, because the foreign company involved in laying the cable is in financial trouble.

Data and Internet Services

BTTB has introduced both X.25 and X.28 public packet switched data services in eight cities. However, BTTB's lack of marketing initiatives have resulted in underutilization of capacity. There were only about 60

users for leased circuits, and 20 to 30 users for dial-up service as of March 2001. A new Digital Data Network using digital subscriber line (DSL) and Integrated Services Digital Network (ISDN) technologies has been commissioned for software developers, but again BTTB has not marketed it actively. BTTB has made the Digital Data Network available to public-sector banks and multinational companies operating in Bangladesh, but again with no marketing effort.

Many private-sector ISPs are in operation. The total number of Internet subscribers at the end of March 2001 was about 200,000, according to industry estimates. This number had been growing at a rate of almost 100 percent per month in 1999. In 2000–2001, however, many of these companies were hesitant to market their services aggressively or to set ambitious targets given overall lack of connectivity.

Reliability of Electricity

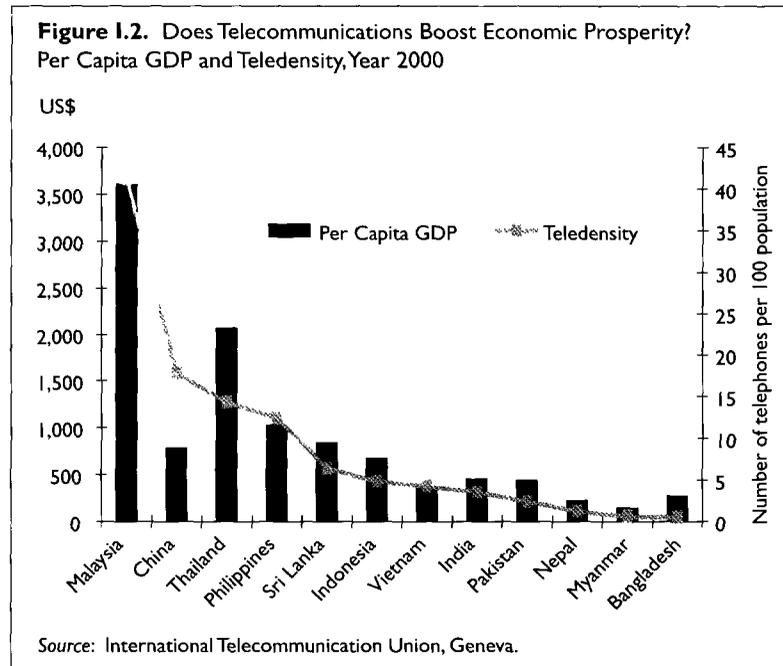
The status of the country's infrastructure for delivering electricity is extremely unreliable at the moment. This situation directly affects the telecommunications sector, particularly in non-urban areas. Liberalization of the power and telecommunications sectors will likely occur simultaneously, at least in areas that now receive no service or inadequate service.

Performance

Figure I.1 compares Bangladesh with other Asian countries in terms of the number of Fixed Line Telephones per Employee in 1999.

This figure shows that Bangladesh, at BTTB, has the lowest employee productivity as compared to its Asian neighbors.

Figure I.2 illustrates the relationship between teledensity and per-capita gross domestic product (GDP.) This figure suggests that the cost of failing to provide access to telephones will be very high for Bangladesh in terms of the country's economic prosperity.



