

Document of  
**The World Bank**

**Report No. 13298-PAK**

**STAFF APPRAISAL REPORT**

**PAKISTAN**

**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

**OCTOBER 18, 1995**

**Energy and Project Finance Division  
Country Department I  
South Asia Region**

## CURRENCY EQUIVALENTS

(As of June 1995)

Currency Unit	=	Pakistan Rupee (Rs)
US\$1	=	Rs 31.0
Rs 1	=	US\$0.0323
Rs 1	=	100 paisas

### Fiscal Year

(Government of Pakistan)

July 1 - June 30

## WEIGHTS AND MEASURES

1 meter	=	3.28 feet
1 kilometer	=	0.63 miles

## ABBREVIATIONS AND ACRONYMS

BLT	-	Build Lease Transfer
ECNEC	-	Economic Committee of the National Economic Council
FAB	-	Frequency Allocation Board
FTN	-	Federal Telecommunications Network
GITT	-	Government Inspector for Telegraph & Telephone
GOP	-	Government of Pakistan
HF	-	High Frequency (3-30 MHz)
ITU	-	International Telecommunication Union
MOC	-	Ministry of Communications
MOF	-	Ministry of Finance
NTC	-	National Telecommunications Corporation
PC	-	Privatization Commission
PCO	-	Public Call Office
PCS	-	Personal Communications Services
PTA	-	Pakistan Telecommunications Authority
PTC	-	Pakistan Telecommunications Corporation
PTCL	-	Pakistan Telecommunications Company Ltd.
PWB	-	Pakistan Wireless Board
T&T	-	Telegraph & Telephone (Department)
UHF	-	Ultra High Frequency (300-3000 MHz)
VHF	-	Very High Frequency (30-300 MHz)
VSAT	-	Very Small Aperture Terminal

PAKISTAN

TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT

Loan and Project Summary

<u>Borrower:</u>	Islamic Republic of Pakistan
<u>Beneficiaries:</u>	Ministry of Communications (MOC), along with Pakistan Telecommunications Authority (PTA) and Frequency Allocation Board (FAB)
<u>Poverty Category:</u>	Not applicable
<u>Amount:</u>	US\$35.0 million equivalent
<u>Terms:</u>	20 years, including 5 years of grace, at the Bank's standard variable interest rate.
<u>Commitment fee:</u>	0.75% on undisbursed loan balances beginning 60 days after signing , less any waiver.
<u>Project Description:</u>	The project components are as follows: (i) technical assistance, through a technical cooperation arrangement to support PTA and FAB during their first year of operation; (ii) consultancy services to assist in the establishment of suitable long-term strategies regarding tariffs, demand management, quality of service and others to support the privatization of PTC; (iii) training of PTA's and FAB's staff; and (iv) hardware and software for an integrated radio spectrum management and monitoring system. Upon completion, Pakistan will have a complete regulatory system for the telecommunications sector, including an adequate licensing regime and radio frequency management.
<u>Project Benefits:</u>	The project is an attractive investment in basic economic management, leading to a more efficient telecommunications sector. The establishment of a transparent regulatory framework and competent regulators with adequate authority and known mandate is essential for the reform of the sector and GOP's privatization efforts. Private operators of telecommunications services would benefit from knowing the rules for tariff adjustments, interconnection, competitive behavior, licensing, etc., and this should encourage them to invest and expand services. The consumers would benefit from increased choice and competition in the provision of services, the establishment of quality of service standards, the consumer protection aspects of new legislation and the possibility to take their complaints to the regulator, PTA, in case an operator does not take adequate corrective action. The expansion and improvement of telecommunications services will contribute to economic growth and poverty alleviation.
<u>Project Risks:</u>	A delay in project implementation may reduce the project's usefulness to GOP in its privatization efforts. Further, GOP's maintenance of capable regulators and adequate funding arrangements for PTA and FAB are critical to ensure the efficient regulation and longer term benefits of the project.

**Estimated Project Costs**

Project Components	US\$ Million			Foreign as % of Total
	Local	Foreign	Total	
<b>MOC</b>				
Support to Sector Reform Program	0.2	0.2	0.4	51.3
Project Implementation Support	0.3	0.0	0.3	0.0
Subtotal:	0.5	0.2	0.7	27.8
<b>PTA</b>				
Type Acceptance Laboratory	0.5	1.3	1.8	71.4
Frequency Management Equipment	1.3	3.3	4.6	71.4
Computers, Office Equipment and Vehicles	0.4	0.5	0.9	57.8
Land, Buildings, Air Cond. and Power Supply	1.7	0.2	1.9	9.0
Training	0.3	0.7	1.0	71.4
Technical Assistance	0.2	0.6	0.8	71.4
Subtotal:	4.4	6.6	11.0	59.6
<b>FAB</b>				
Frequency Management System	8.3	20.6	28.9	71.4
Computers, Office Equipment and Vehicles	0.7	1.0	1.8	58.2
Land, Buildings, Air Cond. and Power Supply	2.3	0.3	2.7	12.4
Training	0.5	1.2	1.7	71.4
Technical Assistance	0.7	1.8	2.5	71.4
Subtotal:	12.5	25.0	37.5	66.6
<b>TOTAL BASE COST</b>	<b>17.5</b>	<b>31.8</b>	<b>49.3</b>	<b>64.5</b>
Physical Contingencies	0.9	1.6	2.5	64.5
Price Contingencies	0.6	1.2	1.9	66.1
<b>TOTAL ESTIMATED PROJECT COST</b>	<b>19.0</b>	<b>34.6</b>	<b>53.6</b>	<b>64.5</b>

Note: Totals may not be exact due to rounding. Local costs include about US\$14.3 million equivalent for taxes and duties.

**Project Financing Plan (US\$ Million Equivalent)**

	Local	Foreign	Total	% of Total
<b>GOP</b>	18.6	0.0	18.6	34.7
<b>IBRD</b>	0.4	34.6	35.0	65.3
<b>TOTAL</b>	19.0	34.6	53.6	100.0

**Disbursement of Bank Loan (US\$ Million Equivalent)**

Bank FY	1996	1997	1998	1999
Annual	0.8	9.5	20.5	4.2
Cumulative	0.8	10.3	30.8	35.0

Economic Rate of Return: Not applicable

**PAKISTAN**  
**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

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This report is based on the findings of an appraisal mission that visited Pakistan in May 1994. The project team consisted of Mihkel Sergo (Task Manager, SA1EF), David Delgado (Telecommunications Engineer, IENTI), Syed Sathar (Consultant, SA1EF) and Ritin Singh (Consultant, SA1EF). Local and foreign consultants also assisted in the preparation of the project. Mr. Paul Isenman was the Director, Country Department I, South Asia Region, and Mr. Per Ljung is Chief, Energy and Project Finance Division. The peer reviewers were Bjorn Wellenius, Peter Smith (IENTI), Pierre Guislain (PSD), Khalid Siraj (ASTTP) and Mohsen Khalil (CIND3).

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Map: IBRD No. 27286



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**I. THE TELECOMMUNICATIONS SECTOR**

**A. BACKGROUND**

1.1. Over the last ten years, Pakistan's economic growth has averaged about 5.5% per annum. However, the September 1992 floods were a major setback for Pakistan's economy. The real GDP growth rate dropped from an average 6.1% in fiscal 1978-92 to only 3.6% in fiscal 1992-95 with several key sectors (agriculture, mining, manufacturing and commerce) experiencing a significant slow down in their growth rates. The management of the fiscal policy has been difficult and, as a result, overall public sector borrowing, which had declined in fiscal 1991-92 to 7.4% of GDP, increased to over 9% in fiscal 1992-93.

1.2 The process of structural reforms initiated in the late 1980s was subsequently expanded into a comprehensive Bank-and-IMF-supported adjustment program in 1993. Under it Pakistan has made significant advances in reducing trade and regulatory barriers to private sector-led growth, although further deepening of reforms is required to improve competitiveness and diversify the economy's productive base. The Government's reform program emphasizes a redefinition of public and private sector roles, by limiting public sector activities to areas of substantial externalities and appropriate regulation of a more competitive environment for the private sector. This policy is reflected in GOP's privatization program for state-owned enterprises and the opening up of areas previously reserved for the public sector. For this purpose, GOP established a Privatization Commission (PC) to manage the privatization of state-owned enterprises. The Bank supports the PC's activities through consultants and other assistance financed by an Institutional Development Fund grant for these purposes and through advice provided by staff.

1.3 The 1980s was a period of rapid technological development and innovation in the telecommunications sector with the introduction of new products and services, such as cellular communications, telefax and high speed data communications. To keep pace with these changes, and meet the dramatically increased demand for service, a growing number of developing countries have restructured their telecommunications sectors. The objectives of these reforms have been to mobilize additional capital for investment, improve the performance of operating enterprises, and respond to rapidly growing pressures for better and more varied telecommunications services. The pace and scope of reforms has varied considerably. Chile, Argentina, Venezuela and Mexico have privatized their telephone companies. In the early 1990's, there was a partial privatization in Malaysia, liberalization of non-basic services in Indonesia, reorganization of telecommunications departments to state enterprises in Sri Lanka and Fiji, and decentralization of operations in India and China. The results have by and large been beneficial. However, the regulatory framework often fell short of what was needed for efficient competition, privatization and market liberalization.

1.4 The restructuring of Pakistan's telecommunications sector has followed similar trends. The Pakistan Telegraph and Telephone Department (T&T) was formed in 1979 separating the telecommunications and postal services. However, T&T's status as a government department under the Ministry of Communications (MOC) did not provide it with adequate financial and operational autonomy or incentives to efficiently operate and expand the telecommunications network. Realizing the importance of good quality telecommunications services as an essential business tool, GOP decided to further

restructure the telecommunications sector. A new state owned corporation, the Pakistan Telecommunications Corporation (PTC), was created out of T&T by the PTC Act of 1991 (XVIII of 1991) and PTC was licensed to provide basic telecommunications services. Improvements in the availability and quality of service have been made since PTC became operational, but it still has to become more consumer and commercially oriented and achieve acceptable service and efficiency standards.

1.5 GOP's main sector objectives are to improve service quality and operational efficiency, expand service and satisfy pending demand. Considering the unsatisfied demand for basic services, projected growth in demand, sector investment needs, and PTC's project implementing capabilities, the public sector alone is unlikely to achieve these objectives. The PTC Act of 1991 opened the telecommunications market for non-basic services to private service providers and MOC has granted operating licenses to mobile cellular, paging, card phone, data communication, and subscriber equipment companies. This trend is being continued by also getting the private sector involved in the provision of basic telephone services.

1.6 GOP's current strategy includes the restructuring of the telecommunications sector to improve its performance, thereby relieving a key constraint on the development of the economy; privatizing PTC to help inject private sector capital and skills into the main service provider; and redefining GOP's role from operator to, primarily, sector policy maker and regulator. For this purpose, GOP retained a consortium of consultants in 1991 to advise on the restructuring of the telecommunications sector. Based on the consortium's recommendations, GOP decided to pass the necessary enabling legislation to separate the sector's commercial operations from its regulation and to initiate the privatization process for PTC (Telecommunications Ordinance of 1994). With Bank's assistance, GOP has developed a strategy which aims at setting up the necessary regulatory framework for the sector and facilitating PTC's privatization. Two regulatory agencies, the Pakistan Telecommunications Authority (PTA) and the Frequency Allocation Board (FAB) have been established to regulate the sector and manage the radio frequency spectrum.

1.7 The consultants consortium also recommended that PTC be made into a company, Pakistan Telecommunications Company Limited (PTCL)<sup>1</sup> under the Companies Act and that 26% of its equity, including its management and operation, be sold to a suitable strategic investor, with additional equity sales from time to time as market conditions permitted. However, GOP initiated PTC's privatization before it was converted into a company by selling "PTC Vouchers", which will be convertible into PTCL shares once the necessary legal steps have been completed. The first voucher issue was made in August 1994 for about 2% of PTC's equity and brought in the equivalent of about US\$100 million. Due to the success of this offer, another voucher issue of about 10% of PTC's equity was made in September 1994 and this provided GOP with an amount of about US\$ 900 million.

1.8 This staff appraisal report provides the background and current status of the telecommunications sector, including regulations, service providers, demand and supply. It then addresses demand and tariff issues, service quality, interconnection and revenue sharing arrangements, licensing regime, and management of the frequency spectrum. The main elements of sectoral reform in response to these problems, the proposed project to set up the regulatory agencies, and how it addresses the sectoral issues are also described.

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<sup>1</sup> In the staff appraisal report "PTC" refers to the existing state owned corporation and "PTCL" to the new company to be incorporated under the Companies Act which will enable the sale of equity to private investors.

## B. THE LEGAL AND REGULATORY FRAMEWORK

1.9 The MOC is the main telecommunications policy maker, and until recently, the Government Inspector for Telegraph and Telephone (GITT), within MOC, was partially responsible for sector regulation. However, a number of other institutions also influenced the telecommunications policy and regulation, such as the Ministry of Finance (MOF), the Planning Commission, the PC, PTC, and the Pakistan Wireless Board (PWB). A description of their respective roles is given below.

### Regulatory Role of Institutions

1.10 The Telecommunications Ordinance, originally issued in July 1994 and repromulgated in July 1995, created two authorities, PTA and FAB, for the regulation of the sector. However, until the new institutions are fully operational, the existing ones will still play a role in sector regulation:

- (a) *MOC*, as the relevant GOP ministry, sets policies, oversees and regulates the telecommunications sector, has the power to grant and revoke licenses, and currently represents GOP's interests in PTC. MOC is involved with PTC's annual development plans within the five year plan cycle along with the Planning Commission. In addition, MOC also approves tariffs. A representative of the MOC sits on the PTC board.
- (b) *GITT*, located within the MOC, is responsible for inspecting new and installed public or private network equipment, and to ensure that it complies with prescribed technical standards. In 1991, MOC further entrusted GITT with regulatory duties related to mobile cellular and payphone licenses, including service quality and tariffs. The GITT reports to the MOC.
- (c) *PTC's* regulatory role includes licensing of some services, type approval of equipment, establishment of standards through its Central Telecommunications Research Laboratories and representing Pakistan at international organizations such as ITU and INTELSAT. According to the PTC Act, PTC has the power to introduce regulations to carry out the provisions of the 1885 Telegraph Act. In practice, this has meant that in new service areas where there is no clear government policy, PTC has been allowed to license and regulate on an ad hoc basis. This is illustrated by the value added service markets in which PTC provides only fragmented services, yet allows no competition.
- (d) *PWB* manages the frequency spectrum: frequency assignment and licensing, monitoring and interference complaint handling, advising GOP on policy, and coordinating with international bodies on standards. The Board is headed by a PTC official who reports to the MOC. The management board of the PWB is composed of ministerial and user representatives, including the PTC, Civil Aviation, Railways, Defense Services, and the Pakistan Television Corporation.
- (e) *MOF* primarily reviews financial plans, tariff increases and PTC's five year development plans with the Planning Commission. MOF is also responsible for cash transfers from PTC to Government. A representative of the MOF sits on the PTC board.
- (f) *Vigilance Committees* were recently constituted at the divisional, regional, and national level by MOC to handle consumer complaints on PTC billing and delays in providing telecommunications services. These committees report to the MOC and their findings may also be submitted to the Ombudsman.

- (g) The *Office of the Ombudsman*, operating under the Wafaqi Mohtasib (Ombudsman) Act, investigates and rectifies acts of maladministration committed by government agencies and institutions. PTC currently falls under its purview. The Ombudsman has also been involved in telecommunications sector licensing policy. In 1990, after MOC issued two mobile licenses, the Ombudsman was asked by the third short-listed applicant to investigate the evaluation process. The Ombudsman found evidence of maladministration and recommended that MOC take remedial measures and as a result a third license was issued.

1.11 **The telecommunications laws and regulations consist of:** the Pakistan Telecommunications Act (PTC Act) of 1991, the Wireless Telegraphy Act of 1933 and by-laws issued thereunder, and the Telegraph Act of 1885 (as amended in 1975). The Telecommunications Ordinance of 1994, repromulgated in July 1995, amends previous acts. Annex 1 gives a summary of these telecommunication laws and regulations. A chronology of the sector development and its legal framework is given below:

**Box 1.1: Chronology of Sector Reform**

1885	Telegraph Act of 1885 is the primary statute of the Government of India and continues to be applied for governing telecommunications in Pakistan. Grants the Federal Government with exclusive powers to establish and maintain all manner of services and products.
1933	Wireless Telegraphy Act applied to regulate the possession of wireless apparatus.
1947	Post and Telegraph Department established.
1951	Pakistan Wireless Board (PWB) established to perform frequency management functions.
1962	The Telephone and Telegraph Division separated from the postal service, creating the Pakistan Telegraph and Telephone Department (T&T) under the control of MOC.
1975	Telegraphy Act of 1885 amended. The post of Government Inspector of Telegraph and Telephones (GIT) created.
1979	Pakistan Telegraph and Telephone Department Order reaffirms T&T as a department under MOC.
1983	The Office of the Ombudsman created to investigate and rectify injustices done to consumers by maladministration.
1990	T&T department reorganized as a statutory corporation, the Pakistan Telecommunications Corporation, (PTC) 100% GOP owned.
1991	Enactment of the Pakistan Telecommunication Corporation Act.
1991	Private sector allowed to develop cellular, paging, and other non-basic services.
1991	Government pledges to satisfy all pending demand for PTC services and improve service quality. "BLT-style" contract for the installation of 500,000 telephone lines signed and PTC investments increased.
1992	Consultants appointed for the planning and implementation of sector reform, including the privatization of PTC.
1994	Government passed a Telecommunications Ordinance (no. LI of 1994) to create the regulatory agencies, the Pakistan Telecommunications Authority and the Frequency Allocation Board, and for PTC's privatization.
1995	Government repromulgated the Telecommunications Ordinance with some changes.

### C. TELECOMMUNICATIONS SERVICE PROVIDERS

1.12 PTC was incorporated in January 1991 out of the former T&T Department. PTC has the monopoly to provide basic local and long distance telephone services and has a nationwide network and international facilities for voice, telex, telegraph and facsimile services. In addition to manufacturing activities through its participation in local joint ventures, Telephone Industries of Pakistan, Carrier Telephone Industries and Alcatel Pakistan Ltd., PTC has established a subsidiary, the Telecommunication Foundation, to compete in new markets with the private sector. This subsidiary can apply for licenses to operate services under similar terms and conditions as any private service provider. PTC's operating revenues in 1994 were about Rs. 26.4 billion and its operating income about Rs.15.2 billion.

