



Guidebook for European Investors in Bangladesh Sector Profiles

**European Commission
Asia Investment Facility**



SECTOR 3

THE TELECOMMUNICATION SECTOR IN BANGLADESH

GLOSSARY OF ABBREVIATIONS

ADB	Asian Development Bank	IDCOL	Infrastructure Development Company Limited
AMPS	Analogue Mobile Phone Systems	IFC	International Finance Corporation
BBTT	Bangladesh Broadcasting Telephone & Technology	IIFC	Infrastructure Investment Facilitation Center
BASIS	Bangladesh Association of Software & Information Services	IPRs	Intellectual Property Rights
BCC	Bangladesh Computer Council	ISPs	Internet Service Providers
BCS	Bangladesh Computer Samity	IT	Information Technology
BOO	Build, Own and Operate	ITU	International Telecommunications Union
BOT	Build, Operate and Transfer	ITX	International Trunk Exchange
BRTA	Bangladesh Rural Telecommunication Authority	MHz	MegaHertz
BTTB	Bangladesh Telegraph & Telephone Board	MOPT	Ministry of Posts and Telecommunications
CDC	Commonwealth Development Corporation	MOU	Memorandum of Understanding
CDMA	Code Division Multiplex Access	NWD	Nation-wide Dialing
CeBIT	An Information Technology and Telecommunication Fair (Held annually in Hanover)	OECF	Overseas Economic Co-operation Fund of Japan
CIDA	Canadian International Development Agency	PBTL	Pacific Bangladesh Telecom Limited
CMEC	China National Machinery and Equipment Import and Export Corporation	PSP	Private Sector Participation
DFID	UK Department for International Development	PSTN	Public Switched Telephone Networks
ECNEC	Executive Committee of the National Economic Council	PHS	Personal Hand-phone System
EPB	Export Promotion Bureau	PRTS	Paging & Radio Trunk Subscribers
FBC	First Bangladesh Consulting Ltd.	TMIB	TM International (Bangladesh)
GDP	Gross Domestic Product	TRI	Technology Resources Industries Bhd.
GIS	Geographical Information Systems	TRIPS	Trade Related Aspects of the Intellectual Property Rights
GOB	Government of Bangladesh	VAT	Value Added Tax
GP	GrameenPhone Ltd.	VOIP	Voice Over Internet Protocol
GSM	Global Systems for Mobile	VSAT	Very Small Aperture Terminal
IDA	International Development Agency	WIPO	World Intellectual Property Organisation
		WTO	World Trade Organisation

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1. THE SIZE AND NATURE OF THE TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY SECTORS

With a population of 130 million, Bangladesh is one of the most densely populated countries in the world but its telecommunications and information infrastructure is among the weakest in Asia.

At the end of 2000, only about 837,000 telephones were in service implying a *tele-density* of about 0.6 telephones per 100 people. Almost 200,000 potential customers are currently on the waiting list for telephone service. The status of telecommunications in Bangladesh at a glance is provided in Table 1.1.

Table 1.1

Telecommunication Status in Bangladesh as of December 2000	
Number of Telephones	837,000
BTTB (Govt. Telephone Board)	527,000
Private Operators (including cellular phones)	310,000
Density of Telephone	0.6%
Registered Pending Demand	192,100
International Voice Circuits	2,107
International Trunk Exchanges (ITX)	3
Total International Circuits	4,000
Nation Wide Dialling Circuits (NWD)	23,000
Network Digitalisation	80%
VSAT Service Providers	> 50
Internet Service Providers (ISPs)	> 100

Source: BTTB and private telecom operators

The share of post and telecommunication sector in the country's GDP, however, increased from 0.62% in 1994-95 to 0.84% in 1998-99.

An Overview

The current state of the telecommunications and information technology infrastructure in Bangladesh is extremely poor, with only 0.6 telephones per 100 people. Not even 10% of the population has access to a telephone, not to speak of their owning one. Ironically, the country was the first among its Asian neighbours to open up the sector to private sector investments about a decade ago, but it has now fallen far behind some of its neighbours in reforming the telecom sector.

Since telecommunications provide the backbone for information technology, the growth of the IT sector is naturally constrained.

The country has made significant progress in some major areas such as food supply, and has become almost self-sufficient in food. With an increase in general economic growth over the recent years, the acute shortages of basic infrastructure facilities like telecom and IT are increasingly felt by a larger percentage of the electorate. So, it is expected that soon after the impending general election is over, the new Government will get on with long-awaited reforms of the sector, and gradually open up the sector fully to the private sector. Consequently, significant investment opportunities may open up for European SME investors.

The Government's declared intention is to increase the number of telephones by one million within next 2-3 years, and significantly improve the quality of the telecom network to give needed support to the IT sector which has been declared as a "*thrust sector*" that accords many fiscal incentives to the sector.

Potential investors, however, must be aware things often do not happen very quickly in Bangladesh and other developing countries. So, they have to be patient and persistent in reaching success. Opportunities are likely to emerge in almost all facets of telecom and IT, including network equipment, terminal equipment, design and delivery of the whole gamut of telecom and IT services, consulting, training, and management services, and the European SME investors will be well-advised to develop appropriate strategy for targeting this market.