Appendix 2. Power

Key Performance Indicators, Bangladesh Power Sector, Public-sector Organizations

Item	Units	1991	1992	1993	1994	1995	1996	1997	1998
Power Development Board (PDB)									
Peak demand	MW	1,640	1,672	1,823	1,875	1,970	2,087	2,114	2,136
Electricity production	GWh	7,826	8,394	8,700	9,221	10,166	10,833	11,243	12,194
Purchases from IPPs	GWh								
Sales to direct customers	GWh	4,295	3,160	2,915	3,022	3,220	3,363	3,361	3,482
Sales to DESA	GWh		2,263	3,356	3,696	4,162	4,551	4,962	5,417
Sales to REB	GWh	575	598	635	729	988	1,082	1,124	1,273
Losses	GWh	2,946	2,372	1,793	1,774	1,795	1,837	1,796	2,018
Losses as % of production	%	37.6%	28.3%	20.6%	19.2%	17.7%	17.0%	16.0%	16.5%
Number of employees					23,515.00	23,988.00	24,379.00	24,462.00	24,455.00
Number of customers		1,223,954	903,001	952,609	1,025,849	1,075,734	1,156,672	1,210,132	1,293,663
Average tariff	BDT/kwh	2.32	2	1.9	1.89	1.87	1.87	1.96	2.07
Collection of accounts	%								
Net income or loss	crore taka							-59	-125
Total sales		4,870	6,021	6,906	7,447	8,370	8,996	9,447	10,172
Sales by customer	kwh	3978.9	6667.8	7249.6	7259.4	7780.7	7777.5	7806.6	7862.9
Sales by employee	gwh/employee				0.3	0.3	0.4	0.4	0.4
Dhaka Electricity Supply Authority and Dhaka Electricity Supply Company Ltd. (DESA and DESCO)									
Peak demand	MW	525	550	630	750	825	976	1,017	1,115
Electricity purchases	GWh		2,260	3,356	3,696	4,162	4,551	4,936	5,419
Sales	GWh		1,456	2,309	2,538	2,914	3,210	3,589	3,908
Losses	GWh		803	1,047	1,158	1,249	1,341	1,347	1,511
	%		35.5%	31.2%	31.3%	30.0%	29.5%	27.3%	27.9%
Number of employees	thousands	4,560							
Number of customers	thousands			426,878	454,811	504,236	549,557	587,033	633,911
Average tariff	taka /kWh			2.38	2.35	2.24	2.21	2.41	2.41
Collection of accounts	%			83.5	78.4	88.0	83.6	81	79.4
Net income or loss	US\$								
Sales by customer	kWh			5409	5580	5779	5841	6114	6165
Rural Electricity Board (REB)									
Peak demand	MW							520	422
Electricity purchases	GWh	575	685	774	907	1,199	1,381	1,449	1,724
Sales	GWh	480	576	652	765	1,016	1,172	1,220	1,434

Source: World Bank staff.



References

- ADB (Asian Development Bank) 2002. Aide Memoire of Fact Finding Mission for Proposed Dhaka Clean Fuel Project.
- . 1996. Report to Board on Jamuna Bridge Access Roads Project.
- Ahmed, Chowdhury Mufad. 1998. *Legal Framework for Water Supply and Sanitation*. Draft Report. UNDP/World Bank.
- Ahmed, M. Feroze. 2002. *Alternative Water Supply Options for Arsenic Affected Areas of Bangladesh*, UNDP/World Bank WSP-SA.
- Bangladesh Bank. *Annual Report, 1998–99*.
- Bangladesh Electricity Reform Act, 2002- Draft.
- Bangladesh Enterprise Institute and World Bank. 2003. *Improving the Investment Climate in Bangladesh*.
- Bangladesh Inland Waters Transport Authority. 1998. *The Tariff rates of Conservancy Service, Pilotage Service, Canal Service and Port Services*.
- . 2002. Income and Expenditure Statements for the Period from 1995–96 to 2000–2001.
- Bangladesh Inland Water Transport Corporation. 2001. *Annual Report 1999–2000*.
- Bangladesh Integrated Transport System Study*. 1998.
- Bangladesh Railways Information Book*. 2000.
- Biman Bangladesh Airlines. 2000. Information Memorandum, Biman, 19 October 2000.
- . 2000. *Privatization Strategy Report on Biman Bangladesh Airlines*.
- . 2000. *Situation Analysis: Airlines on Biman*.
- Block System of Bangladesh with Current Operators. Map from MEM Hydrocarbon Unit, Extracted from Petroleum Potential and Resource Assessment 2001.
- Board of Investments. 1999. *Investing in Bangladesh—A Guide to Opportunities*.
- Cannock 2001. *Telecom Subsidies: Output-Based Contracts for Rural Services in Peru*. World Bank Public Policy for the Private Sector. The World Bank.
- Chittagong Port Authority. 1999. An Overview.
- . 1991. Schedule of Charges
- Clarke George et al. 2001. "Providing Infrastructure Services to Rural and Poor Urban Consumers." Working Paper No.2868, 2002.
- Department of Public Health Engineering. 2000. Urban Water Supply Systems (61 Districts) Data Base.
- Department for International Development. 2002. *Bangladesh Infrastructure Scoping Study*. Bangladesh.
- DHB Consultants. 2002. *Regional Road Network Study for Prioritization under RRMIMP-II*.