1.13 PTC's telephone network and switching capacity consisted of approximately 2,105 manual, analog and digital telephone exchanges with about 2,800,000 exchange lines by end-June 1995 and about 2,200,000 main lines in service, i.e. a capacity utilization of about 80%. Over 70% of the exchanges have been installed in the last eight years (Annex 2). In 1994, about 60% of the working connections were digital. The table below summarizes the network development since 1990. The accelerated development since PTC's incorporation in 1991 is notable.

Table 1.2: PTC's Telephone Network Development (1990-1995)						
	1990	1991	1992	1993	1994	1995
Exch. Line Capacity ('000)	919	1,156	1,464	2,027	2,430	2,801
Lines in Service ('000)	814	1,044	1,243	1,547	1,830	2,205
Population (millions)	109	112	117	120	122	129
Telephone Density (%) <sup>(a)</sup>	0.83	0.92	1.17	1.28	1.5	1.71
Pending Demand ('000)	730	720	670	344	293	209
Digitalization (%)	10	21	36	48	60	70
Number of Employees	49,717	54,084	49,522	51,589	47,766	52,116
Staff/1000 Lines in Service	53	52.4	40	33	26	24
Public Call Offices	3,393	3,850	4,676	5,618	6,400	10,000

Source: PTC (data as of June of each year). (a) Lines in service per 100 population.

1.14 PTC's domestic long distance service is based on an analog network of about 6,500 km of high capacity microwave systems covering the major cities in the country. The network also includes over 2,500 km of analog coaxial cable, and 140/560 megabits/sec digital fibre optic links of approximately 3,000 km. Access to remote areas in the north and southwest is provided by a satellite-based domestic system and circuits leased from INTELSAT and INMARSAT. Telex services have declined significantly during the past decade as new technologies, such as facsimile, have been introduced.

1.15 PTC's international services are based on four INTELSAT Standard "A" earth stations providing direct access to about 40 overseas destinations. There are three international gateway exchanges (two in Karachi and one in Islamabad) with about 4,000 operating international circuits. International outlets to

neighboring India, Iran, and Turkey are via coaxial cable and microwave links. PTC also has access to a submarine cable network.

1.16 In 1989, the first operating license for paging services was issued to a private company. Following the 1990 restructuring of the sector, operating licenses to cellular, paging, data transmission and card phone companies were granted. The cellular licenses granted to PakTel (Cable & Wireless, UK), and Instaphone (Millicom, Comvik and Arfeen) have a fifteen year exclusivity period. Despite this exclusivity period, a third license was granted to Pakistan Mobile Cellular Ltd., which recently started operations. Paging licenses have been issued to fifteen companies but only one, Digital Communications Ltd., is in operation with a ten year exclusivity period. Its network suffers from poor coverage, with service offered only in the Karachi and Islamabad/Rawalpindi areas. In July 1992, MOC issued 20 licenses for the provision of card phone services. Three companies are currently in operation nationally with a total of about 8,300 card payphones competing with PTC's about 10,000 public call offices in 1995.

1.17 There is no central record of leased circuit subscribers. PTC is currently the major authorized public packet switched telecommunication network operator, with 200 nodes, of which about 100 are occupied. Several other organizations, including the Water & Power Development Authority, Oil & Gas Development Corporation, Pakistan Petroleum Ltd., and Pakistan Railways operate extensive private networks using their own plant and equipment, which are not interconnected. In addition, there are a number of private licensed systems, using mainly radio communications and operated by companies such as Sui Gas, Pak Arab Refinery, etc., which are not connected to the public switched network. Currently, only one private data communication operator (Telecommunication Foundation) offers data communications services. Many companies have applied for licenses and await Government approval. There are currently no value added services in Pakistan (the mobile operators offer voice messaging in their service packages). Fourteen companies have applied for licenses to provide Voice Mail services. Applications have also been invited for audiotex information and trunked radio services. Proposals for a domestic satellite for communication and broadcasting is under consideration. The status of private sector service providers is summarized in below:

<b>Box 1.3: Private Sector Service Providers</b> (as of June 1995)				
Service	Company	No. of Subscribers	Year of	
			License	Operation
Paging	1. Digital Comm.	9,500	1989	1990
Cellular	1. PakTel	20,000	1990	1990
	2. InstaPhone	10,000	1990	1990
	3. Pakistan Mobile Cellular (PMCL)	4,000	1992	1993
Card Payphones	1. Telecom Foundation	7000 phones	1992	1993
	2. Telecard	800 phones	1992	1993
	3. Telefon International	500 phones	1992	1993
Data Transmission	1. Telecom Foundation	30	1992	1994
Voice Mail Service	15 companies have applied for license			

1.18 Significant progress has been made towards liberalization of the market for customer premises equipment in Pakistan. Customers can purchase PBXs, modems, and handsets from a variety of suppliers and, provided they have been type-approved, connect them to the publicly switched network. The supply of the first telephone currently remains a PTC monopoly. Moreover, the responsibility for setting technical standards and granting type approval of equipment also resided within PTC.

#### **D. SUPPLY AND DEMAND OF TELECOMMUNICATIONS SERVICES**

1.19 After the 1990 corporatization, and on GOP's directive, PTC embarked on an ambitious expansion program. Annex 3 describes PTC's development program prepared for GOP's Eighth Five Year Plan 1993-1998. In FY92-93, PTC undertook an 800,000 line (400,000 under supplier credit of a "BLT" type) investment program and an additional program for 500,000 lines (100,000 "BLT") in FY93-94. This increased PTC's exchange capacity from about 1,460,000 lines in 1991 to about 2,800,000 by mid-1995. The connection of new subscribers has, however, lagged the installation of new lines. In mid-1995, PTC had about 2,200,000 subscribers, a 1.71 % telephone density. While this penetration is relatively low, it is a marked increase from the 0.8% density of 1990.

1.20 Telephone service is concentrated in major cities. It is estimated that 90% of PTC's telephone lines are installed in urban areas. The metropolitan areas (Karachi, Lahore, Islamabad, and Faisalabad) constitute 33% of Pakistan's total population and yet they have 63% of the lines in service. There are approximately 29,300 villages with a population in excess of 500 people according to the 1981 census. These areas are served by about 1,250 manual exchanges with a capacity of about 110,000 lines, and about 10,000 Public Call Offices (PCOs). The telephone density in these areas is only about 0.13 %.

1.21 The accelerated expansion in recent years has allowed PTC to connect most of the subscribers waiting for service. With the installation of new lines, pending demand fell from about 670,000 in 1991 to about 210,000 lines in June 1995. The total unmet demand may be higher than indicated by PTC's waiting lists as such lists are maintained only in areas in which PTC currently provides service. Further, potential subscribers may not bother to register without a realistic expectation of being connected within a reasonable period of time. On the other hand, PTC's local tariffs and monthly subscription are low, which may have promoted uneconomic demand, especially from the residential sector. It is proposed that a study be undertaken under the project to evaluate the likely impact of tariff changes on demand (para. 2.10). While there is no doubt that future demand will support sector expansion, such a study would facilitate adequate longer-term investment planning in the sector.

## II. SECTOR ISSUES

### A. REGULATORY ARRANGEMENTS

2.1 In 1989, selected markets were opened to private sector investment, yet weaknesses in the institutional environment and sector regulation persisted even after the 1991 PTC Act. For example:

- the regulatory functions were divided between too many parties to be effective (para. 1.9);
- the provision of telecommunications services was dominated by PTC, with statutory monopoly privileges for basic services;
- the relationship between PTC and the Government was essentially administrative in nature, with PTC acting as an extension of the executive arm of the Government;
- a range of regulatory tasks were delegated to the main operator, PTC, leading to a conflict of interest; and
- no clear distinction was drawn between GOP's roles as policy maker, regulator, and operator as the sole owner of PTC.

2.2 Presently, neither MOC nor PTC are equipped to monitor compliance with license conditions on a regular basis, detect license violations, take corrective action against the violators, investigate unlicensed users of radio frequencies, or monitor radio frequencies. Except as provided in the Posts, Telegraphs & Telephones Initial Account Code (1971) for radio fees and royalties, there are no guidelines to determine the amount of fees and royalties to be charged for the licenses nor the manner of recovery.

2.3 These regulatory arrangements have raised a number of issues. First, there is a potential conflict of interest between PTC's commercial interests as a service provider and its role as a regulator. Second, there are no clearly defined responsibilities nor a regulatory body to monitor tariffs, promote fair competition, enforce access and interconnections, manage conflicts, promote uniform technical standards, type approval of equipment, or to monitor performance of operators. Third, the allocation, management, and monitoring of radio frequencies is inadequate. Finally, the existing regulatory arrangements are hindering several applicants and/or licensees to provide services. The need for strengthening the sector regulation has become more urgent as the complexity of the sector increases in a multi-operator environment.

### B. PTC TARIFFS

2.4 The 1991 PTC Act established the following criteria for tariff setting purposes: (a) cost of providing services; (b) need to mobilize funds for network development; and (c) a reasonable return on investments. On the whole, PTC's operations have produced a positive cash flow for investment purposes as well as a reasonable rate of return. However, the total revenue numbers hide a substantial imbalance between low monthly subscription fees and local call charges and high long distance charges (Annex 4). The excise duty, currently 35%, charged on domestic long-distance calls, has contributed to making such calls very costly. It costs about the same to make a call from Islamabad to Karachi as to London. The subscription fee and local call charges, on the other hand, are among the cheapest in Asia. Table 2.1 summarizes the telephone tariff structure of selected Asian countries.

**Table 2.1 Telephone Tariffs of Selected Asian Countries (US\$)**

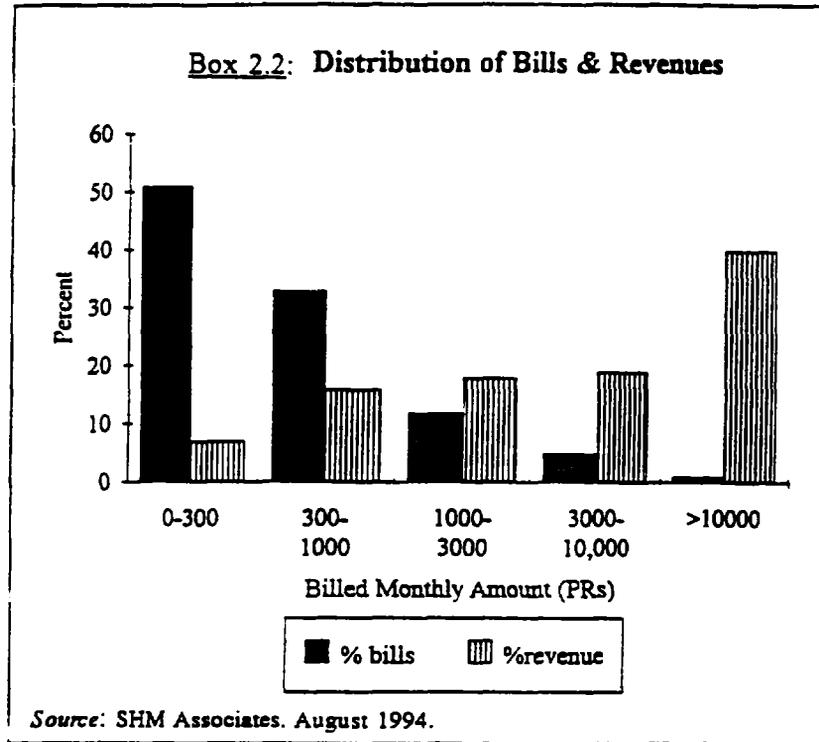
	Connection Fee		Monthly Subscription		Local Call
	Residential	Business	Residential	Business	
Pakistan	80.0	same	1.7	same	0.04
Indonesia	147.8	same	3.7	same	0.05
India	57.1	na	4.7	na	0.05
Malaysia	19.6	same	7.8	13.7	0.05
Philippines	11.5	13.9	9.0	19.9	0.08
Sri Lanka	280.0	same	1.8	same	0.03
Thailand	145.7	same	3.9	same	0.04
All Low Income	99.6	126.6	3.8	4.9	0.06

Source: World Telecommunication Development Report. ITU. 1994. Data for Pakistan as of May 1994.

Note: Malaysia and Philippines are the only two countries in the above table with differentiated tariffs for business and residential subscribers. na: Not available.

2.5 The imbalance in PTC's tariff structure has promoted some uneconomic demand for new connections, especially from the residential sector which does not generate large numbers of profitable long-distance calls. It is estimated that about 70% of subscribers do not make NWD (Nation-Wide Dialing) calls while as many as 90% do not make overseas calls. A mid-1994 study (summarized in Annex 5) indicated that 68% of PTC's bills averaged only Rs. 2400/year (about US\$80), which does not cover PTC's annual estimated operating and maintenance cost of US\$40 per working connection, fixed costs and overheads of US\$150, and a return on the necessary net investment of over US\$1,000 for exchange equipment and local network. In addition, the low monthly rental for a telephone may have reduced the demand for alternative services, e.g., paging, cellular, and public card phones, which currently are being supplied by the private sector.

2.6 The Telecommunications Ordinance of 1995 gives the privatized PTC (PTCL) a seven year exclusivity period on basic voice telephone services. After this period, PTCL's monopoly would cease and competition in the provision of all telecommunications services would be allowed. If the current tariff structure is maintained, PTCL's competitors are likely to concentrate on the profitable business segments, leaving PTCL with the residential subscribers, who may not even produce sufficient call charges to cover the cost to maintain and operate the lines. The chart below (Box 2.2) illustrates the case.



2.7 PTCL would be required to satisfy all demand within a reasonable timeframe. This would be very costly, as most new demand currently is for residential connections (over 70%), which at current tariffs are unprofitable. This is likely to be reflected in the price a private investor is willing to pay for PTCL. PTCs tariffs would, therefore, have to be studied and a plan to rebalancing of tariffs established.

### C. SATISFACTION OF DEMAND

2.8 Since its incorporation in December 1990, PTC embarked on an ambitious expansion program which has more than doubled the size of the network and telephone density (see Table 1.2). The waiting lists for telephone service have been dramatically reduced and the bottleneck in many locations is now the connection procedures and documentation rather than network capacity. In some major cities, where the BLT and other schemes led to rapid network expansion, PTC has experienced problems in filling the exchanges with new subscribers. About a third of the service applicants on old waiting lists in many urban regions had already obtained telephone service or, for other reasons, were not applicants any longer. As of June 1995, PTC's idle exchange capacity averaged about 20% (see Annex 5).

2.9 PTC's exchange fill problems are likely to be temporary as new applicants for service are coming in. Unlimited demand is not guaranteed, however, even at current low prices. Further, if the tariff structure is rebalanced and monthly rental increased from the current \$1.70 equivalent to about \$7.00, some demand, especially residential, is likely to disappear. The impact of higher tariffs on demand could be significant given the increasing proportion of residential demand.

2.10 Waiting lists are currently maintained only in places which already have some telephone service. These waiting lists are unreliable and recent experience indicates that they tend to overstate actual demand (para. 2.8). The demand in areas currently without service is also difficult to estimate with any accuracy. To ensure coordinated and efficient network expansion, a new demand study should urgently be undertaken

(the most recent one is from 1990). This study should also look into the impact of changes in the tariff structure and level on demand and the cost/benefit effects of alternative tariff structures (Annex 10).

#### **D. INTERCONNECTION AND REVENUE SHARING ARRANGEMENTS**

2.11 In accordance with their operating licenses, the cellular, card phone and other private service providers interconnected with PTC largely pay the same charges to PTC for calls originated within their networks as do PTC's normal subscribers. The cellular companies charge their subscribers per "air minute" at double PTC rates for outgoing calls and credit PTC half of that amount. The cellular companies also charge their subscribers for incoming calls from the PTC network at the PTC rate for a local call; PTC charges its subscribers for all outgoing calls. If PTC equipment does not allow for interconnection with the cellular network, the cellular operator pays for the additional equipment on PTC's behalf and recovers this expenditure over time out of the call charges accruing to PTC. All traffic monitoring and billing equipment needed for settlement of the accounts between PTC and the cellular operator are paid for by the latter.

2.12 The above arrangements are biased in favor of PTC. If tariffs and revenue sharing arrangements were cost based, PTC would charge the cellular operators less for calls generated within their networks. For such calls, PTC's costs are substantially lower for local network, subscriber equipment, maintenance, billing and collection. Further, the current arrangements may raise questions regarding the "level playing field," especially after PTC's privatization.

2.13 The current interconnection and revenue sharing arrangements are spelled out in adequate detail in the licenses for the private operators. However, the licensees are required to provide a nationwide network only "as practically possible." So far, the cellular operators have limited their services to the main urban centers, as it may not be in their best financial interest to take steps towards GOP's objective to provide nationwide service. It would be desirable to review the interconnection and revenue sharing arrangements between PTC and the private operators as well as other license conditions, with a view to negotiate more efficient and equitable conditions; this should ideally be done prior to PTC's privatization.

#### **E. QUALITY OF SERVICE**

2.14 An assessment of service quality was carried out in 1991 through a survey of 42 large customers of the former T&T Department in Karachi, Lahore and Islamabad. In parallel, a small residential survey was undertaken in the same cities. Both business and residential survey respondents expressed overall dissatisfaction with the service provided by T&T. The results of the survey are detailed in Annex 6. As for the question: should T&T focus on network expansion or improving existing services, 58% of the respondents believed that PTC should split its efforts equally. The survey also indicated that good quality telecommunications services were of primary importance to both business and residential customers. Although this survey was based on a small sample, it is indicative of PTC's service quality problems. Further, the 1992 Annual Report of the Ombudsman contains about 7,250 complaints against PTC, which constituted 30% of the total complaints received for all public services. Most of the complaints were for excessive billing, delays in installation, and defective instruments.

2.15 Since its incorporation in 1991, PTC's service quality has improved, but is still poor compared to international standards. As in most developing countries, over 90% of the faults experienced by PTC are

attributed to the local network. Many faults are reported directly to local linesmen and may not be included in the statistics below.

<b>Table 2.3: Service Quality Performance Indicators</b>						
<b>(December 1992)</b>						
	<b>Pakistan</b>	<b>Sri Lanka</b>	<b>Philippines</b>	<b>Indonesia</b>	<b>India</b>	<b>Int'l Standard</b>
Faults per 100 lines/month	16	22	N.A.	6	18	10
Faults repaired next working day	80%	75%	78%	73%	84%	5 hr ave. or 1 working day
<u>Call Completion Rates</u>						
Local	70%	40%	N.A.	N.A.	92%	95%
Long distance	60%	30%	N.A.	60%	83%	70%
International	50%	28%	N.A.	39%	N.A.	50%

Note: A busy destination is counted as an incomplete call. The completion rate is, therefore, lower in systems with high traffic load per line.