2. REVIEW OF PRINCIPAL TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY SUB-SECTORS

2.1 Telecommunications Sub-Sector

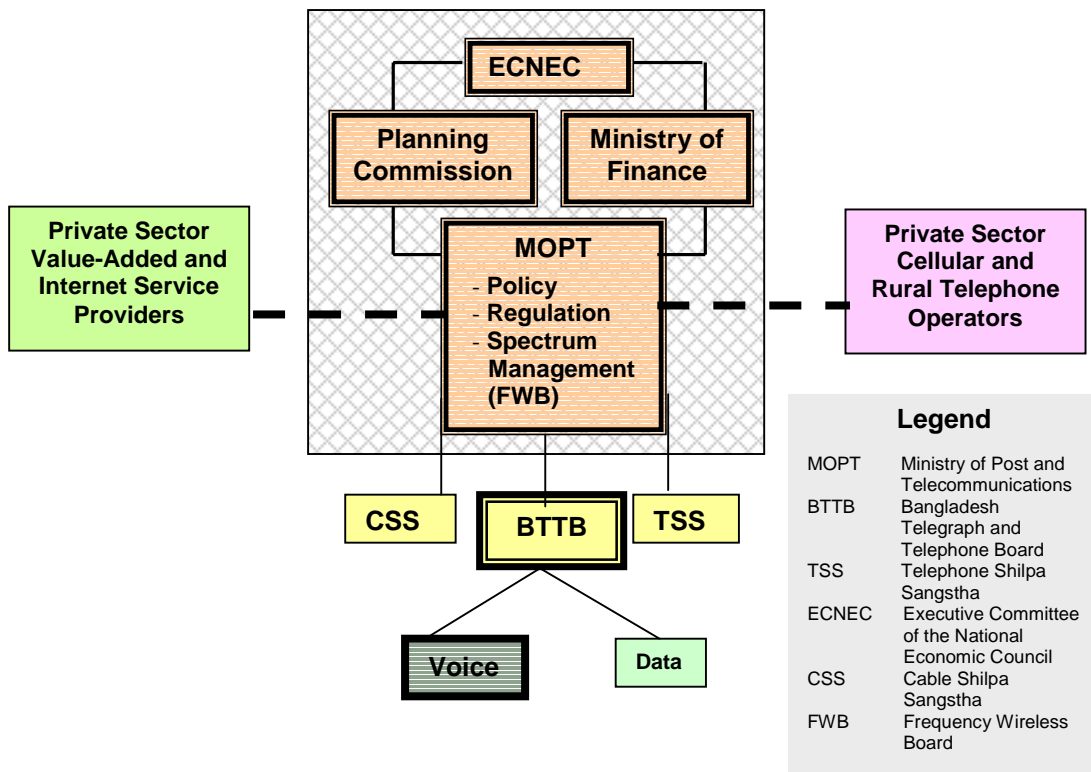
Currently, the telecom sector in Bangladesh is dominated by a state-owned telephone company, Bangladesh Telegraph and Telephone Board (BTTB), which has a virtual monopoly in fixed line telephone service, and which enjoys monopoly rights in domestic long distance and international (terrestrial) services.

Gradual privatisation of the sector started in 1992 when Bangladesh Rural Telecommunications Authority (BRTA) was licensed to provide telecommunications to 200 rural districts, followed by a second operator sometime later. But these two companies had only limited success and poor levels of interconnection with the BTTB network.

Figure 2.1 below broadly portrays the rather complicated organizational structure of the telecom sector. MOPT is the policy making body of the Government of Bangladesh (GOB) for telecommunications. In the absence of a formal regulator, MOPT is also responsible for spectrum management, and regulation of BTTB and private sector rural and cellular operators. The value-added service providers such as VSAT and Internet Service Providers (ISPs) are also supposed to be regulated by MOPT. Besides a government-owned telephone handset manufacturing and PBXs assembly company (TSS), and a cable manufacturing company (CSS), there is virtually no other telecom equipment manufacturing activity in Bangladesh.

Although MOPT is the formal regulator of BTTB, it apparently does not have any power to regulate BTTB tariffs, which are supposed to be approved by the Ministry of Finance. Moreover, major spending decisions of BTTB, for expansion or maintenance of the network, have to be approved by the Planning

Figure 2.1



Commission, and ECNEC, operating under the Prime Minister's Office.

BTTB is mostly concerned with voice telephony. It has a small data services group with useful capacity, but BTTB does not actively market its services. It also offers Internet access to about 3,500 users, many internal.

The proposed National Telecommunication Policy of 1998, which is yet to be fully adopted by the Government through a new Telecommunications Act, called for mobilisation of both public and private sector resources to develop the telecommunications sector, and increasing private sector participation (PSP).

In addition to BTTB, there are at present seven private sector operators licensed to provide basic telecom services and value added services including paging and cellular services. They include, as stated earlier, two rural operators; one Analogue Mobile Phone Systems (AMPS) based cellular service company that is providing cellular mobile

Opening up of the telecommunications sector has already created considerable interest from overseas firms who would like to run mobile cellular networks, operate rural telephone exchanges, provide paging and trunking facilities and become internet service providers.

service to subscribers in Dhaka and Chittagong, and also providing Code Division Multiple Access (CDMA) service to both Dhaka and Chittagong. There are also three GSM cellular companies that operate in Dhaka, Chittagong, and Khulna, while paging and radio trunking telephone services are provided by a single operator in Dhaka, Chittagong, and Khulna. Till December, 2000, these private operators appear to have installed

over 300,000 telephone lines in rural and urban Bangladesh, 90% of which are cellular mobile and radio trunking phones, with GrameenPhone, the most successful private sector operator (www.grameenphone.com) claiming to now have some over 200,000 customers.

Since there is still a large unmet demand for telephone lines, this sector has very large potential for expansion and is expected to attract considerably more investment from both large and small investors, once some

However, expansion in the sector is still highly constrained by the constant difficulties experienced by the Bangladesh Telephone and Telegraph Board (BTTB) to provide the necessary inter-connectivity, with one complete collapse of the network having been experienced in 2000, which resulted in all of the subscribers being cut off.

fundamental policy decisions such setting up a telecom regulatory body, and allowing private sector to set up an alternate long-distance network within the country, etc. are taken and implemented.

BTTB has unsuccessfully proposed several transmission link upgrade projects valued at US\$152 million, including fibre optics, digital spur links and digital microwave links, all of which have failed due to funding constraints. However, BTTB has also requested the Government to arrange funds from selected donors, including the World Bank, who would prefer to see the projects offered to the private sector. The absence of an independent regulatory body is seen as an impediment to greater private sector investment in the telecom sector.