- Forging Sub-Regional Links in Transportation and Logistics in South Asia*. 2000.
- Fourgeaud, Patrick. 2000. *Measuring Port Performance*. The World Bank.
- Fox, Halcrow. 1999. Dhaka Eastern Bypass Road Construction. Draft Document.
- Government of Bangladesh. *Country Report on Inland Water Transport and Dredging in Bangladesh*.
- . 1985. Ground Water Management Ordinance.
- . 1995. Policy Statement on Power Sector Reform.
- . 1996. Private Sector Power Generation Policy.
- . 1998. National Telecommunications Policy.
- . 1998. Policy Guideline for Small Power Plant in Private Sector.
- . 2000. Vision Statement and Policy Statement on Power Sector Reforms.
- Halcrow Management Science. 1998. *Strategic Study to Mobilize Finance and Increase Efficiency in the Dhaka Water Supply and Sewerage Sector*.
- Haldea, Gajendra. 2000. *Indian Highways: A Framework for Commercialization*.
- IDC3 Consultants. 1999. *Roads in Bangladesh. The Next Millennium*.
- Infrastructure Investment Facilitation Center. 1999. *Urban Water Supply, Sanitation, and Waste*. Private Sector Development Project, Sector Paper. Dhaka.
- . 2000. *Summary: Urban Water Supply, Sanitation and Waste Sector Paper*. Dhaka.
- . 2001. *Bangladesh Telecommunications Market and its Development (Draft)*. Dhaka.
- Infrastructure Investment Facilitation Center–KPMG. 2001. *Pourashava Water Supply Project, Feasibility Study*.
- International Telecommunication Union. 2001. *World Telecommunications Development Report*.
- Lucas et al. 2002. *Strategic Gas Utilization Study for the People's Republic of Bangladesh*. Mimeograph.
- Maersk/Sealand. n.d. *Chittagong Port—A Challenge, Briefing Paper*.
- Mott MacDonald Ltd. 1998. *Master Plan and Trade Facilitation Study*.
- Ministry of Communication. 2001. *Roads and Highway Development: Towards Effective Asset Management of Roads and Bridges*.
- Ministry of Energy and Mineral Resources. 2002. *Bangladesh Petroleum Potential and Resource Assessment*.
- . 2002. *Particulars of PSC Blocks*. Unofficial table from MEMR Hydrocarbon Unit.
- Ministry of Water Resources. National Water Resources Policy.
- . 2000. *Land & Water Resources*. National Water Management Plan Project, Topic Paper No. 7.
- Mongla Port Authority. 1988. Port Tariff.
- Newbery, David. 2001. *Draft Public Expenditure Review—Energy Sector*. World Bank/Asian Development Bank.
- Oil & Gas Journal Online. 2001. *Bangladesh signs PSCs with three company JV*. London.
- Organizational Reform of BR, Towards a Corporate Model for Bangladesh Railways*. 1999.
- Petrobangla Sixth Five-Year Plan, July 2002–June 2007*. Draft, 2001.
- Rail II Consultants. 2001. *Rail II Program—Bangladesh*. Program Completion Report.
- Securities and Exchange Commission. 2001, *Annual Report, 2000–01*.
- . 2001. *Quarterly Review, April–June 2001*.
- Shell Bangladesh. 2001. *Shell Bangladesh Exploration and Development Fact Sheet, Update*. Hard copy received from Shell Bangladesh/Shell Hydrocarbons Holdings BV.

References

- Shippers' Council of Bangladesh. *Shipping News*, February 1999.
- S. H. Lucas and Associates. 2002. *Strategic Gas Utilization Study for the People's Republic of Bangladesh*. PowerPoint Presentation of the Final Report.
- South Asia Region Energy and Infrastructure Unit. 2001. *Considerations on Energy Pricing in Bangladesh*. World Bank.
- Telecommunications Act, 2001.
- Temple, Frederick. 2001. Address given at Ports and Shipping Workshop in Dhaka, August 2001.
- Tullow. 2001. *Bangladesh Report Interests and Applications*, Press Release 12 April 2001.
- United Nations Development Program and World Bank. 1998. *Water Vending in Old Dhaka*. UNDP/World Bank WSP-SA.
- . 1999. *Proceedings: Growth of Small-scale Private Sector and Micro-credit Financing for Rural Water and Sanitation Services in Bangladesh*.
- Wallsten, Scott 2001. *An empirical Analysis of Competition, Privatization and Regulation in Africa and Latin America*. World Bank Working Paper. Washington, D.C.
- WASA Act, 1996.
- Weeks, Neville. 2001. *Program Assessment of the Bangladesh Railways Program at the Impact Level*.
- Wellenius, Bjorn. 1997. *Extending Telecommunications Service to Rural Areas—The Chilean Experience: Awarding Subsidies through Competitive Bidding*. World Bank Public Policy for the Private Sector Viewpoint Note. Washington, D.C.
- World Bank. 1996. *Staff Appraisal Report, Bangladesh, Fourth Water Supply Project*.
- . 1998. Project Appraisal Document, Bangladesh Arsenic Mitigation, Water Supply Project.
- . 2001. *Bangladesh: A Review of Public Enterprise Performance—Key Issues and Policy Implications*.
- . 2001. *Conversion of Two-Stroke Baby Taxis to CNG: Briefing Note*.
- . 2001. *World Business Environment Survey*.
- . 2001. *World Development Indicators 2001*.
- . 2002. *Bangladesh Urban Service Delivery: A Score Card*.

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