Source: IBRD.

2.16 A number of service targets, such as call completion rates and fault clearance, have been set for PTC, but have not been properly monitored. There is also a lack of country-wide coordination to ensure that consistent methods are applied and that the data collected is accurate. Since the capability to measure and monitor the actual service quality is weak, the reported data is open to abuse and mis-interpretation. Without a monitoring system and a defined set of measurement methods, targets to be set for PTCL are unlikely to be meaningful. It is important that regulatory processes and procedures be put in place to properly monitor PTCL's performance against a range of service quality measures.

## F. LICENSING REGIME

2.17 The first license for a private company to provide telecommunications services in Pakistan was granted in 1989 for the provision of paging services. Since then, 13 additional paging licenses have been granted. However, the first licensee obtained a court stay order against the other licensees, and is still the only paging operator in Pakistan.

2.18 In 1990 and 1991, two licenses were granted for the provision of cellular mobile services with shared exclusivity to provide this service for 15 years. Even so, in 1992 a third cellular license was granted after an applicant posted a complaint with the Ombudsman and obtained a court order (para. 1.10).

2.19 Stipulated royalty payments, registration, and other fees, as well as the tariffs paid to PTC for the use of its network vary depending on the type of service and when the license was issued. In some cases, different license conditions are stipulated for the provision of the same kind of service, which may impede fair competition. Further, the licenses mention GOP, MOC, GITT, T&T, PTC, and/or PWB as the sector regulators for various aspects of the licensed services.

2.20 Given the above, the telecommunications sector licensing regime needs to be overhauled. Existing licenses should be renegotiated with the licensees, updated to reflect GOP's recent regulatory reforms (as set out in the Telecommunications Ordinance of 1995) and sector policies, and rewritten in suitable legal language to avoid future conflicts regarding exclusivity rights, etc. Existing private service providers should have an interest in license review, as it may lead to lower interconnection costs with PTCL than provided for in the current licenses.

2.21 With the proposed creation of PTCL a license has to be granted to this entity for the provision of public telecommunications services. PTCL is expected to be the dominant carrier and PTA should ensure that the license conditions are consistent with GOP's policy of liberalization and competition in the sector.

## G. MANAGEMENT OF THE RADIO FREQUENCY SPECTRUM

2.22 The radio frequency spectrum is utilized by a variety of communications services, such as cellular, private corporate networks, maritime, aeronautical, AM and FM sound broadcasting, television, and satellite communications. The spectrum is a limited resource and demand is increasing from existing users, which includes GOP, common carriers, and the private sector. The allocation of frequency bands and specific assignments of radio frequencies have become a very complex task involving a number of technical, regulatory and economic issues. GOP is signatory to international radio regulations of the International Telecommunication Union (ITU) and is obliged to provide orderly registration, coordination and monitoring of the radio frequencies and their usage.

2.23 The system for allocation and monitoring of the use of radio frequencies by the national carrier, PTC, cellular service providers, paging companies, broadcasting and other GOP and private users is inadequate. PWB is not properly equipped nor does it have the organization, resources or infrastructure to manage this valuable and limited resource in an efficient manner. The procedures for assignment of frequencies is outmoded and there are no stations to monitor the frequency usage.

2.24 There are already three operators in the expanding radio cellular service market. Moreover, with the introduction of new radio based technologies and services the radio frequency spectrum is increasingly becoming crowded and equitable distribution difficult. Advances in digital technology will open the door to new low-cost wireless services like Personal Communication Services (PCS) which provide for access to an individual anywhere irrespective of location and require additional spectrum space. It is, therefore, necessary to prepare for the introduction of these new technologies and services which will have to share spectrum space with the existing ones and may require reallocation of current usage. This will need careful planning and management. Apart from overcoming the present inadequacies in the management of existing allocations and in the monitoring of the radio frequency spectrum, which is the immediate concern, Pakistan will also have to equip itself to meet the future challenges of equitable distribution and value maximization of this limited resource.

2.25 Despite the above problems, radio frequency usage in Pakistan has been controlled in a reasonable way. Currently, the total number of outstanding licenses and permits is about 20,000 and illegal use has been contained within "acceptable" limits. This should be compared to the Philippines, which has about 200,000 licensed transmitters and an estimated 800,000 illegal ones. Nevertheless, taking into account the expansion in radio services, the time is appropriate for Pakistan to immediately take steps for the establishment of an adequate structure and organization for the management of the radio frequency spectrum.

### **III. SECTOR REFORM**

#### **A. SECTOR OBJECTIVES AND STRATEGIES**

3.1 The Government's broad objectives in the telecommunications sector are to: (i) promote the rapid development, modernization, and diversification of telecommunications services; (ii) facilitate new investment and competition in the sector by adopting an enabling legal and regulatory framework; (iii) encourage increased private sector participation in telecommunications development, including the privatization of PTC; and (iv) reduce GOP's role as an operator in the sector.

3.2 In July 1991, a consortium of consultants was retained to assist GOP in the restructuring of the telecommunications sector and privatization of PTC (Annex 7). The principal recommendations of the consultants were to enact a new Telecommunications Act for the privatization of PTC and the creation of PTA for the regulation of the sector, and FAB for the management of the radio frequency spectrum. The Bank reviewed the consultants' studies and is in general agreement with these recommendations since these sector reforms are designed to:

- separate and insulate regulatory activities from political interventions and commercial operations;
- create a climate of "regulatory certainty" which encourages private investment in the development of the sector and increases the potential proceeds from the privatization of PTC;
- provide adequate consumer protection; and
- increase operating efficiency and development of the sector.

3.3 The Cabinet agreed to the above telecommunications sector reform strategy in February, 1994, including the draft Telecommunications Act and the privatization of PTC, in line with the recommendations of the Privatization Commission (PC) and the consultant's consortium. The draft Telecommunications Act was submitted by MOC to the Ministry of Justice for review in March 1994 and a Telecommunications Ordinance was issued in July, 1994. In July 1995, the Ordinance was repromulgated with some amendments. Annex 8 outlines the highlights of the Ordinance. The new Telecommunications Act is expected to be presented to Parliament later in 1995. In October 1994, GOP provided the Bank with a Sector Policy Letter and Implementation Plan which was reviewed at negotiations (Annex 9).

3.4 While the Telecommunications Ordinance is a major step and provides for an adequate legal basis to proceed with the establishment of PTA and FAB and continue with the privatization process, it is a temporary arrangement until the Parliament approves the Telecommunications Act. In May 1994, MOC appointed the chairman and members of PTA. The chairman of the FAB is the Secretary Communications and an executive vice chairman has been appointed. The functions and responsibilities of the regulatory agencies are given in paras. 3.22 to 3.32 below.

#### **B. PTC's PRIVATIZATION**

3.5 The initial work to transform PTC into an autonomous company with private equity and operations was made by the consultants consortium led by Bear Stearns and Coopers & Lybrand (see

Annex 7). The consultants were funded by PTC and MOC supervised their work, which included the drafting of a new Telecommunications Act and an operating license for a privatized PTC (PTCL).

3.6 In early 1994, GOP decided that the Privatization Commission (PC) would manage the privatization of all state owned enterprises, including PTC. A group of Bank staff and consultants was established under the Privatization and Technical Assistance Project on GOP's request to advise and support the PC. The PC, with Bank support, drafted new terms of reference for the financial and investment banking aspects of PTC's privatization. In February 1995, the PC invited proposals for a Financial Advisor to assist the GOP in the sale of 26% of PTC's shares and the transfer of management control to a strategic investor. As a result of the evaluation of the proposals received, GOP has selected a consortium led by Morgan Grenfell of U.K. for this assignment. The Consultants are expected to commence the preparatory work for PTC's privatization shortly. Financing for a study of critical sector issues (Annex 10) is included in the proposed project to provide support for the Telecommunication Sector Reform Program and advise GOP on relevant conditions for PTCL's operating license (para. 3.11 to 3.21).

3.7 GOP's plans (Annex 8) to incorporate a new entity, PTCL, under the 1984 Companies Ordinance (XLVII of 1984), to which most PTC assets and liabilities will be transferred together with PTC's existing telephone operations (except for NTC operations, see para. 3.34). Separate classes of shares will be created with different voting rights to effectively transfer PTCL's management and corporate governance to a strategic investor. All employees of the PTC will be transferred to PTCL. By end 1995, GOP intends to start negotiating with suitable, prequalified private operators for equity participation in the PTCL. By early 1996, a substantial portion of PTCL's equity is expected to have been sold to a strategic investor, who would take over PTCL's operations and administration. Additional sales will be undertaken from time to time as market conditions permit.

3.8 PTCL will be licensed to provide basic telephone service for a period of twenty five years with an exclusivity period of seven years. Notwithstanding PTCL's exclusive rights, cellular radio telephones, paging and personal communications services will be provided on a competitive basis. GOP will retain some telecommunications operations within a new public sector entity, the National Telecommunications Corporation (NTC), for the provision of telecommunication services to the Federal Government, Provincial Government, Local Authorities, Armed Forces and other official agencies and institutions. A more detailed description of NTC is provided in para. 3.34.

3.9 In July 1994 GOP offered, with the assistance of Merrill Lynch, about 2% of PTC's equity in the domestic market in the form of a "PTC Voucher" convertible into PTCL shares, upon the conversion of PTC into a company. The objective of this offer was to achieve a broad based shareholding in PTCL (including a portion to its staff) in accordance with GOP's privatization policy. The vouchers were listed and traded on all the three stock exchanges in Pakistan. The Central Board of Revenue and the Corporate Law Authority recommended that the PTC vouchers be exempted from capital gains tax. After the incorporation and listing on the stock exchanges, each PTC voucher can be exchanged into 100 ordinary shares in PTCL of Rs. 10 each. This offer of PTC vouchers was heavily oversubscribed and GOP decided on a second issue in early September 1994, with the assistance of Jardine Fleming, Hong Kong, for about 10% of PTCL's equity. This issue was primarily aimed at international institutional investors and was twice oversubscribed. The second tranche vouchers were available in the form of dollar-denominated Global Depository Receipts. GOP plans to establish PTCL and exchange the PTC vouchers for the new company's shares in about a year. In the event that PTCL shares are not listed on the stock exchanges by September 1996, GOP will repurchase the vouchers at Rs. 3800 per voucher.

3.10 The PTC voucher issues were not a part of the original privatization strategy as outlined by the Bear Stearns and Coopers & Lybrand led consultants consortium, which recommended an initial sale of 26% of PTCL's equity, together with its operation and administration, to a suitable strategic investor/operator. On the other hand, the voucher issues brought in about US\$1 billion equivalent and, thus, accelerated the fiscal benefits of PTC's privatization. There is a risk, however, that the success of the voucher issues may have increased GOP's expectations to unrealistic levels as regards the price a strategic investor would be willing to pay for a substantial equity stake in PTCL. In this context, PTCL's tariffs (para 3.12 below), and other issues related to PTCL's operating license, would have to be addressed to make the company more attractive to private investors.

### C. PROPOSED REGULATION

3.11 The proposed regulation of tariffs, demand satisfaction, interconnection, service quality, licensing regime and frequency management is set out in the Telecommunications Ordinance and in the operating licenses of the operators. Some important aspects of the proposed regulation are discussed below:

3.12 According to the proposed draft license, PTCL's tariffs, will be adjusted in line with inflation in accordance with a price-cap formula: inflation minus 0%. This formula is quite generous compared to other countries, e.g., U.K. and Sri Lanka, where tariff increases are capped at inflation minus 2-3%, taking into account potential economies of scale and efficiency gains. In Pakistan, however, the formula would be applied to a skewed tariff structure (para. 2.4-2.5) with a relatively low average revenue per subscriber (only about US\$ 400 per line in 1994). A tariff study will, therefore, be undertaken prior to applying the price-cap formula, with a view to adjust PTCL's tariffs closer to the cost of providing a specific service. In addition to reducing distortions of demand for service, tariff rebalancing would make PTCL more attractive to private investors (see Box 3.1).

#### **Box 3.1: Rate Rebalancing in Canada**

The Canadian Radio Television & Telecommunications Commission (CRTC) took a major decision in mid-September 1994 which will fundamentally change tariff regulation (Telecom Decision CRTC 94-19). Key elements of this decision are:

(i) **Rate rebalancing:** Monthly local telephone rates will rise by C\$2 in each of the next three years. The current average is about C\$15 per month. The scheduled increases in local rates will be accompanied by offsetting reductions in long distance rates.

(ii) **Regulation:** Monopoly rates will be regulated on a rate of return basis till 1998, at which point it will be replaced by price-cap regulation. Depending upon the extent of competition, competitive services will either be deregulated or subject to a process designed to ensure non-predatory rates and guard against increases in certain basic toll rates. Different rate bases will be used for the monopoly and competitive segments of the sector and profits or losses in competitive markets will be borne by the service provider. Competitive services are likely to be deregulated within the next three years.

(iii) **Competition:** The operators will allow full unbundled access to their networks for long distance traffic (which is already permitted) and local service competition. Operators will develop new information services and broadcast services on a common carrier basis

*Source:* Angus Oliver Associates. September 1994.

3.13 According to the Ordinance, PTCL will have an exclusivity period of seven years in the provision of basic voice service, and the private paging company up to 1999 (para. 1.16). Tariff regulation is, therefore, necessary to avoid monopoly abuse. For market segments in which adequate competition has been established, e.g., cellular services with three licensed operators, tariff regulation may not be necessary and the service providers should be free to set the tariffs they charge to their customers. As the telecommunications market becomes more competitive, including the provision of basic services once PTCL's exclusivity period expires, tariffs need not be regulated allowing market forces to establish tariff levels.

3.14 To reduce unsatisfied **demand**, the draft license for PTCL includes specific targets of additional exchange lines to be installed within a certain timeframe. These targets were established prior to PTCL's accelerated expansion program (including the BLT schemes) and have become outdated. The draft license also requires the operator of PTCL to provide service in all centers with population over 500.

3.15 Expansion targets expressed in number of exchange lines may be appropriate when the demand is well known, which is not the case in Pakistan. Further, as demand is a function of price, the growth of demand for services is likely to slow down if tariffs are increased or rebalanced (para. 2.7). A more suitable license condition would be to require PTCL, after the rebalancing of tariffs, to eliminate the waiting lists of service applicants and, thereafter, guarantee connection to new applicants within a reasonable time.

3.16 PTCL will be given the freedom to decide how to provide cost efficient service to centers with over 500 inhabitants: connection of subscribers or provision of PCOs, by radio and/or wireline. After all, convenient access to service for the many may be of greater economic and social value than personal telephones for the few. The cellular, paging, and other private service providers will also be encouraged to expand service outside the larger cities. This will be done by enforcing license conditions and by giving more favorable interconnection and revenue sharing arrangements with PTCL to companies that expand their services into rural and less profitable areas.

3.17 The **interconnection and revenue sharing arrangements** between PTC/PTCL and other operators should encourage expansion of service, when economically justified, and provide the operators with suitable financial incentives. All interconnected operators will gain as the telephone system as a whole expands, since the number of calling combinations will increase at an exponential rate, e.g., outgoing as well as incoming traffic for the network of one operator will increase as another operator expands his system. If incoming and outgoing traffic between the networks of interconnected operators is reasonably balanced, each operator could keep what they bill and no special accounting for the calls would be necessary. Against this background, PTC's current interconnection and revenue sharing arrangements with other operators will be reviewed. Any changes to these arrangements will, as far as possible, be implemented before PTCL's privatization.

3.18 The operating licenses to the operators include certain **service quality** standards. Suitable monitoring of these standards will be undertaken by PTA and FAB and corrective actions will be prescribed in the case of non-compliance. To provide an additional incentive for the operators to maintain adequate service quality, tariff adjustments may be made conditional on the compliance of agreed service quality targets. Improved service quality may also make tariff increases and/or rebalancing more acceptable to subscribers.

3.19 PTA will be the **licensing** authority, replacing MOC, GITT, PTC and PWB. PTA will be provided with adequate procedures and the necessary legal expertise to ensure the validity of the licenses and minimize court challenges (para. 2.18). For a suitable longer term licensing policy, GOP/MOC will assess the future needs of the telecommunications market and establish an appropriate number of operators to be given licenses in each market segment. The objective would be to maximize competition within the constraints of the exclusivity periods already granted in existing licenses, availability of radio frequencies, security and other national concerns.

3.20 GOP/MOC will also establish a longer term policy for the use of the **radio frequency spectrum**. The current demand for the frequency spectrum would have to be balanced against the future needs for new radio based services and technologies. The demand for frequencies from radio based local networks is likely to increase. It may be desirable to require new operators to use digital technology, which would provide more flexibility to the frequency allocation planning. GOP should also take steps to realize the commercial value of the radio spectrum (see box below).

#### **Box 3.2 Commercial Value of the Radio Spectrum**

The growing commercial value of the radio spectrum has prompted several countries to reconsider their current regime for spectrum management. Further, because the number of radio licenses sought by telecommunications service providers has risen sharply in recent years, failure to accord priority to an effective spectrum management policy can lead to large revenue losses for the government. For example, in Argentina, once the Commission Nacional de Telecomunicaciones (CNT) adopted an effective plan for monitoring the use of the radio spectrum, spectrum fees increased dramatically. From 1990 to 1991, CNT reportedly collected the equivalent of only \$2 million in fees following the enforcement of its new policy and in 1992 fee revenue increased to more than \$10 million. Effective planning and regulation need not require a large organization. The key requirement is to get the legislative authority, organization structure, core staffing, and priorities right.

Source: A. Hill and M.A. Abdala, *Regulation, Institutions and Commitment: Privatization and Regulation in the Argentine Telecommunications Sector*, "World Bank Informal Discussion Paper, Draft , Policy Research Department, April 8, 1993. *Radio Communications Spectrum Management Reform*, Department of Transport and Communications, Canberra, Australia, September 1992.