The Government of Bangladesh has realised that the country is lagging significantly behind some of its Asian neighbours (as portrayed in

Table 2.1

A Quick Look at the Telecom Scene in Bangladesh and its Asian Neighbours											
Country	Independent Regulator	Competition in					Dominant Operator	VOIP Legal?	Separation of Policy and Regulation	Tele-density ²	Privatisation in Progress ³
		Fixed	Cellular	NLD ¹	International	ISP					
Bangladesh	No	No	Yes	No	No	Yes	Govt.	No	No	0.6	No
India	Yes	Yes	Yes	Yes	Yes	Yes	Govt. Corp. ⁶	No	Yes	3+	Yes
Pakistan	Yes	No ⁷	Yes	No ⁷	No ⁷	Yes	Govt. Corp. ⁶	No	Yes	4+	Yes
Sri Lanka	Yes	Yes	Yes	Yes	Yes	Yes	Govt. Corp. ⁶	?	Yes	4+	Yes
Nepal	Yes	Yes	Yes	Yes	Yes	Yes	Privatised ⁴	?	Yes	1+	Yes
Thailand	Yes	Yes	Yes	Yes	Yes	Yes	Govt. Corp. ⁵	Yes	Yes	4+	Yes
Malaysia	Yes	Yes	Yes	Yes	Yes	Yes	Privatised ⁴	?	Yes	22+	Yes
China	No	Yes	Yes	Yes	Yes	Yes	Govt. Corp. ⁶	Yes	No	20+	Not fully

1. Nationwide long distance service on fixed line phones.
2. The world average is 11 +, and the developed country average is about 55.
3. Privatisation of current/former government monopolies in telecom services.
4. Privatised former govt. monopoly.
5. Privatisation in progress.
6. Autonomous corporation.
7. Monopoly expires in 2002.

Sources: ITU website, and websites of regulators or dominant operators of the relevant countries.

Note: The table is quoted from a market study commissioned through IIFC by MOPT and conducted by Canada-Bangladesh Infrastructure Consultants of Ottawa, Canada in April 2001

Table 2.1) in building a telecom infrastructure suitable for giving *thrust* to the IT sector. So, recent Government telecommunications policy includes long-term plans to privatise BTTB and to install fibre optic and microwave links. The Bangladesh Government recently announced plans to increase the number of telephone lines to 1.3 million by the year 2002, and to 1.6 million by 2005.

2.2 Information Technology (IT) Sub-Sector

The IT sector in Bangladesh is relatively small

Following intense lobbying from the Bangladesh business community, the Government of Bangladesh has now declared information technology to be a "Thrust Sector". This in practice means that IT should be given the highest level of support from the government, in the form of zero customs duty on import of IT equipment, and other fiscal incentives.

compared to other South Asian and South East Asian countries, such as India, Pakistan, Philippines and Sri Lanka. However, it is believed that this sector could have considerable growth potential, if it were to receive better support from the Government. Consequently, it may offer increasing opportunities to small and medium sized investors from Europe. Up to now, IT investment in Bangladesh has mostly been confined to information processing by Bangladeshi firms who developed business alliances with international firms, mostly from America, for data entry, medical forms processing etc. However, growth has proven to be very slow, on account of the poor infrastructure in Bangladesh for information technology, which includes poor connectivity, high costs of data transmission, poor productivity, lack of trained programmers and

managers, and poor market promotion by Bangladeshi firms.

Several European companies, over the last five years or so are known to have considered investment in this sector in Bangladesh, as they sought to source reliable and cheaper information processing services.

One result of declaring IT as a *Thrust Sector*, is that duties on both computers and components imports have been eliminated, which has already led to reductions in retail prices of up to 40% on assembled computers. The weak telecommunications infrastructure is also starting to be strengthened as the government has opened up installation of very small aperture terminals (VSATs) to the private sector, in order to make the use of the Internet cheaper and to lower the cost of data transmission to allow Bangladeshi information processing services to compete with other Asian countries. Since March 2000, there are no longer any restrictions on getting licenses from BTTB for the installation of VSATs and the annual license fee has been reduced from US\$8,000 to US\$3,500. The Government is also investing in a digital data network, which will enable Internet service providers to increase transmission speeds from 128 kilobits per second to two megabits per second.

Poor data communications infrastructure has been responsible for very little European investment in Bangladesh, in either software development or in computing services. Moreover, software piracy has also been a major deterrent to investment in this area. Strong pressure is now being put by foreign governments for the final implementation of the strong intellectual property rights (IPR) laws. These laws, which have been needed for some time, are endlessly debated by the Government of Bangladesh, but have not been implemented to date.

The annual domestic market size for information technology, which includes computer hardware, peripherals and software was estimated by the US Embassy in Dhaka to be worth about US\$20 million a year, which is rapidly increasing at a rate of about 25% per year. There are approximately 200,000 desktop PCs in Bangladesh with sales dominated by locally assembled clones, with many local computer assemblers importing mother boards, with most components from either Taiwan or South Korea.

Vendors are now targeting small offices and home users. The growing number of computer training schools that are now operating in

One particular area of interest for Europeans is geographical information systems (GIS), which are key components in various environmental impact assessment studies needed for project development as well as for project planning. Since high levels of data entry and data management are key components of GIS, European firms wishing to offer these services in Bangladesh, try to develop business collaboration with local partners. In many cases, the European partner may supply key specialised equipment for digitising plus training to use it.

Bangladesh is expected to rapidly increase the number of computer personnel available.

Since the introduction of Internet services in 1996, a growing number of businesses and individuals have been buying computers for their communication needs.

Management is also being strengthened in a number of IT firms as many young Bangladeshis, who have studied and worked in both North America and Europe, have returned home and set up companies in Bangladesh.

To date no software or computing services firm has received ISO 9000 certification, or

even attempted to obtain it. This puts Bangladesh at a competitive disadvantage against neighbouring countries such as India, Pakistan, Philippines, Sri Lanka, where an increasing number of firms are obtaining certification.

3. LIST OF MAJOR LOCAL COMPANIES AND REVIEW OF THEIR EXISTING COLLABORATIONS WITH FOREIGN FIRMS

3.1 Telecommunications

3.1.1 Public sector telecommunications

The Bangladesh Telegraph and Telephone Board (BTTB) is the main operator of telephone services in Bangladesh and has until recently maintained a monopoly position on domestic wire services, international (terrestrial) and satellites, with all international dialing being retained as a Government monopoly.