3.21 In August 1995, GOP retained a financial advisor to assist in PTC's privatization. This financial advisor will also study such regulatory issues that need to be resolved urgently to properly draft the operating license for a privatized PTC. To ensure adequate coordination between concerned parties, a working group was formed consisting of high level representatives from MOC, PTA, FAB, PTC, PC and the financial advisor. To assist GOP/MOC in its longer term policy formulation and sector reform efforts and facilitate the regulation of a privatized PTC, a study of tariffs, taxation, demand, service quality, etc., will be carried out (Annex 10). This study will be initiated in January 1996 and coordinated with the activities of the financial advisor retained by GOP for PTC's privatization. An interim report will be available by June 1996 and the final report by December 1996 at the expected time of PTC's privatization. *During negotiations, it was agreed to undertake a study of regulatory issues as outlined in Annex 10, discuss the results with the Bank and identify suitable strategies for implementation.*

## D. THE REGULATORY AGENCIES

3.22 The Telecommunications Ordinance of July 1995 establishes the Pakistan Telecommunications Authority and the Frequency Allocation Board to regulate the telecommunications sector in Pakistan. The ordinance provides for a division of the various regulatory functions which are summarized below:

<b>Box 3.3: Institutions and Regulatory Responsibilities</b>	
<b>Regulatory Authority</b>	<b>Regulatory Responsibilities</b>
Ministry of Communications (MOC)	<ul style="list-style-type: none"><li>- overall sector policy-making</li><li>- licensing policy (criteria for amendment)</li><li>- representation on international bodies (with assistance from PTA and/or FAB)</li></ul>
Pakistan Telecommunications Authority (PTA)	<ul style="list-style-type: none"><li>- policy advice to MOC</li><li>- sector monitoring</li><li>- licensing</li><li>- tariff regulation</li><li>- arbitration of interconnection disputes</li><li>- complaints handling</li><li>- technical regulation (standards and type approval)</li></ul>
Frequency Allocation Board (FAB)	<ul style="list-style-type: none"><li>- policy advice to MOC</li><li>- allocation of radio frequencies</li><li>- monitoring of use and interference</li></ul>

3.23 **GOP**, through **MOC**, will retain the responsibility for overall telecommunications policy. It is envisaged that key decisions would be made by **MOC**, such as policies for the licensing of additional operators, amendment of licenses and the radio frequency allocations. **MOC** will continue to represent the interests of **GOP** domestically and in international bodies such as **ITU** and **INTELSAT** with support and advice of **PTA** and **FAB**. **PTA** and **FAB** will monitor national and international developments in the telecommunications sector and provide advice to **MOC** on these matters as part of their policy advisory functions.

3.24 **PTA** will assume the responsibility over the regulatory functions currently entrusted to **GITT**, **Vigilance Commission**, **PTC** and **MOC**. **PTA** will be responsible for licensing of operators in accordance with policies laid down by **MOC**, collect license fees and maintain registers of all accredited service providers. A key role for **PTA** will be the establishment and enforcement of license conditions and other regulatory requirements. For this purpose, **PTA** will be empowered to require operators to supply the operational and financial data necessary to ensure that license provisions relating to service quality, network expansion, demand satisfaction, etc., are adhered to. It will be given the power to issue legally enforceable orders to service providers, and to impose penalties in the event of non-compliance. **PTA** will recommend license amendments and revocations to **MOC**. License amendments would also be possible through mutual agreement between **PTA** and the licensee. **PTA** will also ensure reasonable interconnection between operators, arbitrate complaints and impose fines on service providers in case license and/or other regulatory provisions are not complied with.

3.25 PTA will be responsible for the regulation of service quality standards. It will have the power to impose mandatory technical guidelines designed to ensure safety and network inter-operability. It will set standards for all equipment which is to be connected to the public telecommunications network, and be responsible for type approval of such equipment. In summary, PTA will be given substantial financial and administrative autonomy to efficiently implement GOP's policies for the sector.

3.26 PTA will be governed by a three person board, one of whom will be a economic/commercial expert and an other will be a professional telecommunications engineer. One member of the board will serve as chairman. Each member will be appointed for a term of four years and will be eligible for re-appointment for a similar or shorter term.

3.27 The organizational structure of PTA (Annex 11) has been developed based on its principal responsibilities and functions. The key functions of the Divisions/Departments will be: (i) Corporate Management: financial and human resources, Management Information System, library, public relations, consumer protection and resolution of user complaints; (ii) Policy, Research and Law: policy advice (such as criteria for new licenses), research on current and future telecommunications issues and trends, and legal counsel; (iii) Licensing: issuing and monitoring of operator licenses and liaison with FAB; (iv) Finances and Tariffs: financial policies of licensed operators, audit to verify license compliance reports, tariff applications, interconnection agreements and issues; (v) Engineering: advice on all engineering matters including service quality, standards, type acceptance tests, and network and technical analysis and (vi) Standards and Specifications: development and evaluation of equipment standards. PTA will have permanent professional staff and fully operational PTA is expected to require about fifty professional staff plus support staff.

3.28 The Telecommunications Ordinance provides PTA funding from GOP grants (including a Rs. 50 million initial grant); loans raised by PTA; license fees from applications; and annual fees payable by the licensees. Once PTA has become operational, it would be fully funded by fees on the operators and no direct GOP support would be required.

3.29 Under the Ordinance, FAB took over PWB's current functions and responsibilities for allocating the radio frequency spectrum. Upon the application by PTA, FAB assigns specific frequencies for the operation of services; the operating licenses, however, is given by PTA. FAB will maintain computerized records of all frequency allocations, monitor radio spectrum use, and investigate complaints about interference. It has the power to inspect radio installations and issue orders requiring the cessation of activities found illegal or to have caused interference.

3.30 FAB is located in MOC and consists of six members, including the Secretary of Communications, Chairman of PTA, a nominee of each of the Ministries of Defense, Information & Broadcasting, and Interior. The sixth member appointed by GOP serves as full time Executive Vice Chairman and CEO and the Secretary of Communications serves as Chairman of the FAB.

3.31 The organizational structure of FAB has been developed based on its principal responsibilities (Annex 12). The principal functions of the various Divisions/Departments will be: (i) Policy and Regulation regarding radio spectrum utilization; (ii) International and Domestic Coordination: responsible for bilateral and multilateral agreements, ITU relations, international monitoring and direction finding, and internal inter-agency coordination; (iii) Spectrum Planning: frequency allocation, plans and tables, and channeling plans; (iv) Spectrum Engineering: intermodulation, interference and propagation and area coverage analysis; (v) Inspection and Monitoring: enforcement programs such as inspections. FAB will

have permanent professional staff and may retain from time to time temporary staff and consultants as necessary. Fully operational, FAB will be a technically oriented organization in charge of 20 monitoring stations in addition to its radio frequency allocation functions. *During negotiations, it was agreed that PTA and FAB would have an organization structure and conduct themselves in a manner satisfactory to the Bank. To that end, the organization charts for PTA and FAB, as set out in Annexes 11 and 12, and staffing requirements were discussed and agreed.* These organizational structures are intended for the final organization and some major functions may be combined during the initial stages of operations.

3.32 The PTA and FAB powers and duties are in line with similar structures for telecommunications sector regulation outside Pakistan. PTA and FAB will have to closely work together and coordinate the licensing and assignment of the radio frequencies in Pakistan. To enable PTA/FAB to retain suitably qualified staff, they should be allowed to pay salaries comparable with those of the private sector. This will be especially important after the privatization of PTC. However, being part of the Government, exemption of PTA/FAB staff from civil service regulations as regards pay scales may not be feasible. To attract and retain suitably qualified staff, PTA/FAB will, therefore, offer other suitable incentives to the extent possible. For staff outside Government service, e.g. long term consultants, contracts will be given with adequate conditions to attract experts from within and outside the country.

## **E. THE OPERATORS**

3.33 PTCL will provide basic telecommunication services during an exclusivity period of seven years. Thereafter, the telecommunications market in basic services will be opened to competition. If PTCL's tariff structure is not rebalanced before its exclusivity period expires, competitors would attract the profitable business subscribers by offering lower long-distance rates, while PTCL would be left with the less profitable residential subscribers. To ensure efficient competition, PTCL's tariffs should be close to the cost of providing a service before its monopoly expires.

3.34 Before PTCL's privatization, GOP intends to create NTC for a separate network serving the northern areas, Government and the armed forces (para. 3.8). NTC would operate an independent network to be formed out of some of PTC's existing local and long distance facilities and by suitable rearrangements of official subscribers between exchanges. GOP has prepared a plan indicating the specific telephone exchanges and the microwave and coaxial networks needed to make NTC operationally independent. About 4% of PTCL's exchange capacity, or about 100,000 lines, would be transferred to NTC. Most of those lines are reliable but of a relatively obsolete EMD technology and are located in Islamabad, Lahore and Karachi (one exchange each) and about 50 minor exchanges mainly in the northeast. Domestic call charges would remain with the company where the call is originated (PTCL or NTC), which is a normal practice when incoming and outgoing calls are fairly balanced. PTCL would operate the international facilities and would bill NTC for its outgoing international calls. NTC will be operated as a Government statutory corporation on a commercial basis, whereas the new PTCL will be operated under the Companies Ordinance as a private company.

3.35 Similar government networks exist in countries like the United States, namely the Federal Telecommunications Network (FTN) connecting all the Federal offices in the USA and operating independently of the private/public telecommunications networks. FTN leases facilities as needed from the private operating companies. Although a separate network may not be a least-cost solution, it provides direct advantages to a private operator in insulating it from Government pressures to invest and operate facilities that may not be financially viable. It also reduces the risk of Government interference in the

operations of a private system during crisis situations. Furthermore, Government is often slow in paying its telephone bills and collection is difficult as Government subscribers cannot be easily disconnected. For these reasons, a separate Government network may actually increase the attractiveness of PTCL to private investors.

3.36 Outside of PTCL and NTC's monopolies, there are a number of independent operators who will continue to provide services: three cellular, one card phone, one paging and one data communications service providers. There are also a number of licensees which have not yet started operations. With the establishment of PTA, the resulting "regulatory certainty," and an expanding market, it is expected that new operators will start providing more services.

3.37 To facilitate the establishment of new service providers and to encourage efficient competition, existing licenses may have to be renegotiated, e.g., with the paging operator to cease his monopoly up to 1999 over paging services. Financial and other incentives, through tariff adjustments and revenue sharing arrangements, should be identified by the regulator to encourage the operators to expand their services out of the urban centers into rural and other less profitable areas. If a licensee refuses to renegotiate his license, PTA would have to wait until the license (or exclusivity period) expires and then make suitable changes. As explained earlier (para. 3.17), all operators will gain from the expansion of the telecommunications system as a whole.

## F. THE BANK'S ROLE

3.38 The Bank has been involved in five telecommunications projects in Pakistan. The first four projects have generally been successful in developing programs for the expansion and modernization of the telecommunications network and some modest institutional building in the administrative and accounting areas. The fifth telecommunications project was approved in July 1986 and was closed in December 1993. In addition to network expansion, sector reform, such as PTC's incorporation, was initiated under this project and some progress was made in the commercialization of PTC with the passage of the 1991 PTC Act. The Project Completion Report, dated December 22, 1994, concludes that this was a highly successful project in expanding and improving the telecommunications network, as well as initiating sector reforms. The proposed project is a logical continuation of the sector reforms initiated under the fifth telecommunications project. The Bank will continue to play a critical role in the sector reform process, including the privatization of PTC, by supporting GOP's efforts to implement an adequate sector regulation.

3.39 The Bank's prior involvement in Pakistan's telecommunications sector and its experience with similar projects in Mexico, Philippines, and Venezuela, makes it well suited to assist GOP in its sector reform efforts and in the establishment of regulatory systems and institutions. GOP could also gain from the Bank's experience in other countries regarding increasing the flow of private capital, management, and technology for the telecommunications sector.

3.40 The Bank is also supporting GOP's privatization efforts through a group of Bank staff and consultants providing technical assistance to the Privatization Commission, including technical assistance for PTC's privatization. The proposed project aims at implementing the legal and regulatory framework, as suggested by the consultant's consortium (Annex 7) and accepted by GOP and the Bank. It will also assist GOP in its long term policy formulation, sector reform efforts, and privatization of PTC through a study of tariffs, demand, service quality, etc. (Annex 10). The project will be coordinated with the Bank support provided to the Privatization Commission.

## IV. THE PROJECT

### A. PROJECT OBJECTIVES

4.1 The primary project objective is to support the reform and efficient development of the Pakistan telecommunications sector by implementing a suitable regulatory framework for both public and private telecommunications operators and the efficient allocation and use of the radio spectrum. More specifically, the project will assist in establishing the PTA and FAB. Through its regulatory activities, PTA will promote competition in the provision of telecommunication services and increase private sector participation. The FAB will provide for the efficient management and allocation of the radio frequency spectrum for private and public use. While fully supporting PTC's privatization process, the Bank does not provide any direct assistance to PTC in this project in view of its expected privatization.

4.2 The proposed project is consistent with the Bank's Country Assistance Strategy, which, inter-alia, emphasizes support for redefining public/private sector roles, including privatization of public services and increasing the public sector's ability to regulate a more competitive environment for the expansion of the private sector. The project is also consistent with the Bank's strategy in the telecommunications sector, which calls for shifting the Government's role from ownership and operations to policy making and regulation, promoting efficiency and service quality, and increased private sector participation in investments and provision of services.

### B. STATUS OF PROJECT PREPARATION

4.3 Consultants, under terms of reference agreed during the February 1994 pre-appraisal mission and funded by a Japanese Grant Facility, prepared the detailed design of the regulatory system, including the radio spectrum management, in line with the reform strategy prepared by the GOP retained consultant's consortium. These proposals were discussed with MOC and concerned PTC staff upon which site inspections and technical specifications for the project equipment were completed and terms of reference for technical assistance prepared. Other GOP parties were also consulted through MOC's assistance. The proposed project, as described below, is based on the results of these discussions and consultations. As a condition of Board Presentation, MOC has obtained anticipatory approval of the project and its main components from Economic Committee of the National Economic Council (ECNEC). *As a condition of Loan Effectiveness, MOC will obtain approval of the project and its main components by ECNEC. (6.2)*

### C. PROJECT COMPONENTS

4.4 The proposed project addresses GOP's objectives and priorities for the sector through the following components:

- (a) technical assistance through a "technical cooperation arrangement"<sup>2</sup> with a reputable regulatory agency (Annex 14). Under this arrangement, PTA's and FAB's priority tasks

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<sup>2</sup> These arrangements will be similar to "twinning." The term "technical cooperation" has been preferred, however, as the managerial authority will always remain with PTA/FAB officials.

will be to adopt appropriate organizational structures for their entire range of regulatory activities. Technical assistance to the extent of 48 expert-months will be provided to PTA and FAB for project implementation. An additional 24 expert-months will be provided to FAB during the first year of its operation to build operational and maintenance capabilities;<sup>3</sup>

- (b) staff training for PTA and FAB will be incorporated in the provision of technical assistance through the arrangement of relevant courses and seminars in Pakistan, study trips abroad, and training by the equipment suppliers. In addition to training provided by suppliers on the operation and maintenance of the equipment for spectrum management and monitoring and PTA/FAB's technical cooperation partner (see (a) above), the project would provide for: (i) seminars and courses offered by private firms, universities and associations, dealing with specialized regulatory issues and general regulatory methods; (ii) research fellowships at universities for the study of regulatory and telecommunications issues; and (iii) a tour of regulatory agencies in other countries. Regular employee training in non-specialized functions (e.g., computer literacy) will be included in PTA's and FAB's operating budgets (Annex 15);
- (c) procurement and installation of an integrated radio spectrum management and monitoring system consisting of central administrative facilities at Islamabad, regional licensing offices, a satellite monitoring facility at Islamabad, a network of fixed and mobile radio frequency monitoring stations to cover the regions of the country where most of the radio systems are operating, and equipment for a type acceptance laboratory. The system has been designed as an integrated network that will provide both administrative (mostly licensing) and technical facilities (frequency planning, radio spectrum monitoring, etc.) and can be easily expanded in the future as the use of the spectrum increases; and
- (d) support to GOP's sector reform program through studies of sector issues to facilitate the privatization process, e.g., tariffs, demand management, quality of service standards, etc.

Details of the project components are given in Annex 13.

#### **D. PROJECT COST AND FINANCING**

4.5 The total project cost is estimated at US\$53.6 million (including estimated customs duties and local taxes), with a foreign cost component of US\$34.6 million. Relevant land and buildings will be transferred from PTC to PTA and, especially, to FAB. Detailed project cost estimates and yearly expenditures are presented in Annex 16 and summarized below in Table 4.1

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<sup>3</sup> US\$0.3 million of the loan have been allocated to MOC for project implementation support (preparation of specifications, evaluation of bids, project execution).

**Table 4.1: Estimated Project Costs**

Project Components	US\$ Million			Foreign as % of Total
	Local	Foreign	Total	
<b>MOC</b>				
Support to Sector Reform Program	0.2	0.2	0.4	51.3
Project Implementation Support	0.3	0.0	0.3	0.0
Subtotal:	0.5	0.2	0.7	27.8
<b>PTA</b>				
Type Acceptance Laboratory	0.5	1.3	1.8	71.4
Frequency Management Equipment	1.3	3.3	4.6	71.4
Computers, Office Equipment and Vehicles	0.4	0.5	0.9	57.8
Land, Buildings, Air Cond. and Power Supply	1.7	0.2	1.9	9.0
Training	0.3	0.7	1.0	71.4
Technical Assistance	0.2	0.6	0.8	71.4
Subtotal:	4.4	6.6	11.0	59.6
<b>FAB</b>				
Frequency Management System	8.3	20.6	28.9	71.4
Computers, Office Equipment and Vehicles	0.7	1.0	1.8	58.2
Land, Buildings, Air Cond. and Power Supply	2.3	0.3	2.7	12.4
Training	0.5	1.2	1.7	71.4
Technical Assistance	0.7	1.8	2.5	71.4
Subtotal:	12.5	25.0	37.5	66.6
<b>TOTAL BASE COST</b>				
	<b>17.5</b>	<b>31.8</b>	<b>49.3</b>	<b>64.5</b>
Physical Contingencies	0.9	1.6	2.5	64.5
Price Contingencies	0.6	1.2	1.9	66.1
<b>TOTAL ESTIMATED PROJECT COST</b>				
	<b>19.0</b>	<b>34.6</b>	<b>53.6</b>	<b>64.5</b>

Note: Totals may not be exact due to rounding. Local costs include about US\$14.3 million equivalent for taxes and duties.

4.6 Project costs have been estimated by consultants based on mid 1994 contracts and budgetary information provided by various potential suppliers (no changes were introduced following negotiations in July 1995 since prices remained stable between 1994 and 1995). Physical contingencies have been estimated at 5% for both foreign and local costs of equipment-related items. Local costs include about 40% custom duties and taxes on imported goods and services. The international price increases in US\$ terms are assumed to be 2.0% in 1996, 1.6% in 1997, 2.1% in 1998, and 2.4% in 1999.