In 1983, BTTB started to install a national automatic long distance telephone dialing system to link all major cities of the country and by June 1997, some 100 stations including all 64-district headquarters and 10 Thana headquarters and 36 Thanas were brought under this system.

In order to meet the broad objective of the National Telecommunication Policy of 1998, which sets a target to substantially increase the number of telephone lines in service by 2010, BTTB has tried to plan a number of programmes to increase its telephone capacity, replace and modernise existing exchanges. However, BTTB's development plans have been considerably constrained by lack of financial resources.

The ongoing BTTB expansion programme to allow Bangladesh to raise its telephone

Table 3.1
BTTB Expansion Programme

Name of Programme and Major Equipment Vendor	Telephone Exchange Capacity		
	Replacement	Expansion	Total
200,000 lines digital telephone project with Bond Financing ALCATEL	66,000	134,000	200,000
Installation of 39,000 lines in Chittagong with French funding, ALCATEL	8,860	30,140	39,000
SADE Programme for 7 district headquarters by Italtel Linea	9,900	10,600	20,500
Greater Dhaka (Phase – II) telephone project (OECF funding from Japan), Ericsson	17,000	50,500	67,500
140,000 lines digital telephone lines at district headquarters (Suppliers credit from China)	40,000	100,000	140,000
Emergency Expansion of 6 NEC Digital exchanges in Dhaka		12,000	12,000
Installation of 2000 line digital exchange at Feni (Italtel Linea)	1,600	400	2,000
Digital exchange at Narayanganj and Sirajganj under RR Program (Italtel Lines UT Model)	5,700	2,300	8,000
Installation of digital exchanges at Chapai Nawabganj, Naogaon and Thakurgaon	1,200	1,800	3,000
Total	150,260	370,740	521,000

Source: Telecommunications in Bangladesh. Paper presented by Fazlur Rahman of Multi Media, at the Workshop on Internet: South Asian Realities and Opportunities, Dhaka, April 5-8, 1999

capacity to at least 1,000,000 lines by the year 2000, was presented at the Workshop on the Internet: South Asian Realities and Opportunities held in Dhaka from April 5-8, 1999, and is given above in Table 3.1

At the moment, there is somewhat of a stand-off between the Government of Bangladesh (GOB) and the World Bank. The World Bank wants GOB to appoint an "independent" regulator for the telecom sector before any further reforms are introduced. But GOB has not agreed to this condition so far, and consequently, the World Bank has put on hold any further funding by the Bank, to support the growth of the telecom sector.

In 1996, in order to develop international VSAT services to facilitate global high-speed data communications for their subscribers, BTTB made an agreement with Pakistan Datacom to install and operate VSATs in Bangladesh on a 5 year BOT (Build, Operate & Transfer) basis. Under this arrangement Pakistan Datacom contracted to supply, install, operate and maintain VSATs in Bangladesh on behalf of BTTB and by mid 1997, five subscribers were given VSAT data based circuits, with subscribers being charged a fixed monthly rent for each VSAT circuit.

3.1.2 Private sector telecommunications

Seven licenses have already been awarded and are listed in Table 5.1 in Section 5. The responsibility for rural telecommunication services was entrusted to two local private operators, the Bangladesh Rural Telecommunication Authority (BRTA) and Integrated Services Limited, with rural Bangladesh being equally divided between the two operators.

BRTA, after winning the concession to provide rural telephone services, developed a relationship with Nokia from Finland, who took total responsibility under a turnkey contract to provide digital linkages to 165 rural headquarters. In turn, Nokia then developed business collaboration with Cosmos Marketing Consultants to provide management and operational support.

Ericsson has in 2000 signed a five year contract with TM International (Bangladesh) Ltd (TMIB) for the upgrading of their GSM cellular network. TMIB, who hold a 15 year licence to build, own, operate and maintain a GSM network in Bangladesh, launched their network in 1997 using an infrastructure supplied by Alcatel.

The two Code Division Multiplex Access (CDMA) networks that were launched in 1999 by the Pacific Bangladesh Telecom Limited to cover Dhaka and Chittagong, were totally supplied and supported by Motorola from the United States through their Network Solutions Division.

BTTB had been forced to develop a number of operational collaborations to allow not only an enlargement of the current system but to maintain and upgrade the existing system, as could be seen in Table 3.1. In November 1999, the BTTB signed a contract with the China National Machinery and Equipment Import and Export Corporation (CMEC) valued at US\$ 213 million, which gave CMEC the responsibility to upgrade the telecommunications infrastructure in 58 districts in Bangladesh, while 2 months earlier another contract, valued at approximately US\$ 58 million, was awarded to the Pakistan Telecom Foundation, in collaboration with the Telephone Industries Pakistan to install an additional 55,000 telephone lines in Bangladesh by the end of 2000.

Finally in 2000, breaking the fixed telephone line monopoly position of the BTTB, the Bangladesh Government has awarded a concession, which will allow WorldTel Limited from the United Kingdom to supply a complete telephone system to Dhaka with 300,000 digital lines on a build own operate (BOO) basis. The system, which is expected to be operational in 2003, and designed to be expanded to 500,000 lines, would then compete with BTTB. However, recent reports indicate that WorldTel is finding it difficult to finalise the deal.

WorldTel, which operates from London with a branch office in Geneva, is a private sector development company that had been created by the International Telecommunications Union (ITU) in Geneva to develop and finance telecommunications in developing countries on a commercial basis. WorldTel develops strategic alliances with specific systems suppliers and equipment suppliers to design build and operate their system and could well represent potential business opportunities for European investors in the telecommunications sector.

Cellular mobile telephone services were first introduced into Bangladesh by Pacific Bangladesh Telecom Limited (PBTL), a joint venture partnership that is owned by the local conglomerate, the Pacific Group, in 1989 using an Analogue Mobile Phone System (AMPS), though more recently they have changed and are now using Code Division Multiple Access (CDMA) technology.