4.7 The financing plan for the project is presented in Table 4.2. The proposed Bank loan of US\$35.0 million would finance about 65% of the total project cost and 100% of the foreign exchange costs. The remaining cost of US\$16.3 million (32%) would be covered by GOP. GOP will transfer the necessary land and buildings for PTA/FAB's head offices and licensing and monitoring stations (about 20 sites) from PTC

to PTA/FAB at nominal cost. The market value of these properties is much higher than their book value and GOP's contribution to the project is, therefore, larger than the project cost and financing plan indicate.

**Table 4.2: Project Financing Plan (US\$ Million Equivalent)**

	Local	Foreign	Total	% of Total
<b>GOP</b>	18.6	0.0	18.6	34.7
<b>IBRD</b>	0.4	34.6	35.0	65.3
<b>TOTAL</b>	19.0	34.6	53.6	100.0

4.8 The proposed Bank loan would be lent to the Government of Pakistan for 20 years, to be repaid over 15 years after 5 years of grace, at the standard variable interest rate, with GOP assuming the foreign exchange risk.

#### **E. PROJECT ADMINISTRATION AND IMPLEMENTATION**

4.9 **Organization and Management.** PTA and FAB will be responsible for the implementation of their own project components under the general supervision of the MOC. *During negotiations, it was agreed that a unit will be formed within MOC by December 31, 1995 with a project manager to coordinate the project works, including procurement of goods and services, implementation monitoring, accounts, project audits and reporting. These arrangements were discussed and agreed during negotiations.*

4.10 **Implementation Timetable.** GOP established PTA and FAB in August 1994 and key staff were appointed as a condition of loan negotiations. Contracts for equipment supply and TA/technical cooperation arrangements for PTA/FAB would be finalized by mid 1996. Both agencies would be fully operational in early 1996. A project implementation plan is shown in Annex 17. The project is expected to be completed by December 31, 1998.

4.11 **Procurement.** To encourage supplier/bidder interest and to provide a single responsibility for the proper functioning of the system as a whole, the main equipment for radio frequency management will be one package and will be procured under ICB procedures in accordance with the Bank's procurement guidelines issued in January 1995. The same procedures will be used for laboratory equipment and vehicles. The consultants for the project will be hired in accordance with the Bank's guidelines for the use of consultants. Desktop computers and printers, costing under US\$200,000 for each lot for a total not exceeding US\$700,000, will be procured over the life of the project under national competitive bidding procedures. Project TA and training will be procured in accordance with procedures acceptable to the Bank. *During negotiations, it was agreed that GOP will establish a special Tender Board by December 31, 1995, under the supervision of the MOC, for PTA's and FAB's procurement under the project.* Table 4.3 indicates the proposed bid packages, procurement methods and estimated amounts. Annex 18 contains a procurement timetable. All procurement costing over US\$200,000 will require the Bank's prior review. Other contracts will be subject to random post reviews in the field by visiting missions. Contracts for hiring

of consulting firms costing US\$100,000 equivalent or more and contracts for hiring individuals costing US\$50,000 equivalent or more would be subject to prior review by the Bank. Approximately 90% of the value of the Bank loan would require prior review. The bidding documents for the spectrum management system were submitted to the Bank for review as a condition of negotiations.

**Table 4.3: Summary of Procurement Arrangements**  
(US\$ Million Equivalent. Contingencies are included)

Project Components	Procurement Method		
	ICB	Other (*)	Total
<b>Equipment</b>			
Spectrum Management System (PTA/FAB)	26.1 (26.1)	0.0 (0.0)	26.1 (26.1)
Type Acceptance Laboratory	1.4 (1.4)	0.0 (0.0)	1.4 (1.4)
Computers, Vehicles and Office Equipment	0.0 (0.0)	2.1 (1.7)	2.1 (1.7)
Air Conditioning & Power Supply	0.5 (0.5)	0.0 (0.0)	0.5 (0.5)
<b>Civil Works</b>	0.0 (0.0)	3.8 (0.0)	3.8 (0.0)
<b>TA (Institutional Development)</b>			
Training	0.0 (0.0)	2.1 (2.1)	2.1 (2.1)
Consultancy	0.0 (0.0)	3.3 (3.3)	3.3 (3.3)
<b>Total Procurement</b>	<b>28.0</b>	<b>11.2</b>	<b>39.3</b>
<b>of which Bank financed</b>	<b>(28.0)</b>	<b>(7.0)</b>	<b>(35.0)</b>
<b>Taxes and Duties</b>			<b>14.3</b>
<b>Total Project Cost</b>			<b>53.6</b>

Note: Figures in parentheses are amounts financed by the Bank. Totals may not be exact due to rounding.

(\*) Other: Includes limited international bidding, national competitive bidding, and Bank procedures for selection of consultants.

4.12 **Disbursement.** The Bank loan would be disbursed against: (a) 100% of foreign expenditures, and 100% of local expenditures (ex-factory cost) for equipment, (b) 100% of foreign and local expenditures (ex-factory cost) and 75% of local expenditures for other items procured locally for computers, vehicles and office equipment, and (c) 100% of expenditures for consultants' services and training. The estimated disbursement schedule and the standard disbursement profile for Bank-assisted

telecommunications project in Pakistan is given in Annex 19 and disbursement categories in Annex 20. A summary of projected disbursement is shown in Table 4.4. The loan will be closed on June 30, 1999. The projected disbursement period is about three years shorter than the Bank's standard disbursement profile (issued August, 1995) for telecommunications projects in the South Asia Region. Since the advance preparation of procurement documents under the project will facilitate early procurement and implementation, most disbursements have been projected during the first two years after loan effectiveness. Full documentation would be required for all equipment contracts above \$200,000, consultant firm contracts above \$100,000 and individual consultant contracts above \$50,000. Disbursements for contracts below this amount and all training expenditures would be made on the basis of Statement of Expenditures (SOEs). The supporting documentation for SOE expenditures would be retained by PTA and FAB and made available for review by Bank supervision missions.

**Table 4.4: Disbursement of Bank Loan**  
(US\$ Million Equivalent)

Bank FY	1996	1997	1998	1999
Annual	0.8	9.5	20.5	4.2
Cumulative	0.8	10.3	30.8	35.0

**4.13 Special Account.** To facilitate disbursement, a Special Account will be established at a bank under terms and conditions satisfactory to IBRD. This Account will be maintained in US Dollars with an authorized allocation of US\$1,000,000 and would be used for all eligible expenditures, both local and foreign, of less than US\$500,000 equivalent. Replenishment applications will be submitted on a monthly basis or when amounts withdrawn are equal to one-third of the authorized allocation, whichever occurs first. During negotiations, the procedures for the operation and audit of the Special Account were explained to GOP. The Special Account will be opened and operated in accordance with Bank procedures.

**4.14 Accounts and Audits.** MOC will have the overall responsibility for the project audit. The actual audit work will be conducted by independent auditors acceptable to the Bank. PTA and FAB will establish and maintain their accounting systems in accordance with sound and internationally recognized principles and practices acceptable to the Bank. Each entity will provide interim and annual financial statements to reflect its financial performance and position. Audited financial statements for PTA/FAB will be provided to the Bank within nine months of the close of the fiscal year. The audit report will include a statement of the adequacy of the accounting system and internal controls, and compliance with financial covenants. The accounting, financial reporting, and audit arrangements should provide adequate and timely information to the Bank for supervision of the project. *During negotiations, it was agreed that audit reports will be submitted to the Bank within nine months after the end of the financial year on: (a) the project accounts, including a separate opinion on the Special Account and any statements of expenditures (SOE); and (b) the annual financial statements for PTA and FAB.* Unaudited financial statements for PTA and FAB will be submitted to the Bank within six months of the end of the financial year.

**4.15 Monitoring, Reporting and Supervision.** GOB and the Bank will monitor the overall performance of PTA and FAB during project implementation aided by performance indicators (Annex 21). In addition, the Bank will monitor procurement and project implementation. This monitoring will assist

GOP in taking timely corrective action as necessary. *During negotiations, it was agreed to monitor PTA/FAB's performance and project implementation progress using indicators set out in Annex 21.*

4.16 *During negotiations, it was agreed that MOC will supervise the preparation by PTA and FAB of quarterly project progress reports, in a format acceptable to the Bank, and will submit such reports to the Bank within one month of the end of the quarter. Project accounts will be maintained by MOC's project unit, so that the cost of each project component and loan disbursement can be clearly established. Reporting requirements are summarized in Annex 22.*

4.17 Supervision of the project will focus on the following key aspects: (a) setting up and further development of PTA and FAB in accordance with the agreed timetable, organizational structure and staffing; (b) timely and effective procurement of goods and services; and (c) implementation coordination of the various project components. The final mission in 1999 will provide instructions for preparation of the Implementation Completion Report (ICR) and agree on a suitable plan for the future operations of the project. The total estimated Bank staff inputs are: telecommunications engineers and finance specialists for a total of about 10 staff-weeks a year. Specialized consultants will be used, as necessary, for a total of about 3 expert-weeks a year. A supervision plan is given in Annex 23.

4.18 **Environment and Health Aspects.** The project has been given a "C" environment rating. Since the project is mainly intended to assist GOP in the restructuring of the regulatory and institutional framework for the development of telecommunications in Pakistan, it is not expected to have any adverse impact on the environment or cause any health problems. HF monitoring stations will be installed away from urban centers to avoid harmful interference to or from other radio systems. VHF and UHF stations will use small rooms in mostly existing buildings, whose renovation or construction will be subject to standard construction practices in urban areas to avoid noise, dust and damage to neighboring property. No disruption of virgin land is expected.

## **V. PROJECT JUSTIFICATION**

5.1 The proposed project supports an essential component of GOP's telecommunications sector reform program, namely the implementation of a regulatory framework which is essential for increased private sector participation. The sector regulation is becoming increasingly important with the growth in the number of service providers, rapid technological change, and private ownership of operations. The project is consistent with the Bank's policies regarding the telecommunications sector.

### **A. PROJECT BENEFITS**

5.2 Telecommunications services are increasingly based on radio technologies and it is being realized that the radio frequency spectrum is a valuable resource that should be protected. In India, the recent auctioning of licenses to provide mobile cellular services brought in winning bids equivalent to US\$ 6.0 billion and in the USA the auctioning of frequency assignments for personal communications services (PCS) brought in about US\$ 8.0 billion. In Pakistan, as in most other countries, the licenses for existing mobile cellular and other radio based services were granted without auctions or high up-front charges. It is, therefore, difficult to quantify the economic value of the radio frequency spectrum. For the future, however, the project will provide GOP with the licensing and monitoring tools to mobilize resources and protect against unlicensed use of the frequency spectrum, which, judging from international experience, has a substantial value.

5.3 The establishment of a transparent regulatory framework and competent regulators with adequate authority and a known mandate is a basic role of Government and would enhance GOP's privatization efforts and increase the interest of potential investors; this would be reflected in the bids for the initial sale of PTCL's equity. The operators of telecommunications services would also benefit from knowing the rules for tariff adjustments, interconnection, competitive environment, licensing, etc., and this will encourage the private sector to invest and expand services. The consumers will benefit from more efficient and better service quality, the consumer protection aspects of the Telecommunications Bill, and the possibility of presenting their complaints to the regulator, PTA, when the operators do not take adequate corrective action. Finally, the expansion and improvement of telecommunications services will contribute to economic growth and poverty alleviation. As the experience from other countries suggests, private sector performance improves with the establishment of an adequate regulatory system (Box 5.1).

### **B. FISCAL IMPACT**

5.4 The overall fiscal impact of the project will be positive. The initial set-up costs will, in addition to the Bank loan, be covered by the GOP budget and the operating costs will be met through license and other fees on operators. The initial GOP budget allocation is Rs.50.0 million. License and other fees charged to the operators, as indicated in the Telecommunications Ordinance, would exceed Rs. 200.0 million a year according to project PC1 estimates. These arrangements would be more than adequate for PTA/FAB's salaries and other operating expenditures estimated at about Rs. 60.0 million a year (at full operation), provided GOP funds the initial capital costs to establish these regulatory authorities. As the telecommunications networks and traffic grows over time, GOP will through PTA collect substantially higher amounts in taxes, royalties, licenses and other fees charged to the various operators in the

telecommunication sector. According to the current licenses, the cellular operators pay a 4% royalty on their billing, less PTC's call charges, as well as 4% of their net after tax income. The second license for data communications prescribes largely the same royalties as for the cellular operators. Other licenses (e.g. card phones, paging, voice mail and store and forward facsimile, etc.) contain a variety of license, registration and renewal fees, per subscriber fees and deposits. The operating license for a privatized PTC will also provide for license fees and/or royalty payments and the eventual auctioning of frequencies for new services may produce substantial additional revenues (para 5.2).

<b>Box 5.1: Regulatory Systems &amp; Private Sector Performance</b>		
<b>Country</b>	<b>Regulatory System</b>	<b>Private Sector Performance</b>
ARGENTINA privatized in 1990	Repeated changes in regulation 1989-1992.	Highly profitable, but too soon to tell impact on service quality and national welfare.
CHILE privatized in 1988-89	Highly detailed benchmark regulation supervised by regulatory agency with explicit arbitration process.	Unprecedented high rates of investment and network expansion subsequent to privatization; substantial increase in national welfare.
JAMAICA privatized in 1988-1989	Rate of return specified in license agreement. No independent regulator.	Major investment in domestic network and increased national welfare, high profitability.
PHILIPPINES private since inception	Long-standing regulation by commission with vague mandate and modest power.	Alternation between stagnation and periods of moderate investment. Very high unmet demand. Profitability unknown.
UNITED KINGDOM privatized in 1984	Price-cap regulation and complex mechanisms of conflict resolutions specified in the license.	Take-off of investment in 1983, with large gains in national welfare.

Source: Regulation, Institutions and Commitment in Telecommunications - A Comparative Analysis of Five Country Studies. B. Levy and P. Spiller, April 1993.

5.5 Once in full operation, the above taxes, royalties, license fees and other levies charged to the sector operators will more than cover the operating costs of PTA and FAB. Any funds surplus to PTA/FAB's requirements would be transferred to the Treasury. A renegotiation of existing licenses to standardize the fees paid by the various operators is likely to increase this fiscal surplus. *During negotiations, assurances were obtained from GOP that it will provide in a timely fashion all the necessary funds for the implementation of the project and start-up of PTA/FAB operations.*

5.6 The introduction of more market based fees for the assignment and use of the radio frequency spectrum would add to GOP's fiscal benefits from the sector. The radio frequency spectrum is a valuable scarce resource and it has become more common to charge for the assignment of frequencies, e.g., through frequency auctions (as in New Zealand, see below, and more recently in the United States), competitive hearings, etc. Further, recurrent fees can be charged to avoid hoarding of frequencies in the hope of later selling them at a higher price.

**Box 5.2: New Zealand's Experiment in Radio Frequency Management**

In 1989, New Zealand reshaped its spectrum-management regime, privatizing large parts of the radio spectrum, and started to auction off spectrum rights giving permanent private-property rights to the spectrum, permitting the market to allocate frequencies efficiently.

New Zealand's 1989 law made two key changes in the traditional spectrum management regime: the use of auctions rather than hearings as the method of assigning radio licenses and the privatization of spectrum rights through the distribution of long-term, tradable property rights of radio bands.

Auctioning was an expeditious way of resolving competition for allocations. In a year and a half, New Zealand's Ministry of Commerce received a total of 2,915 bids for 264 contested licenses in 5 different bands, an average of 11 bids per license.

Two conclusions can be drawn from this experience: private property rights to the spectrum are technically feasible and spectrum privatization can be achieved more easily by distributing nationwide rights to a broad spectrum of frequencies rather than privatizing individual channels.

Source: Adapted from *Reform of Spectrum Management: Lessons from New Zealand*. Reason Foundation, 1991.

5.7 PTC's privatization would provide GOP with a substantial one-time fiscal benefit,<sup>4</sup> while the potential for recurrent future dividends from PTCL's operations would be reduced. This project supports PTC's privatization as well as other private investments in the telecommunications sector. Over the longer run, this should lead to substantial fiscal benefits.

5.8 A reduction of the 35% excise duty on domestic call charges to avoid distortions in calling patterns would reduce GOP's fiscal revenues. However, some revenues would be recaptured by higher income taxes from PTCL due to more long-distance traffic and profits. GOP may also replace the current excise duty on PTCL's domestic calls with a lower flat tax on all telecommunications revenue, which would preserve GOP's fiscal benefits while being less distorting for the telecommunications market.

### C. PROJECT SUSTAINABILITY

5.9 The institutional and legal features of the the project have been examined and are appropriate. The legal basis for PTA and FAB, their staffing and funding and GOP's commitment to sector reform are key factors in the sustainability of the project. The Telecommunications Ordinance of 1994 legally established the regulatory institutions PTA and FAB. However, this Ordinance, which was repromulgated in July 1995, is of temporary nature and GOP intends having the Telecommunications Bill enacted to provide PTA and FAB with a permanent legal basis. *During negotiations it was explained that the Bank may take remedial action if the legal basis for PTA and FAB lapses or if GOP's telecommunications sector reform program is not implemented.* A Sector Policy Letter and Action Plan outlining GOP's commitment to the sector reform program is in Annex 9. GOP made key staff appointments for PTA and FAB prior to negotiations and a budget of Rs. 50.0 million has been provided for their start-up operations. PTA and

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<sup>4</sup> The sale of PTCL vouchers (para. 3.10), equivalent to about 12% of PTCL's equity, brought in about US\$1.0 billion.

FAB's staffing and funding arrangements were discussed during negotiations (paras. 3.31 and 5.4) and suitable agreements reached. PTA will collect license and other fees from the service providers, which will ensure adequate funding outside GOP's budget. Over the longer run, PTA/FAB's license and other revenues are likely to increase substantially, as existing service providers expand their operations and new operators are licensed. The importance of the regulatory institutions will increase in a complex, multi operator environment. It will, therefore, be in GOP's, the private operators' and the public's best interest to maintain strong regulatory institutions to ensure adequate interconnection and revenue sharing arrangements between mostly private operators as well as protection of consumer interests.

#### **D. PROJECT RISKS**

5.10 There are specific project risks related to the timing of PTC's privatization. An early privatization of PTC would complicate the transfer of relevant staff, equipment, sites and buildings from PTC to PTA and FAB, renegotiations of interconnection and revenue sharing arrangements between PTCL and other operators, and reform of GOP's taxation policy towards the sector. The transfer of relevant staff, equipment, sites and buildings from PTC to PTA/FAB has been initiated and should be completed well in time before PTC is privatized. GOP, with assistance of the financial advisor and studies to be made under the project (para. 3.21), will review interconnection, revenue sharing and other regulatory issues with the objective of establishing adequate policies in time for PTC's privatization.

5.11 A delay in the passing of permanent legislation for the telecommunications sector (para. 5.9) is likely to delay the privatization of PTC. However, the project would still be justified, as the regulatory framework and frequency management infrastructure that it provides are needed with or without the privatization of PTC. A lapse in the legal basis for PTA/FAB or failure to implement the sector reform program would trigger remedial actions by the Bank.

5.12 GOP's maintenance of capable regulators and adequate funding arrangements for PTA and FAB are critical to ensure efficient regulation of the sector and the longer term benefits of the project. There is a risk that PTA/FAB staff is appointed on political grounds rather than merit. However, this risk is mitigated by the Telecommunications Ordinance, which provides PTA with substantial financial and administrative autonomy. During negotiations, GOP agreed to make available in a timely fashion all the necessary funds for the efficient operations of PTA and FAB. Similarly, GOP will finalize the staffing arrangements and the organizational structure of PTA and FAB by early 1996 to make them fully operational. After initial delays, GOP is now progressing satisfactorily in these matters. The above risks are manageable.

#### **E. PERFORMANCE INDICATORS**

5.13 The performance indicators for this project have been classified into three groups: (i) project implementation; (ii) efficiency of sector regulation; and (iii) project's contribution to longer-term sector objectives. Project implementation will be monitored through quarterly progress reports (see para. 4.16). The efficiency of sector regulation will be evaluated when the regulatory agencies, PTA and FAB, commence their operations and as the various regulatory functions are implemented. The project's contribution to the longer-term sector objectives will be evaluated towards the end of the project and would form part of the project implementation completion reporting. A list of proposed project performance indicators is given in Annex 21.

## **VI. AGREEMENTS REACHED AND RECOMMENDATION**

### Agreements Reached

- 6.1 During Negotiations agreements were reached on:
- (a) study to support the sector reform program (3.21).
  - (b) organizational structure and staffing of PTA and FAB (3.31);
  - (c) establishment of a project unit and appointment of a project manager for the project implementation (4.9);
  - (d) establishment of a special Tender Board, under the supervision of MOC, for PTA's and FAB's procurement (4.11);
  - (e) annual audit reports for the project, special account and PTA and FAB (4.14);
  - (f) performance indicators for PTA and FAB (4.15);
  - (g) progress reports and project accounts for PTA and FAB (4.16); and
  - (h) PTA/FAB's funding arrangements (5.4);
- 6.2 By Effectiveness: ECNEC approval of the project and the relevant PC1 (4.3)
- 6.3 Remedies: The Bank may take remedial action if:
- (a) the Telecommunications Sector Reform Program is not carried out; and,
  - (b) the legal foundation for PTA and FAB lapses or is changed so as to adversely affect their ability to implement the project (5.8)

### Recommendation

6.4 On the basis of the above, the proposed project is suitable for a Bank loan of US\$35.0 million equivalent to the Islamic Republic of Pakistan for a term of 20 years at the standard variable interest rate, including a five year grace period.

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**Telecommunications Laws and Regulations**

The Telecommunications Ordinance of 1995, maintains the Telegraph Act of 1885 and some Sections of the PTC Act of 1991, and overrides the provisions of the Wireless Telegraphy Act of 1933 (see Annex 8). The scope of the laws issued prior to the 1995 Ordinance is explained below.

The Pakistan Telecommunications Corporation Act, 1991, is the statute pursuant to which the original Pakistan Telephone and Telegraph Administration was replaced with the Pakistan Telecommunications Corporation (PTC). Under the PTC Act, the PTC was constituted as a statutory corporation with a board of directors and chairman. The PTC Act specified that the purposes and functions of the corporation are to establish, maintain, and operate telecommunications throughout Pakistan; participate in the manufacture of telecommunications equipment, and to engage in research and development; as well as advise the Government on telecommunications issues and maintain liaison with foreign telecommunications administrations and international organizations.

The Wireless Telegraphy Act, 1933, applied primarily to one-way or broadcast services, specifically radio and television. Other one-way telecommunications services, such as paging, are authorized under the Telegraph Act. The Wireless Telegraphy Act governs the granting of licenses to manufacturers and retailers involved in the sale of radio equipment, as well as the licensing of radio and television receivers. Magisterial powers are granted to certain officials in the Telegraph and Telephone Department as well as to the licensing authority (the Pakistan Television Corporation) to issue summons. Finally, the Government is authorized to issue regulations to implement the provisions of the Act.

The Telegraph Act of 1885, as amended in 1975, is the primary statute (other than the PTC Act discussed above) governing telecommunications in Pakistan. This Act granted to the Federal Government exclusive powers to establish and maintain all manner of telecommunications transmission services and products. The Telegraph Act established other broad privileges and powers of the Government with respect to telecommunications, including the right to grant or revoke licenses to private parties; seize licensed facilities and intercept messages in the event of public emergencies; issue rules governing the operations of government or private licensed facilities; and exercise the power of compulsory acquisition over public and private property. The Telegraph Act also laid down specific penalties for a variety of offenses, including the illegal operations of facilities; unlawful interception of messages; interference or damage to facilities; theft of transmission lines; annoyance or intimidation through the use of telecommunications facilities; bribery and other misconduct by telegraph officers; and transmission of fraudulent or obscene messages.

Source: *Existing Regulatory Framework and Policy of Government of Pakistan in the Telecommunications Sector*. M. Anwar. TelePak Systems & Services, 1994.

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**PTC's Local Exchange Network**

1. Age Profile of Local Exchanges: The proportion of exchanges based on the year of installation, as per 1993 development plans, is shown in the table below. It is important to note that more than 70% of the exchanges have been installed in the last eight years.

<b>Age Profile of Exchanges (1993)</b>	
<b>Period</b>	<b>Proportion</b>
1955-1959	1.1%
1960-1964	1.1%
1965-1969	1.6%
1970-1974	4.7%
1975-1979	9.3%
1980-1984	10.4%
1985-1989	13.9%
1990+	57.8%

*Source: Detecon Report-Plan for Network Expansion*

2. Manual Exchanges: The distribution of the manual exchanges by region and connected subscribers is given in the table below.

<b>Manual Exchange Lines and PCO's By Region (June 1992)</b>					
PTC's Admin. Regions	Exchange Line Capacity	No. of Working Lines	No. of Exchanges	Average Number of Lines/ Exchange	Pending Demand
CTR	46,024	37,619	387	118.9	32,727
FTR	8,500	8,012	92	92.4	7,404
NTR	20,779	18,019	281	73.9	14,277
STR	20,230	14,386	274	73.8	545
WTR	14,540	11,042	197	73.8	3,920
Total	110,073	89,078	1,231	89.4	58,873

Note: CTR-Central Telecom Region; FTR-Faisalabad Telecom Region; NTR-Northern Telecom Region; STR-Southern Telecom Region; WTR-Western Telecom Region

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**PTC's 1993-1998 Development Plan\***

PTC utilizes a five-year planning cycle to plan for the development and modernization of telecommunications in Pakistan. The 8th Five-Year Plan was prepared in May of 1992 for the period 1993-1998. The principal aim of the Plan is to significantly improve market penetration of telephone services throughout Pakistan, and to eliminate the backlog of pending demand and meet new demand generated during the period. The Plan calls for additional 2.5 million telephone lines to be installed during the 1993-1998 period, or approximately 500,000 per annum. The implementation of the Plan would increase the telephone density to approximately 3.6% as of 30 June 1998. Total capacity as of that date is projected to be 4.86 million lines (assumes 2.4 million lines are installed as of 30 June 1993). Other principal elements of the Plan are as follows:

- \* Telephone density in Pakistan's large cities (Lahore, Karachi and Islamabad) is targeted at 15%
- \* Rural communities with a population in excess of approximately 500 should be provided with at least one long distance PCO
- \* Installation of a digital transmission network covering the entire country and a network management system which integrates all existing and new transmission routes
- \* Islamabad, Lahore and Karachi to have fibre optic rings in their central business districts
- \* New services to be added are:
  - Narrow band ISDN
  - Teleconferencing/video conferencing
  - High speed data transfer
  - Electronic mail
  - Intelligent networks
  - Fixed and mobile services covering trains/planes
  - Launching of satellite ("PAKSAT"), leading to modern flexible services
  - 800/900 services
  - Computerized national and international directories
- \* Rebuilding of significant portions of the local loop
- \* Marketing and customer services organizations to be established in head offices and regional centers established in head offices and regional centers.

The total cost for the PTC development program during the Plan is estimated at about PRs. 110 billion (US \$4.2 billion) at current exchange rates. The addition of 2.5 million lines in local exchange capacity translates to a cost-per-line of PRs. 44,000 (US \$1,692). The BLT-type program is projected during the period of the Plan to contribute 1.25 million lines, or about 50% of the capacity added.

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\* The 1993-98 Development Plan provides a framework and the Annual Development Program (ADP) for each year governs actual implementation.

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**Selected PTC Telephone Tariffs (Rupees)**

<b>Installation Charges</b>		
Registration Fee:		100
Connection Fees:	- Basic Fee	2,500
	- Local Deposit	60
	- Security Deposit	450
	- Plus two months rent in advance	
Self-financing Scheme:	- Initial Demand Note	500
Connection is provided within one month after receipt of an advance of Rs. 20,000.	- Final Demand Note (the balance amount after adjustment for the normal connection fees as above is adjusted against future monthly telephone bills.	19,500

<b>Monthly Rentals</b>	
Line connected to a manual or automatic exchange with capacity of 1,000 lines or more, including nationwide subscriber dialing (NWD).	50
International Subscriber Dialing (ISD)	25

<b>Local Call Fee (*)</b>		1.25
<b>NWD Call Fee (per metering pulse) (*):</b>		1.25
<b>NWD Call Charge per Minute (*):</b>	Up to 25 km	1.25
	26 - 40 km	3.75
	41 - 80 km	5.00
Off-peak periods:	81 - 120	7.75
20:30-23:30: Half rate	121 - 160	10.00
23:30-05:30: 1/4 rate	161 - 320	15.00
05:30-07:30: Half rate	321 - 480	18.75
	481 - 1000	25.00
	Exceeding 1000 km	30.00

<b>International Call Charges (Selected Countries)</b>		
ISD: on a one minute basis.	Argentina	74
Through operator: minimum of 3 minutes	Australia	60
(station to station calls at the same ISD	Bahrain	37
rate; person to person calls, additional	China	60
15%).	Colombia	48
	Egypt	68
	France	65
	Germany	43
	Great Britain	48
	India	56
	Indonesia	72
	Sweden	56
	Tanzania	41
	Thailand	31
	United States	51

(\*) Excise Duty (35%) not included. Source: PTC - July 1995

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**PTC Revenue Analysis Study**

Local consultants, Messrs. Sidat Hyder Morshed Associates (Pvt.) Ltd., were retained in May 1994 to examine and evaluate the:

- a. classification of bills according to amount billed;
- b. separation of residential and commercial subscribers;
- c. analysis of the current waiting list and its composition;
- d. estimate of the investment cost for a new line;
- e. estimate of the average operating cost per line.

Methodology

PTC data was collected, processed and analyzed as follows:

- (i) Billing Data: Data was obtained from three PTC computer centers at Islamabad, Lahore, and Karachi. Bills were classified into bands of bill amounts, tabulated and analyzed.
- (ii) Telephone Survey: A subset of valid billing data was randomly selected. These subscribers were then telephoned and questioned to determine subscriber category.
- (iii) Waiting List Data: Samples were obtained from registers of applicants kept in Islamabad, Lahore, and Karachi. Additional waiting list data was obtained from PTC reports. The data was analyzed to determine real pending demand and capacity in the various telecommunications regions.
- (iv) Investment Cost Data: Data was obtained for a number of recent expansion projects in various PTC regions. The costs were analyzed, separating rural and urban areas, and the cost of providing a new line was estimated.
- (v) Operating Cost data: Expenses were obtained from various PTC accounting and other reports, including PTC's Operation and Maintenance Wing.

Summary of Findings

1. Billing Data

- Around 80% of the subscribers contributed less than 20% to the overall revenue.
- The average monthly bill for 68% of PTC's subscribers is only PRs. 2400 (about US\$ 85). Conversely, about 15% of PTC's subscribers contribute about 75% of PTC's revenues with an average bill of about PRs.57,600 (about US\$ 1900) annually.
- 71% of the subscribers do not make long distance (NWD) calls while 90% of subscribers do not make any overseas calls. Thus, local calls contribute significantly to the total revenue and a revision of the tariff structure could increase revenues substantially.
- Comparisons between BLT and non-BLT subscribers shows a lower average revenue per line for the recently connected BLT subscribers. The most likely cause is the higher number of residential connections to BLT equipment.

<b>Comparison of Average Monthly Revenue between BLT and non-BLT Connections (PRs.)</b>		
<b>Region</b>	<b>BLT</b>	<b>Non-BLT</b>
ITR	626	1,613
LTR	408	724
KTR1	2,095	1,858
KTR2	899	1,036
FTR	512	773
STR	989	1,975
WTR	651	473

KTR1 has the highest ratio of commercial connections throughout Pakistan, which explains the higher revenues. Commercial subscribers have multiple lines and are now using the better quality BLT lines for making outgoing telephone calls and, especially, fax and the old lines for incoming calls. The new digital connections also provide better details of long distance calls in the bills.

#### 2. Subscriber Categories

- 77% of the private connections were residential, and the remaining 23% were commercial. The average breakdown of residential connections for BLT vs. non-BLT subscribers was 83% to 72%.
- 72% of the residential subscribers contributed 25% of the total revenue (from residential subscribers) with an average bill amount of PRs. 2725/year (about US\$ 85).

#### 3. Waiting Lists

- 32% of the waiting list applicants were considered non-serious.
- Delays between initial application and final connection have become shorter for the more recent applicants. For July-September 1993 it was 205 days, while April-June 1994 it was 42 days. Moreover, BLT subscribers were connected faster than others.
- The portion of residential applicants is increasing. Between July 1993-June 1994, residential applications were 74%. The previous period, between January 1991-June 1993, they were only 66%.

#### 4. Pending Demand

- In 1991-93, the idle capacity in Pakistan was in the range of 11%-15% of the installed capacity. In 1994 it increased to around 25%. The ratio of applicants waiting for a connection to the available idle capacity was greater than 3 for most of the period between May 1991 to March 1993. Currently, supply seems to exceed demand.
- The pending demand was around 700,000 in March 1993, and around 290,000 in May 1994. In mid 1994, the pending demand was substantially lower than the idle capacity for most of the telecommunication regions. In some areas, the idle capacity is approaching 40% of the exchange capacity, which indicates that a new demand study is needed to provide an adequate basis for PTC's network planning.

5. Cost of Providing Service

- The investment cost of providing a new connection in an urban area is about PRs. 33,000 (about US\$ 1100) and PRs. 59,000 (about US\$ 2000) in rural areas (excluding long distance and international facilities).
- The operating and maintenance cost (excluding capital costs and depreciation) per working connection is PRs. 1200/year (about US\$ 40/year) and overheads are PRs. 4500/year (about US\$ 150/year).

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**Quality of Service Survey**

1. A customer survey on PTC's service quality was carried out in 1991 as a part of the background report prepared by the consultant consortium. Changes are expected as a result of network expansion and modernization. The consulting consortium performed a survey of 42 large PTC customers in Karachi, Lahore and Islamabad; including the Government Departments in Sindh and Punjab, WAPDA, Muslim Commercial Bank, ICI Pakistan, Pakistan National Shipping Company, Lever Brothers, Pakistan Television Corporation, Oil and Gas Development Corporation and C.I.TOH. In parallel, the Consortium undertook a small residential survey in the same cities.

2. Both business and residential survey respondents expressed a general dissatisfaction with the level of service provided by PTC in all three regions. While overall the level of service was not satisfactory in any of the three regions, respondents rated the performance of PTC in Lahore particularly poorly. The results of the surveys are detailed below.

Business surveys

3. Over 40% of the respondents were currently on the waiting list for a new telephone connections, and over two thirds expressed a requirement for additional lines. The average time on the waiting list was reported as over 14 months, with the waits in the Lahore region considerably longer, on average, than those in the other regions. 45% of all respondents felt that PTC's service and performance in providing new lines was poor.

4. PTC was felt to be unresponsive to customers, both for queries about services as well as for complaints. Only in Islamabad did a majority respondents believe that service information was readily available from PTC. In total, some 60% of the respondents thought that the responsiveness of PTC employees was poor (Islamabad region's performance was better, with only 38% of respondents judging responsiveness to be poor).

5. PTC's services in removing line faults was considered to be "delayed" by 86% of respondents. Services appeared to be worst in Lahore-100% of respondents believed that service was delayed, Islamabad-69% thought it delayed. The average time to repair line or equipment faults was estimated as 71 hours. In general, PTC's ability to deliver solutions for complaints was judged equally poor, with 48 percent of total respondents judging that PTC's response was inadequate: this ranged from 77% in Lahore to 31% in Islamabad.

6. Business users were equally keen that PTC not only improve the quality and availability of basic service but also develop new services. Only in the Karachi area did respondents register a strong preference for improvement in basic service provision (38%). The new business services which were desired included (expressed as a percentage of total respondents expressing interest in the service):

**Interest in New Business Services**

	<b>Lahore</b>	<b>Karachi</b>	<b>Islamabad</b>	<b>Overall</b>
VSAT	7.7%	12.5%	23.1%	14.3%
800 service	23.1%	12.5%	30.8%	21.4%
WATS	38.5%	18.8%	69.2%	40.5%
Centrex	23.1%	12.5%	7.7%	14.3%
Electronic mail	53.8%	31.2%	15.4%	33.3%

Residential surveys

- Residential respondents were less satisfied with PTC's performance than business respondents. Over 80% of the respondents were on the waiting list for a new telephone connection, with an average waiting period of 30 months.
- For those respondents with lines, 90% judged that PTC's service in remedying faults was judged "delayed". And 58% of respondents believed that the PTC response was inadequate.
- As for the question of whether or not PTC should focus on new service development, or improve basic services, only 29% thought PTC should focus solely on improving basic service, while 58% believed that PTC should split its efforts to both improving basic service and developing new services.