The other three Operators Grameen Phone Limited (GP), TM International (Bangladesh) (TMIB) and Sheba Telecom are providing Cellular service with GSM technology. Private operators offer the mobile, paging and the radio trunking services. Private operators are also given license to operate digital exchanges at rural Thana headquarters. Details about their

activities of the Bangladesh branch of the GSM World Association can be found on their Web site at:

www.gsmworld.com/gsminfo/cou_bd.htm

Constant problems of interconnection with BTTB, have forced private operators to seek their own transmission network, including using the Bangladesh Railways Fibre Optic network for cellular service. GrameenPhone Limited (GP) after taking out a long lease on the fibre optic cable network that the Bangladesh Railways developed along the entire length of their railway tracks has since been upgraded. This has provided GrameenPhone with a ready made transmission network that covers the whole of Bangladesh and has helped them expand their services along the entire railway route. As a result, GrameenPhone is now expanding its customer base by almost 20,000 a month. Of course, due to lack of adequate interconnection capability of BTTB, most of the new Grameen customers can communicate only with other Grameen customers.

The other two cellular operators are also constructing their own microwave links along the Dhaka to Chittagong highway.

3.2 Information Technology

From the field survey it was possible to identify the most important Bangladeshi Computer Companies, those who export and those who are seeking to strike strategic alliances.

A few organisations and some individuals have been exporting Software and Data Processing services. Despite their best efforts, the Export Promotion Bureau (EPB) is still unable to procure documented evidence of the actual exports Bangladesh has made. Nonetheless, among the firms/organisations which have

exported IT services are CITech (Computer Information Technology Co); Computer Solutions Limited; ANIRBAN; IBCS-Primax; BRAC; NACD, FBC and Machine-Dialogue. However, the total volume of such export is negligible. According to the recent data available from EPB, computer software and data processing services worth, US\$ 15 million were exported during the year 1998-99.

There are now about one hundred companies that are members of the Bangladesh Computer Samity (BCS), many of which are headed by young professionals, who after completing their studies in Europe and North America then returned to Bangladesh and created their own companies. At the present development stage of the IT sector, these professionals are well aware of their shortcomings and are conscious that they require know-how and technology, and so are interested in seeking strategic alliances with European firms.

Several of the most promising, who are listed in Appendix 3, have been regularly sponsored by both the United Nations and bilateral funds to attend the CeBIT information technology fair in Hanover, Germany, as well as the Softworld fair in Canada.

4. FORMS OF CO-OPERATION

All the seven telecom licencees to date have either foreign private operators as partners or foreign equipment suppliers. All foreign private operators have entered the market by way of joint ventures, even though in accordance with the GOB private sector investment guidelines, they could have taken 100% equity stake in a telecom operating company. Most foreign investors believe that they need a local partner to help them through the regulatory process with MOPT, while most local groups did not feel they had sufficient technical skills or financial resources to operate on their own.

Collaboration in information technology is mostly based on licensing agreements and representation. A growing number of computer training schools are being opened, including one sponsored by Microsoft.

5. EUROPEAN AND OTHER FOREIGN FIRMS PRESENT IN THE TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY SUB-SECTORS

As indicated earlier, there are already a number of European and other foreign

Table 5.1
Telecommunication Operators in Bangladesh

Operator	Foreign Collaborator/Vendor	Area of Operation
Pacific Bangladesh Telecom Limited	Motorola	Cellular Radio Telephone Service
Bangladesh Telecom (Pvt.) Limited		Radio Paging, Radio Trunking and Riverine Telecommunication Services
Bangladesh Rural Telecom Authority	Nokia	Rural Telecom Service
Sheba Telecom Limited	Joint venture between Integrated Services Ltd. and Technology Resources Industries Bhd (Malaysia)	Digital Cellular Mobile Radio Telephone Services, and Rural Telecom Service
GrameenPhone Consortium	A joint venture among Telenor (Norway), Grameen Bank, Marubeni Corporation (Japan) and Gonofone (US)	Digital Cellular Mobile Radio Telephone Services
TM International (Bangladesh)	Ericsson; A joint venture between Telecom Malaysia and A.K. Khan Group	Digital Cellular Mobile Radio Telephone Services
Bangladesh Broadcasting Telephone & Technology (BBTT)		Personal Hand-phone System (PHS) [Not commissioned yet]

Source: Telecommunications in Bangladesh by Fazlur Rahman cited in Table 3.1

companies present in Bangladesh, as operators, where they work in joint venture with local firms and as suppliers of equipment. Table 5.1 above lists the telecom licensees, a number of which have foreign partners or foreign vendors.

Although there are a number of European investors who may have a significant presence in this sector, a large part of it appears to be dominated by investors from North America. Tyco Submarine Systems Limited of the US has signed an MOU with the GOB to lay an underwater fibre optic cable between Bangladesh and Singapore, which would allow Bangladesh access to the global underwater telecommunications cable network that passes through Singapore. This will then give Bangladesh world-wide connectivity into the data superhighway. The underwater fibre optic cable that would cover some 3200 kilometres between Bangladesh and Singapore, is expected to cost about US\$150 million and to be completed by the year of 2002.

6. ANALYSIS OF IMPORT AND EXPORT FLOWS

The World Bank believes that considerable foreign exchange is earned by Bangladesh on account of the revenue sharing arrangements that BTTB has with international operators. However, the World Bank's study on FDI in Bangladesh gives the following projections of private capital inflows and outflows in telecommunications investment between 1999-2000 and 2009-2010, which are given below in Figure 6.1

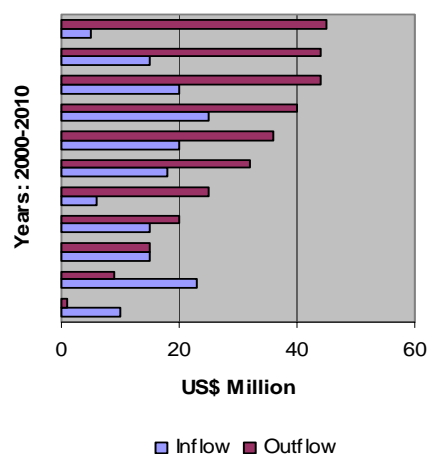
The total FDI in telephone sector was 74.0 million US\$ from 1994-95 through 1998-99, (World Bank, 1999).