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**Work Performed by the Consultant's Consortium**

1. In October 1991, a consortium led by Bear Stearns and Coopers & Lybrand, including Latham & Watkins; Abacus (Pak.) Ltd.; Ford, Rhodes, Robson, Morrow; Jahangir Siddiqui & Co.; and Surridge & Beecheno (collectively the "Consortium") submitted its proposals, in accordance with GOP's invitation, for the *Privatization Transaction Advisory Work* and *Regulatory Development and Implementation Work*. In June 1992, an agreement was entered into by GOP and Bear Stearns and Coopers & Lybrand (as representatives of the consortium) for consultancy services.
2. The Consortium undertook extensive interviews, data gathering and analysis. A large number of interviews were conducted with members of PTC, senior representatives of MOC, and other ministries and agencies. Large users, and operators of telecommunications services were also surveyed in Pakistan. The work, conducted by the consortium team in Pakistan was supplemented by interviews and research with the international investor community. Finally, an extensive review of recent experience of telecommunications privatization around the world was prepared. In September 1992, the Consortium sponsored a meeting in which GOP described the broad objectives for the telecommunications sector to an audience which included representatives from many of the world's leading telecommunications companies.
3. The Consortium's first formal report titled *PTC Privatization-Phase 1 Report* was presented with preliminary recommendations and analysis. The report covered: (i) overall economic and policy framework in Pakistan; (ii) extensive review of the telecommunications sector, the market and legal and regulatory structures, PTC, its network, finances and organization; (iii) potential options for restructuring the industry, future role of competition, sector regulation and structure; (iv) drafts of a new Telecommunications Act and operating license for a privatized PTC; (v) financial projections; (vi) options for privatizing PTC; and (vi) implementation plan for the privatization and restructuring program.
4. A second report titled *PTC Privatization - Phase 1 Supplemental Report* was submitted in late October 1992 which further elaborated on: (i) recent international trends relating to privatization of state owned businesses and the relative merits of privatizing telecommunications; (ii) financial analysis of policy alternatives, particularly projected tax revenues, dividends, proceeds, and net foreign exchange position under various scenarios; (iii) the likely valuation of PTC and proceeds to be realized from a sale of 26% of GOP holdings of PTC shares to a strategic investor with subsequent shares being sold as market conditions permitted; (iv) the schedule of steps required to proceed as rapidly as possible; and (v) modification of draft legislation.
5. The Consortium submitted a third report titled *PTC - Privatization Phase 1 Supplemental Report, Review of Certain Legal Issues* in late-November 1992. This addressed the legal and policy issues raised by the Attorney General of Pakistan.
6. In mid-January 1993, the Consortium presented its fourth report titled *PTC - Privatization Phase 1 Supplemental Report, Review of Certain Corporate Governance Issues* which summarized all legal and

policy recommendations reached by the Privatization Commission in its various meetings. Also commencing in January 1993, the Consortium began work with MOC and senior PTC officers to prepare the necessary documentation for the proposed offering of PTC equity. This effort included preparation of an *Information Memorandum* which described fully the operations, financial position, prospects of PTC and the terms of the proposed privatization. This phase also required the drafting of the various legislative, corporate and transaction documents, such as shareholders agreement, confidentiality agreements, power of attorney, etc.

7. GOP provided the World Bank copies of the various documents submitted to the Privatization Commission. In addition, the Privatization Commission directed the Consortium to meet representatives of the Bank to provide clarifications and exchange views regarding the proposed privatization. The Bank's comments and suggestions were incorporated in the reports by the consortium.

8. In September 1993, the Consortium presented a Briefing Report on the status of the PTC privatization program which also included the next steps required in the privatization process. GOP did not retain the Consortium for implementation of the PTC privatization program. In February 1995, GOP invited proposals for a Financial Advisor and selected Morgan Grenfell (UK) for this assignment.

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**Highlights of the 1995 Telecommunications Ordinance**

The Telegraph Act 1885 which governed the telecommunications sector in Pakistan has been maintained. The Wireless Telegraphy Act of 1933 is amended to provide that nothing therein extends to any and all issues and matters subject to the Telecommunications Ordinance of 1995. Certain sections of the PTC Act of 1991 have also been repealed. While the recently issued Ordinance created the two regulatory authorities, PTA and FAB, the existing institutions still play a role in sector regulation, till such time that these authorities become fully operational.

New Legislation and Regulatory Framework

1. A Telecommunications Ordinance was issued on July 13, 1994, and repromulgated in July 1995, establishing the regulatory scheme for telecommunications in Pakistan. The new legislation provides for the establishment of Pakistan Telecommunications Authority (PTA) as the independent regulatory authority. The new regulatory and legal framework will cover exclusive rights, fair competition, service obligations, technical regulation and other relevant matters. PTC will have no future involvement in the regulation of the sector (except as specifically requested by PTA).
2. Under the ordinance, GOP, through MOC, will establish the overall telecommunications sector policies including policies for the grant and renewal, amendment, suspension or revocation of licenses by PTA. MOC will represent GOP in meetings of international telecommunications organizations with the support and advice from PTA and FAB.
3. PTA's objectives are to promote the availability of high quality, efficient and cost effective telecommunications services; promote the rapid modernization of the switched network; plan and regulate the commercial use of the radio frequency spectrum; and facilitate the privatization of PTC.
4. PTA will be responsible for granting licenses to telecommunications operators in accordance to policies laid down by the Federal Government; administer the radio frequency spectrum allocated to services by the FAB; monitor compliance of PTCL's and other operators license conditions; tariff regulation; terms and conditions of interconnection agreements; promotion of fair competition; type approval of equipment; and render views on international telecommunications policy issues and such other matters as GOP may request.
5. PTA will be governed by a three person board, one member to be a financial expert and one member to be a professional telecommunications engineer. One member of the board will serve as chairman. PTA will have a permanent professional staff and may retain from time to time such part-time and consulting resources as it requires. PTA can appoint advisory committees consisting of people with appropriate expertise to represent the views and interests of users and operators, and advise the members and their staff on policy and technical matters.

6. The initial operations of PTA will be funded by GOP grants (to start with a Rs. 50 million grant); loans raised by PTA; fees from processing various applications; and annual fees payable by the licensees not exceeding 0.33% of the annual gross revenue of each licensee. These funds will administered through bank accounts.

7. FAB will take over the current responsibilities of PWB for the allocation of radio frequencies, monitoring and the general management of the radio frequency spectrum in Pakistan. FAB will be located in MOC and shall consist of six members, including the Secretary of Communications, Chairman of PTA, nominees of each of the Ministries of Defense, Information & Broadcasting, and Interior. The sixth member will be appointed by GOP to serve as Director General, Vice Chairman and member of FAB. The Secretary of Communications, or his designee, will serve as Chairman of the FAB. FAB will have permanent professional staff and may retain from time to time such part-time and consulting resources as it requires.

8. FAB will have exclusive authority to allocate portions of the radio frequency spectrum to commercial telecommunications services, radio and television broadcasting operations, Government, public and private wireless operators. All applications for allocation of part of the frequency spectrum will be made to FAB through the PTA. FAB will be guided by the applicable recommendations of the ITU and other concerned international organizations.

#### Structure and Privatization of PTC

9. A new corporate entity, PTCL, is to be formed under the Companies Ordinance, 1984 (XLVII of 1984) to which certain assets and specifically enumerated liabilities of PTC will be transferred and which will thereupon succeed to PTC's rights to provide telecommunications services in Pakistan. PTC's existing telephony services business will be transferred to PTCL and privatized "as is" without being restructured either regionally or into different "service" organizations (such as local, long distance or international).

10. Initially all shares of the company shall be issued or held in trust for the President. Different classes of shares may have different voting rights for the management and corporate governance of PTCL. The Federal Government shall immediately on incorporation of PTCL, fix a date for election of directors for the company. All employees of the PTC will be transferred to the new company and thereby cease to be employees of the corporation.

11. The PTA shall grant a license to the PTCL for the provision of basic telephone service for period of twenty five years with the exclusive right for a period of seven years. The company, subject to the approval of the Federal Government, will not be liable to pay income tax for period of three years from the transfer date. Notwithstanding the exclusive rights of PTCL, PTA can permit telephone services, including cellular radio, paging and personal communications services on a competitive basis.

#### National Telecommunications Corporation

12. The Federal Government may establish a National Telecommunications Corporation (NTC) for provision of telecommunication services to the Federal Government, Provincial Government, Local Authorities, armed forces, or such agencies or institutions as the Federal Government may determine.

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**Telecommunications Sector Policy Letter**

1. In February 1994, the Government of Pakistan defined its policy for the further development of the telecommunications sector and on October 13, 1994, GOP issued a letter on its Telecommunications sector Policy. This letter provides some details and a time frame for the implementation of this policy.
2. The Government's broad objectives in the telecommunications sector are to: (i) expand and improve the telecommunications infrastructure to better support economic, social and cultural development in Pakistan; (ii) facilitate new investment and competition in the sector by adopting an enabling legal and regulatory framework; and (iii) encourage increased private sector participation in telecommunications development, including the privatization of PTC.
3. To achieve these objectives, the Government will undertake a sector restructuring program which will involve the following main activities:
  - (a) promulgating a new Telecommunications Act;
  - (b) promoting competition and private participation in the provision of telecommunications services;
  - (c) privatizing the operations of PTC.

Promulgating a New Telecommunications Act

4. A Telecommunications Ordinance was promulgated on July 13, 1994 and repromulgated in July 1995. The Ordinance will be placed for enactment as an Act of Parliament. The Act provides the framework for active participation of the private sector in the development and the provision of all telecommunications services. The Act also provides the legal framework for: (i) the definition of MOC's power and duties; (ii) the establishment of the Pakistan Telecommunication Authority (PTA) and the Frequency Allocation Board (FAB), and the definition of their powers and duties; and (iii) the privatization of PTC.
5. MOC will advise GOP on sector policy, which will be implemented by the operators and the regulatory authorities. Among other things, MOC will advise on new service types to be introduced; represent Pakistan in international fora relating to telecommunications; and promote and support, as required by circumstances, the development of suitable telecommunications policies. MOC will mainly rely on PTA for advice and support to carry out the above functions.
6. In order to encourage private sector participation in sector development and fair competition, it is necessary to separate the provision of services from the regulatory functions. While Government intends to retain regulatory and policy making authority over the sector, the provision of telecommunications networks and services is expected to be taken over by the private sector. For the efficient regulation of the sector, an autonomous regulatory authority, PTA, will be established. It will be governed by a board

consisting of three members with suitable qualifications. One member will serve as Chairman, and full time professional staff and consultants will be appointed as necessary.

7. PTA would grant/amend/enforce operating licenses and ensure that operators adhere to license conditions; issue radio licenses; regulate prices and quality of service where service providers have a monopoly and monitor rates for other service providers; enforce interconnection to enable the development of competing and new services; resolve customer complaints and disputes; establish technical standards; and provide policy advice as required by MOC.

8. FAB will be in charge of the management and monitoring of the radio spectrum. FAB will take over the responsibilities of the Pakistan Wireless Board. The FAB will consist of six members, including the Secretary of Communications, Chairman of PTA, a nominee from each of the Ministries of Defense, Information & Broadcasting, and Interior. The sixth member will be full time acting as Vice Chairman who will be the Executive Director of the FAB. The FAB will have a professional permanent staff and may retain from time to time consultants, as necessary. Among other things, it will allocate radio frequencies; monitor radio frequency use and investigate interference; and inspect installations.

#### Promoting Competition and Private Provision of Services

9. The PTA will promote competition by developing and adopting transparent procedures for licensing of operators, facilitating interconnection, promoting economically sound cost-based pricing principles, and providing adequate regulatory certainty to investors. Competition will be allowed in the provision of telecommunications services (other than basic wired voice telephony during the initial seven years of operations of the privatized PTC). Operators will be allowed to provide telecommunications services using the technology of their choice, provided the equipment has been type approved and appropriate operating license has been obtained. The number of competitors and the duration of their licenses will be determined based on market and economic efficiency considerations. Transparent and expeditious procedures for licensing will be introduced to promote the entry of competing service providers.

#### Privatization of PTC

10. It is the Government's objective to transform PTC into a commercially operated and fully autonomous private company. A new corporate entity, Pakistan Telecommunications Company Ltd. (PTCL) is to be incorporated under the Companies Ordinance, to which most PTC assets and liabilities will be transferred. PTC's existing telephone operations will also be transferred to PTCL. As a first step in PTCL's privatization, GOP offered about 12% of PTCL's equity in the domestic and international markets. By mid 1995, the Government intends to negotiate with suitable private operators for equity participation in PTCL. By the end of 1995, a substantial part of PTCL's equity, together with its administration and operations, is expected to have been sold to a strategic investor, with additional sales to be undertaken from time to time as market conditions permit. PTCL will be granted a 25 year renewable license to provide basic voice telephony services. This license will be exclusive for seven years.

11. To ensure PTCL's long-term financial viability, facilitate competition, and create a level playing field for all sector operators, the Government will make all efforts to ensure that PTCL prices to end users and its interconnection charges to other service providers are based on economic costs. PTCL's existing tariffs would, therefore, have to be rebalanced, based on a tariff study combined with realistic demand forecasts. Once adequately balanced, PTCL's tariffs will be regulated by a price cap system which will be enforced by the PTA.

12. The Government will implement this sector restructuring program as an action plan and keep the Bank duly informed regularly on its progress and development. This action plan was reviewed and amended (attached) during negotiations of the project in July 1995.

**Sector Policy Action Plan \***  
**(Proposed)**

Action	Planned Time Frame for Action	Comments
A. Promulgation of Telecommunications Ordinance, 1994	By July 13, 1994	Has been promulgated
B. Legal Establishment of PTA and FAB	By October 15, 1994	Have been established
C. Presentation of the Telecommunications Bill to Parliament.	By September 1, 1994	The Bill has been presented to Committee of the Parliament.
D. Enactment of the Telecommunications Bill	By December 31, 1995	
E. Finalizing Information Memorandum for PTC's Privatization.	By December 31, 1995	
F. Bringing PTC's accounts up to date; restating accounts; financial projection; etc.	By December 31, 1995	
G. Floating shares in local market/international and/or to PTC employees.	By August 30, 1996.	PTC vouchers of 11.6% value floated in the local and international markets
H. Decide on Selection process for strategic investors.	By 1st March 1996	
I. Divesting of PTC to strategic investors, including management	By December 31, 1996	
J. Implementing expanded and improved PTCL services as stated in operating license.	As from 1997	

\* As revised during negotiations

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**Sector Reform Program Study**

1. To assist GOP in its long term policy formulation and sector reform efforts and privatization of PTC, a study will be undertaken by PTA covering: (i) tariff structure and levels; (ii) taxation policy; (iii) demand for connections and traffic; (iv) quality of service standards; (v) expansion into rural and less profitable areas; and (vi) market structure, including increased private participation in sector development. Of special interest would be an analysis of the inter-relationship between those areas, e.g., the impact of telecommunications tariffs on demand and market structure, including PTC's privatization. A brief description of each area follows below:

(a) Tariffs. PTC's local tariffs are amongst the lowest in the world and this is also true if compared only with lower income countries in Asia. The tariffs referred to are connection fees, local call charges and, especially, monthly subscription fees. The long-distance tariffs are relatively high, especially the domestic ones. This may have encouraged uneconomic demand for connection of subscribers that make few long-distance calls, e.g. residential subscribers. Other effects of this tariff structure include: relatively low revenues per subscriber (currently about US\$400 per annum), declining profitability of PTC, reduced demand for other communications means, e.g. pagers, call offices, cellular facilities etc. and costly PTC investments to catch up with demand for telephone lines that may not be profitable.

(b) Taxation Policy. A 35% excise duty is currently applied to domestic call charges. This tax makes the tariff imbalance worse contributing to a reduction in long-distance traffic and to the creation of uneconomic demand from potential subscribers that intended to make very few long-distance calls.

(c) Demand. The most recent demand study in PTC is from 1990. Since then, PTC's network has expanded at a very high rate, private telecommunications operators have established themselves in the market and new services have been introduced. A new demand study should, therefore, be undertaken. An important element of such a study should be to estimate the residential groups ability and willingness to pay increased tariffs, point elasticities for a basket of charges/services (monthly, local, long-distance, and international charges) , and the impact of tariff changes on the future demand for service.

(d) Quality of Service. PTC's service quality is inadequate and realistic annual targets for its improvement should be established. If it is decided to rebalance PTC's local tariffs, i.e. increasing the monthly rental and/or connection fee, this may be made more acceptable to the subscribers by improving PTC's service quality (and billing), e.g. the increase in certain tariffs could be coupled to the achievement of service quality standards specified in the operating license for a future private operator.

(e) Rural Areas. Suitable targets, license conditions and incentives should be built into the operating licenses of PTCL, and cellular, pay phones and other operators to expand into rural and less profitable areas. Tariff structure, interconnection, revenue sharing and other arrangements should be studied with a view to identify such incentives.

(f) Market structure. Low PTC tariffs may reduce the demand for other services which are priced

commercially, i.e. based on the cost of providing the service and market competition. Example of such services are: paging, pay phones, cellular and data transmission. Further, the price offered for PTCL at its privatization by potential strategic investors is likely to be relatively low if tariffs are not rebalanced. After a seven year exclusivity period for basic services, PTCL's profitable business subscriber (who generate most of long-distance calls) could be taken over by competitors, leaving PTCL with the residential subscribers (that generate few long-distance calls) and a consequent fall in PTCL's profitability.

2. The data collection and initial analysis of each area of the study will be contracted with local consultancy firms. The detailed analysis and study of the inter-relation between the various elements (e.g. the impact of various tariff structures and levels on demand, competition and PTCL's value) should be carried out by a well qualified consulting firm with international experience and ability to be the responsible party for the study as a whole.