It was also noted that once information technology became a "Thrust Sector" and

import duties were eliminated, it boosted computer imports substantially and led to large retail price reductions. However in the telecommunications sector, import duties and taxes on telecom equipment and phones are still very high at 60%.

Figure 6.1

Projected Private Capital Flows in the Telecom Sector



Source: The World Bank

7. ANALYSIS OF MAIN MARKETS

7.1 Local, regional and international markets

As noted earlier, the main telecommunications market in Bangladesh is composed of a little over 800,000 phone connections, almost one-third of which are cellular phones. At the present trend, it is expected that cellular phones will outnumber fixed-line phones by the end of 2002, thanks largely to the fast growth of the GrameenPhone system. Currently there are three markets in Bangladesh, namely the local call market, the domestic long distance market and the international market. The highly lucrative international market is exclusively served by BTTB. According to estimates reported annually in the International Telecommunications Union Yearbook,

incoming calls outnumber outgoing calls by a ratio of 3:1.

7.2 Market Trends

Depending on the success of the World Bank's Bangladesh-Telecommunications Sector Reform Programme, which *inter alia*, hopes to rehabilitate BTTB's existing network to facilitate interconnection between the private operators and BTTB's existing network, the number of subscribers is expected to increase substantially. Also telecommunications reform will include regulatory changes such as the opening of the wireless area, which is expected to result in an improved infrastructure. To date the private sector has been more concerned with developing the local call market, where strong competition is expected to drive the market.

With the large number of people registered on waiting lists, the market trend is expected to show rapid growth for the foreseeable future.

Once Bangladesh becomes connected to the global submarine cable system in Singapore in 2002, it will then have the availability of a significantly increased bandwidth, and so the Internet market is expected to grow exponentially.

7.3 Role of Local Agents

The role of the local importer or distributor in both telecommunications and information technology can be very important. Local agents may act both as a local partner and/or as a country representative or distributor. While this particular aspect of investment was not specifically studied in detail, the positive role that industrial groups such as the A.K. Khan Group or the Cosmos Group have played in introducing foreign investment in the

telecommunications sector has been particularly noticeable. For example, as was mentioned above, the Cosmos Group was able to assist Nokia from Finland to develop a relationship with the Bangladesh Rural Telecom Authority to develop rural telecommunications. Their corporate brochure also claims that they have collaborated with the MCI Communications Corporation from the United States to support their efforts to add more telephone circuits between Bangladesh and the United States for improved connection to the Internet. A.K. Khan Group in a similar way, have developed positive relationships with Telecom Malaysia to form TM International (Bangladesh), (TMIB).

In the information technology sector, since no major software or information processing firm is resident in Bangladesh, with the possible exception of Siemens Bangladesh, most IT firms work through distributors or selected partners that are licensed to use their proprietary system. Also most major international firms have a partner programme, which allows them to use certain proprietary software, use a certain platform and be technically supported by the international firm.

Any small to medium sized firm wishing to enter the telecommunications sector in Bangladesh, will find that talking to such groups as Cosmos Marketing Consultants, would allow them to determine the best ways of entering into this market. However, it must be pointed out that all of the embassies of EU Member States resident in Bangladesh have lists of the most reliable importers, distributors or agents that they believe could be approached for specific sectors.

7.4 Competition

Since BTTB controls monopolies on both international (terrestrial) and satellites for the foreseeable future, competition will only be considered for the local market. Until recently BTTB held a monopoly also on domestic fixed line markets in urban areas. Now, with the awarding of a contract to WorldTel, as described earlier, things may change.

Apart from competition in the fixed line portion, there is considerable competition in the various mobile sectors.

In the future, GSM systems may have to compete with providers of CDMA-based systems, that have just started to appear in Bangladesh. Currently there is only one company, Pacific Bangladesh Telecom Ltd (PBTL), a joint venture partnership that is owned by the local conglomerate, the Pacific Group, who provide CDMA systems-based services. PBTL do this by using an 800 MHz cellular system provided by Motorola Inc, which has a 50,000 subscriber capacity. PBTL has also commenced a second service in Chittagong which also has the capacity to service 50,000 subscribers.

8. MAIN TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY SECTOR-RELATED ISSUES

8.1 The Poor State of the Telecommunications Infrastructure

The BTTB network in Bangladesh is old and in disrepair and is selectively focused on urban areas as well as predominately located away from rural areas, where the majority of the population live. The waiting time for a

connection has to be counted in years, with some 200,000 people waiting to be connected.

The Bangladesh Telecom Scene at a Glance

- Extremely low tele-reach (access to a telephone);
- Badly structured and poorly managed BTTB, the government-owned telephone company;
- Existing telecom policies adequate, but no action towards implementation;
- Unrealistically high tariff;
- Recent opening up of VSAT service to the private sector;
- Tremendous shortage of BTTB network capacity, denying interconnection to new cellular subscribers and other users of value added services;
- Buoyant growth of the cellular industry;
- A very high scarcity premium for new fixed telephone connections;
- Voice over Internet Protocol (VOIP) declared illegal;
- Cellular companies are barred from carrying data;
- A burgeoning domestic IT industry suffering from lack of connectivity and telecom service;
- BTTB's services part is in a poor state;
- An undersea cable project is said to be in the works, with no visible progress;
- Urgent need of thousands of public telephones
- More than 200,000 ISP subscribers, thanks largely to opening up of VSAT services, but now ISPs cannot market their services aggressively due to the lack of additional lines they need.

The reliability of the BTTB for their line transmission infrastructure is considered suspect with an annual reported main line fault rate of 600 faults per 100 main lines.

There are also problems of cross connections, with many connections being made with incorrect numbers. With a call completion rate reported to be about 40%, there is considerable customer dissatisfaction. The poor quality of service can be gauged from the complaint rate, which averages 50 complaints per 100 lines per year.

8.2 Interconnection

There is an urgent need for an alternate high-speed network in the country, to alleviate the acute interconnection problem, and even BTTB senior executives acknowledge that. Once the Government gives the green signal for such a network, it may open up a lot of business opportunities for European telecom firms.

Poor levels of interconnection between private operators and BTTB is a major constraint being experienced by private operators and presents major problems for those wishing to expand their network. As more private operators receive licenses and the traffic generated by existing and new operators increases, it is believed that interconnection problems and traffic congestion is likely to worsen before it improves, as there is an unwillingness to interconnect even where possibilities exist. Although considerable pressure is constantly being put on BTTB, particularly on the occasion after their whole network went down in early 2000, BTTB have not been able to respond to the problem.

8.3 Call and Installation Charges

An installation charge of US\$450 in Bangladesh is among the highest in the world, compared to Pakistan's charge of US\$90 and India's US\$60. International call charges are also high, with charges for calling Europe at US\$1.50/minute, being six times higher than the charges for calling Bangladesh from Europe.

8.4 Intellectual property rights (IPR)

Bangladesh has been a member of the World Intellectual Property Organisation (WIPO) since 1985, and adheres to the Paris Convention on Intellectual Property, 1991. While its intellectual property laws are

outdated and enforcement of existing regulations is weak, the Bangladesh Government is working to generate awareness and update old laws. The Government is currently examining drafts of new Patent, Designs and Trademark Acts which, if legislated, would bring them into conformity with the World Trade Organisation's Trade Related Aspects of the Intellectual Property Rights (TRIPS) Agreement, which the Government has already signed. Bangladesh has 10 years from January 1, 1995 to implement TRIPS.

Discussions were held in Bangladesh in 1999 by the American-Bangladesh Chamber of Commerce to expedite this legislation, which was followed by the visit by a major delegation from the United States representing

Although intellectual property infringement is common, it is of particular significance for IT investment, where the lack of adequate IPR is now recognised as a serious constraint. The Government is currently trying to overcome such constraints through legislation that has continually been reported to be before Parliament for a number of years. Such legislation that is sought by the business community, would match most of the IPR standards legislated in India, which have recently been implemented and which are believed to have substantially helped to increase the level of IT investment coming into India.

members of the global membership of the Software Publishers Association, who made it very clear that Bangladesh could not hope to be able to get any substantial IT investment until such legislation is passed.

8.5 Problems encountered by Internet Service Providers (ISPs)

All the major Internet Service Providers (ISPs) in Bangladesh are providing their Internet services via the satellite links through VSATs

(Very Small Aperture Terminals). However, those data circuits using such uplinks experience inherent time delays of more than 500 milliseconds, which are not experienced by ISPs, that connect via optical fibre links for internet connectivity. Optical fibres, which use the frequency of light, offer availability of a much higher bandwidth than is currently available from a single linkage via VSATs.

Due to the high cost of the satellite linkages, most of the ISPs in Bangladesh are only using single VSATs, which connect to international providers either in Hong Kong or Singapore. Currently only two ISPs in Bangladesh have two VSAT circuits. Since all VSAT circuits require periods of down-time, it would be impossible for any ISPs with only a single VSAT, to be able to ensure an uninterrupted service.

Because of this, many Bangladeshi ISPs find it difficult to justify providing many added-value services, such as Internet telephony, fax-to-fax and voice over IP. Since Bangladesh Government's policy is not at all clear about the provision of such services, some ISPs take advantage of unclear government policies to offer telephone and fax services, while others simply refrain from doing so.

Currently BTTB provide the VSAT data circuits to ISPs, with BTTB leasing their circuits from other VSAT operators outside Bangladesh and then leasing them out to local VSAT subscribers. However, in order to obtain VSAT connection, all subscribers must sign an agreement with the BTTB which includes a declaration that the subscriber will not provide any service that competes with BTTB. Hence, all VSAT subscribers in order to comply with their contractual agreements are only permitted to use their VSAT data circuits either for private use or for connection to the Internet. Now that the BTTB has become an ISP themselves, they are competing in the domain of the ISPs.

The Bangladesh Telegraph and Telephone Board BTTB, both controls and acts not only as the local VSAT operator but as the sole provider of land line telephones as well. However, processing any request for VSAT data circuits or telephone lines through BTTB can often take unacceptable amounts of time and effort.

Finally, European SME investors must recognize the following global trends in telecom, in evaluating any investment options. Sooner or later, Bangladesh and other developing countries will also have to take note of these trends, and do their best to set the stage accordingly, so that they do not fall behind others in the global information highway.

Global Trends in Telecom

- Voice traffic already overtaken by data;
- Mobile phones outstripping fixed line phones, particularly in many Asian countries;
- Internet access through mobile phones: packet radio and 3G networks
- IP telephony replacing traditional Public Switched Telephone Networks;
- Meltdown in revenue from voice over the next decade;
- Complete re-structuring of telecom tariff to raise revenue mainly from data traffic;
- Government-owned utilities disappearing fast through privatisation;
- Internet and web technologies dominating the world through e-business, e-education, e-entertainment, e-governance, and even e-health;
- Telecom markets becoming more and more competitive;
- Telecom sector liberalisation and reforms sweeping the developing countries;
- With greater competition, regulators turning to light-handed regulation;
- Regulators becoming more like umpires in a game, to ensure a level-playing field for all competing participants;
- Increased recognition of convergence of technologies (telecom, broadcasting, and information technology) through multimedia policies and regulatory bodies.
- A country's economic health increasingly dependent on its IT savvy.

APPENDICES
APPENDIX 1: INFORMATION SOURCES ON THE TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY SUB-SECTORS
Information on Telecommunications

APT Yearbook 1998 covering Bangladesh and published by APT Secretariat

Bangladesh branch of the GSM World association can be found on their Web site at: www.gsmworld.com/gsminfo/cou_bd.htm , which lists the GSM operators in Bangladesh and provides an increasing number of hyper linkages to relevant sites.

International Telecommunications Intelligence is published weekly by Espicom Telecommunications Intelligence, Chichester, United Kingdom. It provides a wide range of news and analysis of the global telecommunications industry, including Bangladesh. Details are available at www.espicom.com

Internet in Bangladesh: State of Art and Changes Needed to Prosper. Paper presented by S.M. Iqbal of Information Services Network Ltd at the Workshop on Internet: South Asian Realities and Opportunities Dhaka, April 5-8, 1999

International Telecommunications Union Yearbook 2000. Published annually by the International Telecommunications Union. Geneva.

Telecommunications in Bangladesh. Paper presented by Fazlur Rahman of Multi Media, at the Workshop on Internet: South Asian Realities and Opportunities Dhaka, April 5-8, 1999

Telecommunications Re-Regulation in Bangladesh. Paper jointly presented by L .Jean Camp of Harvard University and Brian Anderson of UUNET at the INET 2000 18-21 July 2000, Japan

World Bank: *FDI in Bangladesh: Issues of Long-run Sustainability*. A policy note. October 1999.

World Bank Group. Development data available at www.worldbank.org/data/

World Bank Project Information Document: *Bangladesh Telecommunications Project*, 5 September 1997

Information on Information Technology

South East Asia Software & Services Financial Times Survey 2 June 1999

Information Technology Handbook for Developing Countries published by International Trade Centre UNCTAD/WTO, Geneva. English, French and Spanish. 1998.

APPENDIX 2: LIST OF KEY CONTACTS

<p><u>Bangladesh Telegraph and Telephone Board (BTTB)</u> Telejojog Bhaban, 37E Eskaton Gardens Dhaka 1000 Tel: 880 2 407 800, 880 2 831500 Fax: 880 2 832 577</p>	<p><u>Ministry of Posts & Telecommunications (MOPT)</u> Telecommunications Regulatory Board Bhaban N° 7, Room 411 Bangladesh Secretariat Dhaka 1000 Tel: 880 2 831 480 Fax: 880 2 861 5755</p>
<p><u>Bangladesh Computer Council</u> (Ministry of Science & Technology) House 31/A, Road 6, Dhanmondi Dhaka - 1205 Tel :880 2 861 0680 Fax : 880 2861 3773 E-mail : jan@bangla.net</p>	<p><u>Bangladesh Computer Samity (BCS)</u> IT Association of Bangladesh 13/1 Fatema Arcade (2nd Floor) Road 5, Dhanmondi, Dhaka - 1205 Tel : 880 2 861 1444 Fax : 861 0410 E-mail : bcc@bdonline.com</p>
<p><u>Bangladesh Association of Software & Information Services (BASIS)</u> 54 Inner Circular Road Dhaka 1000 Tel: 880 2 811 6215 Fax: 880 2 811 7734</p>	

APPENDIX 3: LIST OF FIRMS OPERATING IN INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS IN BANGLADESH

INFORMATION TECHNOLOGY FIRMS	
<p><u>CITech Communications Limited</u> SR # 230, BSC Computer City AT IBD Bhaban E-8A Rokeya Dhaka 1212 Tel: 880 2 881 1196 Fax: 880 2 881 1195 Email: azhar@citechco.net</p>	<p><u>Computer Services Limited</u> House N° 43, Road N° 16 New Dhanmondi Dhaka 1209 Tel: 880 2 811 6215 Fax: 880 2 911 9861 Email: csl@citechco.net</p>
<p><u>Decode Limited</u> House 49 (1st Floor) Satmasjid Road Dhanmondi R/A Dhaka 1209 Tel: 880 2 816 490 E-mail : decode@citechco.net Website : www.decodebd.com</p>	<p><u>IBCS Primax Software (BD) Limited</u> House N° 672, Road N° 11 New Dhanamondi R/A Dhaka 1212 Tel: 880 2 816921 Fax: 880 2 818178</p>
<p><u>Leads Corporation Limited</u> Adamjee Court Annex 2 119-120 Motijheel C/A, 5th Floor Dhaka 1000 Tel: 880 2 955 1746 Fax: 880 2 956 5586 Email: leads@bangla.net Web site: www.leads-bd.com</p>	<p><u>Texas Electronics Ltd</u> BTA Tower (10th Floor) 29 Kemal Ataturk Avenue Banani C/A Dhaka 1213 Tel: 880 2 988 5710 Fax: 880 2 882 3587 Email: sfque@texasgroup.net Web site: www.texasgroup.net</p>
<p><u>Siemens Bangladesh Limited</u> Jiban Bima Tower (12th Floor) 10 Dilkusha Commercial Area Dhaka - 1000 Tel : 880 2 956 3739, 880 2 956 3734-37 Fax : 880 2 887 261 E-mail : sbl@bangla.net</p>	<p><u>Technohaven</u> House N°37, Road N°6 Dhanamondi R/A Dhaka 1205 Tel: 880 2 966 8334-7 Fax: 880 2 966 8338</p>
<p><u>First Bangladesh Consulting Ltd. (FBC)</u> House # 64, Road # 17, Block # E, Banani, Dhaka-1213 Tel: 880 2 881 1768, Fax: 880 2 8828836 E-mail: fbc@firstbangla.com URL: www.firstbanla.com/fbc</p>	

TELECOMMUNICATIONS FIRMS IN BANGLADESH	
<p><u>Ericsson Radio Systems AB</u> Iqbal Centre (12th Floor) 42 Kemal Ataturk Avenue Banani, Dhaka 1213 Tel: 880 2 988 6641, 880 2 882 3864 Fax: 880 2 988 6642 Email: jan.campbell@bbd.ericsson.se</p>	<p><u>GrameenPhone</u> Celebration Point Road # 113/A, Plot # 3 & 5, Gulshan, Dhaka 1212 Tel: 880 2 988 2990 Fax: 880 2 988 2970 Web site: www.grameenphone.com</p>
<p><u>Sheba Telecom</u> 28 Land View (12th Floor) Gulshan 2, Dhaka 1212 Tel: 880 2 882 1256 Fax: 880 2 882 7 265</p>	<p><u>TM International (Bangladesh) Ltd</u> BRAC Centre (9th Floor) 75 Motijheel C/A Dhaka 1213 Tel: 880 2 988 7150 Fax: 880 2 988 5463</p>