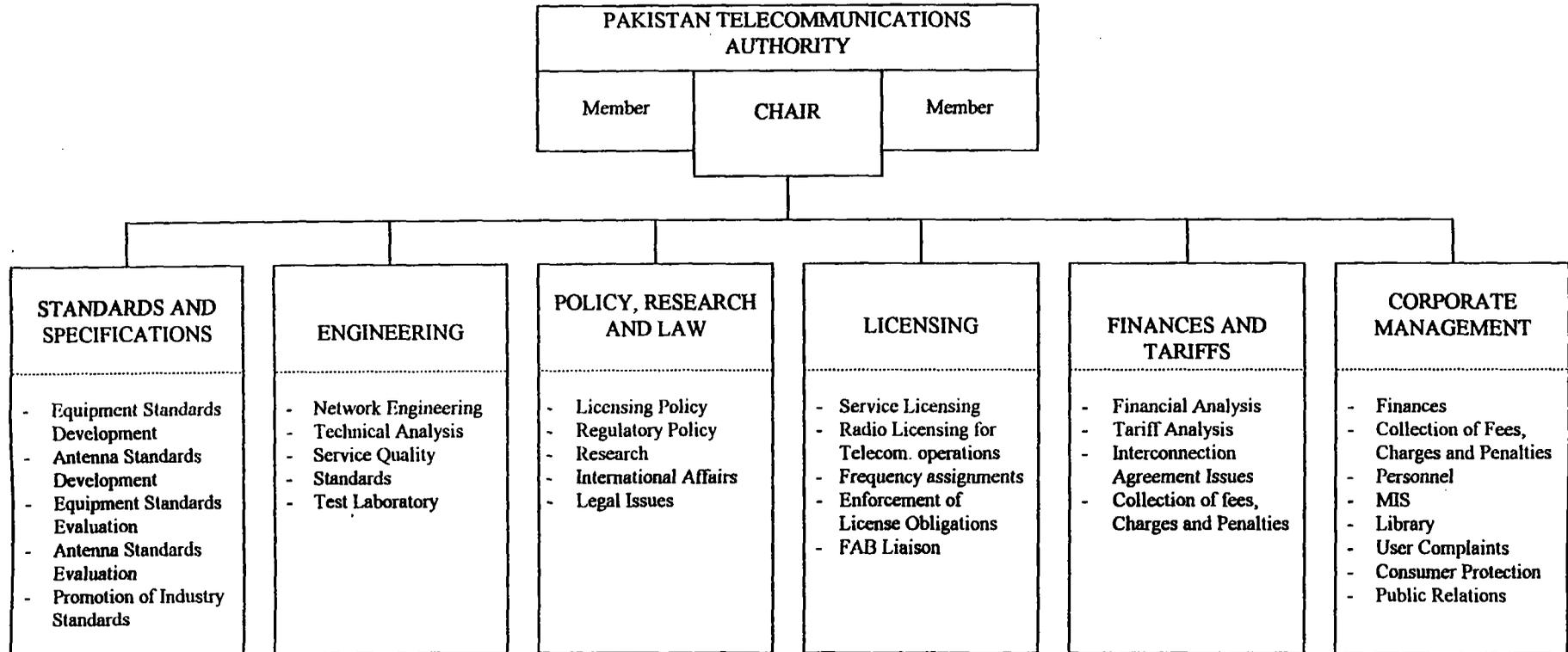
3. This study will build on relevant available information and the research of other studies already completed, e.g.:

- \* the Telecommunications Ordinance of 1994;
- \* "PTC Revenue Analysis" undertaken in 1994;
- \* Bear Stearns/Coopers Lybrand study, 1992-93;
- \* relevant parts of the World Bank draft appraisal report of the "Telecommunications Regulation and Privatization Support Project"
- \* "Proposal for a Telecommunications Regulatory Authority in Pakistan", 1994;
- \* "Existing Regulatory Framework and Policy of GOP in the Telecommunications Sector", 1994; and
- \* other relevant information available with MOC, PTC, and the World Bank.

4. The study will be initiated in January 1996 and an interim report will be ready by June 1996. The report will be finalized by December 1996.

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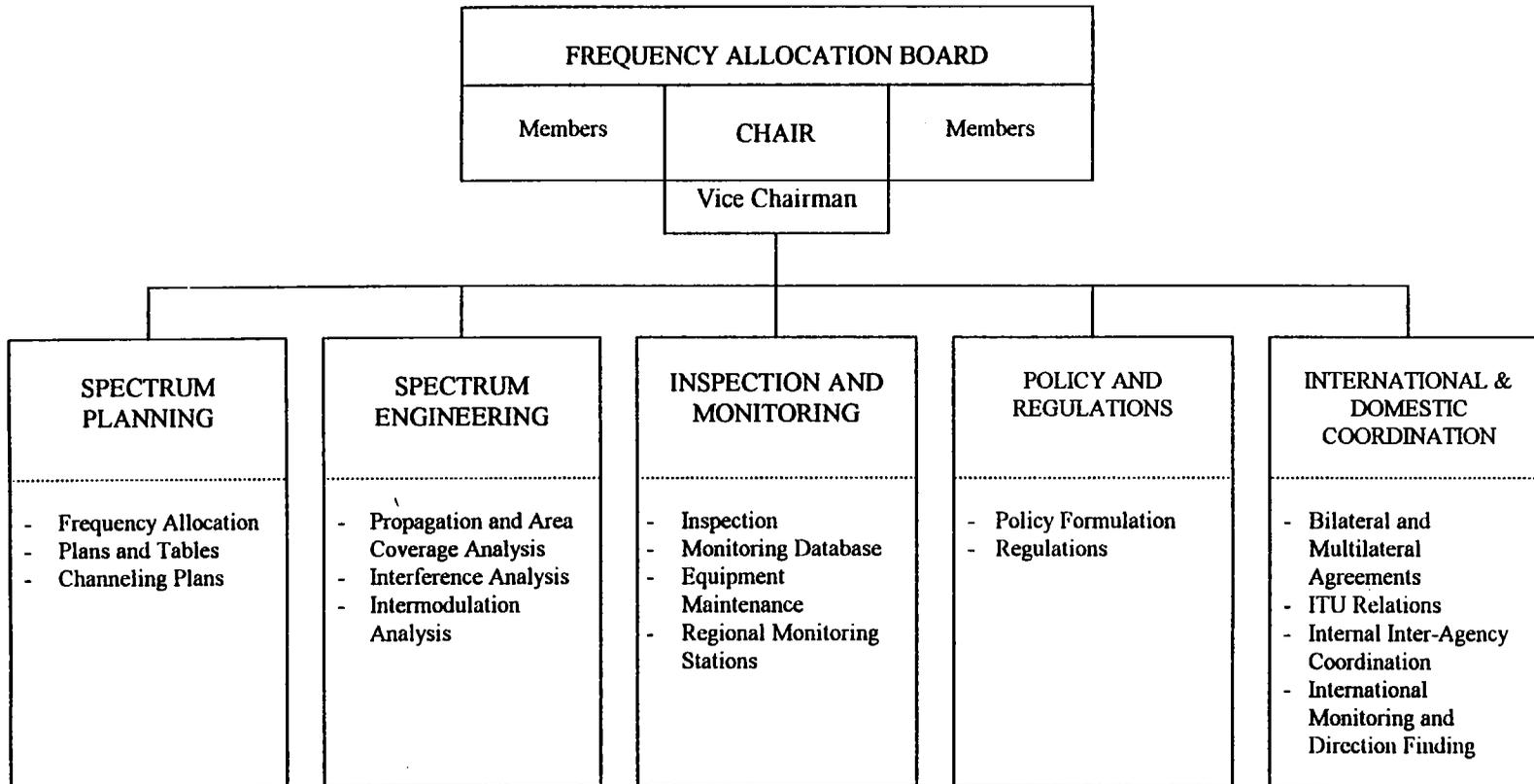
**Organization Chart of PTA**



Note: The boxes represent Divisions or Departments intended for the final organization, but some major functions may be combined during the initial stages, for example, STANDARDS AND SPECIFICATIONS + ENGINEERING and POLICY, RESEARCH AND LAW + LICENSING.

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**Organization Chart of FAB**



Note: The boxes represent Divisions or Departments intended for the final organization, but some major functions may be combined during the initial stages, for example, SPECTRUM PLANNING + SPECTRUM ENGINEERING and POLICY AND REGULATIONS + INTERNATIONAL & DOMESTIC COORDINATION.

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**Project Description**

SUPPORT TO GOP FOR SECTOR REFORM PROGRAM

1. In addition to a continuous technical assistance (detailed below) during the initial period, GOP will retain consultants to assist in specific studies that will support the formulation of a longer term overall sector development strategy. A study to be undertaken at an early stage include: tariff structure, taxation policy, demand for telephone service, service quality, market structure, etc (Annex 10).

TECHNICAL ASSISTANCE

2. Technical assistance to the extent of 48 expert-months will be provided to FAB for project implementation. An additional 48 expert-months will be provided to PTA and 24 expert-months to FAB, during the first two years of their operation to advise the management and staff of each organization to build their administrative and technical capabilities to manage the overall regulation of the telecommunications sector and to establish administrative and other procedures for efficient development of day-to-day functions. For this purpose, experts with extensive hands-on experience with reputable regulatory agencies would be employed on a full time basis and would be located in Pakistan.

TRAINING

3. Staff training will be incorporated in the provision of technical assistance, relevant courses and seminars in Pakistan, study trips abroad, and training by the equipment suppliers. The training financed under the project could include: (i) a technical cooperation arrangement, involving staff exchanges with relevant foreign regulatory agencies, information sharing and formal and informal contacts, and advice; (ii) seminars and courses offered on a periodic basis by private firms, universities and associations, and dealing with specialized regulatory issues and general regulatory methods; (iii) research fellowships in universities for the study of regulatory and telecommunications issues; (iv) a tour of regulatory agencies in other countries; and (v) training in the operation and maintenance of the equipment for spectrum management and monitoring. Regular employee training in non-specialized functions (e.g., computer literacy) will be included in PTA's and FAB's operating budgets.

RADIO SPECTRUM MANAGEMENT SYSTEM

4. The radio spectrum management and monitoring system will consist of the following components:
- (a) a central administrative facility in Islamabad equipped with a central server computer, client computers to support the functional groups of PTA and FAB, a Local Area Network (LAN) to connect the distributed client computers to the server, and a Database Management System (DBMS);

- (b) a satellite monitoring facility in Islamabad, with multibeam hyperbolic surface antennas and multiple feeds. Each antenna would cover about 15 degrees of the orbital arc. This facility will be particularly important to monitor the use of the Pakistan domestic satellite system;
- (c) a High Frequency Direction Finding (HF/DF) Network with facilities in Islamabad, Karachi, Multan and Quetta. The four stations will be equipped with direction finders of the interferometer type, measurement receivers, antennas, PCs, printers, and other instruments;
- (d) a UHF/VHF Monitoring Network consisting of a combination of about 16 manned regional stations and about 10 unmanned remote stations supervised by the regional sites. The remote sites extend the range of the regional stations over a wider area. The number of stations can be increased at a later stage without changes in the basic infrastructure. Each regional site will be equipped with a minimum of two computers, an audio logger, two or more receivers, and a router on the internal LAN, configured to contain multiple connections to the remote sites. A high speed data link will be incorporated linking the regional stations to the central office in Islamabad. The remote monitoring site will be configured with a single computer, the audio logger, a single receiver, and a switch allowing the use of an omnidirectional or a directional antenna. The following sites have been identified for the regional stations: Chishtian, D.G. Khan, Gilgit, Gwadar, Islamabad, Karachi, Khipro, Lahore, Multan, Ormara, Peshawar, Quetta, Rahimyar Khan, Sukkur, Zard, and Zhob. Islamabad and the regional stations will be interconnected through a VSAT network;
- (e) three mobile survey vehicles (MSV) designed to support normal regulatory enforcement requirements in accordance with ITU recommendations: location of unidentified transmitters, mobile survey, data collection on traffic density, bandwidth and field strength measurements, resolution of interference problems and performance evaluation of cellular radiotelephone systems. Each unit will be integrated by the following subsystems: mobile survey, direction finding, bandwidth and power measurements, data acquisition and equipment control, voice and data communications, software, vehicle and support subsystem, and cellular radiotelephone system mapping. The mobile survey equipment will cover the band from 9 KHz to 1 GHz. The portable HF direction finding capability is in the LF/HF band from 2 to 30 MHz. In the VHF/UHF band, the direction finding capability will cover a range from 25 MHz to 1300 MHz. The spectrum analyzer provided with the MSV will cover the range from 30 Hz to 2.9 GHz. The system includes a computer and peripherals and receivers individually controllable by it;
- (f) software for an integrated frequency management and monitoring system, including networking software, the database management system, licensing software (for automated processing of licenses), monitoring software, monitoring-licensing bridge software, a comparative record analysis application program, and other several application programs

(e.g., mobile/cellular service area coverage, inter-cell analysis, terrain profile analysis, microwave frequency planning). Application programs to use digitized terrain elevation databases will facilitate the analysis of communications links in the VHF and UHF bands; and

(g) instruments for an equipment measurement and test laboratory.<sup>1</sup>

5. The provision of land for antenna fields, buildings or rooms for equipment housing, customs duties and local taxes, essential office equipment (except computers and peripherals) and furniture will be funded by the GOP.

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<sup>1</sup> The management and monitoring systems in 5(a) to (g) above could be expanded in the future with an antenna test range and other regional and remote monitoring stations.

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**Terms of Reference for Technical Assistance through Technical Cooperation Arrangement**

**I. Introduction**

In recent years, various private companies have been established in Pakistan to provide cellular, data transmission, paging, public card phone, and other services. The Government of Pakistan (GOP) has also decided to privatize the main telephone operator, Pakistan Telecommunications Corporation (PTC) through the sale of 26% of its equity to a strategic investor and further sales in the local market. The current regulatory system has become inadequate for the efficient regulation of this multi-operator telecommunications sector.

GOP has requested World Bank support for the strengthening of the telecommunications sector regulation and assistance in establishing a regulatory authority, the Pakistan Telecommunications Authority (PTA), and a Frequency Allocation Board (FAB) for the management and monitoring of the radio frequency spectrum. GOP passed a Telecommunications Ordinance on July 13, 1994 which legally established these regulatory entities and provides a new regulatory system.

The Bank supported "Telecommunications Regulations and Privatization Support Project" will assist GOP in establishing these entities. It is critical that PTA and FAB discharge their responsibilities and manage the overall regulation of the telecommunications sector efficiently. For this purpose, PTA/FAB intend to enter into a long-term technical cooperation arrangement with an experienced telecommunications regulatory entity, hereinafter called the "partner".

**II. Objectives**

Technical Cooperation in this project is envisaged as a process that will pair a PTA/FAB with a similar but more mature entity in another country. Pairing two institutions with similar functions will make possible the direct transfer of relevant operational knowledge. The partner should identify itself fully with the needs and objectives of PTA/FAB and provide them with continued back-up services, advice, and experienced personnel as necessary over about two years. The more experienced "partner" should be able to provide examples and practical applications of principles and procedures that can be used by PTA/FAB. The approach, scope and quality of technical cooperation should create a much broader relation between the provider and the recipient than the standard TA provided through consultants or twinning arrangements. This technical cooperation will (a) offer a range of services, broader in scope and greater flexibility, than usually offered by consulting firms, (b) should be less expensive than traditional TA, (c) provide opportunities to integrate training with TA, and (d) increases the time frame for dealing with implementation and institutional development problems. A similar experience in telecommunications is provided by Fiji/Singapore under the Third Telecommunications Project.

The objectives of such a technical cooperation arrangement would be to:

- (i) provide sustained technical and managerial support, staff training and cooperation aimed at building and strengthening PTA and FAB to the point where they can independently regulate all aspects of a complex telecommunications sector;
- (ii) transfer specific know-how to PTA and FAB staff; and
- (iii) assist in the development and implementation of the procedures and practices required by PTA and FAB.

The mechanism for achieving these objectives would include:

- \* seconding experienced professionals from the partner organization;
- \* providing back-up services from the headquarters of the partner organization;
- \* designing and implementing a comprehensive training program, including training courses (as appropriate), on-the-job training, and selective assignment of PTA and FAB's personnel to the partner's organization for first-hand exposure to operations; and
- \* providing specialized technical personnel and services to undertake discrete tasks as required.

### **III. Identification of the Technical Cooperation Partner**

PTA/FAB will identify suitable telecommunications regulatory agencies that may be interested in a Technical Cooperation Agreement and select one as a partner. The criteria for selection will be as follows:

- (i) The partner should excel in most of these areas:
  - Policy, Research and Law
  - Licensing
  - Financial and Tariff Analysis
  - Interconnection Arrangements
  - International and Domestic Coordination
  - Spectrum Planning and Engineering
  - Inspection and Monitoring
  - Technical Standards and Specifications
- (ii) The organization should be business-oriented;
- (iii) The language and cultural environment of the partner should be compatible with that of Pakistan;
- (iv) The partner should be willing and able to second the necessary number of persons, led by a senior team leader.

Once a partner has been selected a detailed plan should be compiled and agreed upon by the parties. The plan will specify:

- Areas of technical cooperation;
- Explicit objectives
- Schedule of visits of personnel from both sides and specific targets for each trip;
- Budget

#### **IV. Description of Services**

It is envisaged that the partner will provide technical cooperation both in Pakistan and in the partner's country. The priority areas, list of participants and period of training/assignment will be finalized after joint discussions between the partner and PTA and FAB. After these discussions and with priorities agreed, the partner will prepare a comprehensive time-phased action program. For each recommended action, the partner will indicate their own and PTA/FAB's personnel needs (number and specialties), material requirement, foreign and local cost estimates and expected results. Work to be carried out in the two countries would be specified. The mode of technical assistance would be as follows:

(a) **Training in "Partner" Country**

PTA and FAB participants will spend time in the partner's institution for "on-the-job" training. The program should be designed to update the specialized knowledge of the concerned staff as well as broaden their knowledge and functional skills in the relevant regulatory areas.

It is estimated that about \_\_\_\_<sup>2</sup> PTA and FAB staff would participate in this training program with a total of about \_\_\_\_<sup>3</sup> man-months of training. In the partner institution, a coordinator will be nominated to organize the program for the visitors and to follow up their progress in the different assignments. At the end of each assignment, the concerned "Partner" manager will submit his evaluation of the trainee's performance to the coordinator. The overall performance evaluation of the trainee will be sent to PTA/FAB management.

(b) **Training in Pakistan**

48 expert-months will be provided to PTA and 36 expert-months to FAB, during the first two years of their operation to advise the management and staff of each organization and to build their administrative and technical capabilities to manage the overall regulation of the telecommunications sector and to establish procedures for efficient day-to-day operations. For this purpose, partner experts with extensive hands-on experience would be located on a full time basis in Pakistan.

Other experts in selected areas from the "partner" institution will visit Pakistan on short assignments as necessary. They will work with counterpart PTA and FAB staff. Besides transfer of know-how through one-to-one contact, they may also be asked to perform training, hold seminars, workshops, etc.

(c) **Lending out experts to PTA and FAB**

In the event PTA and FAB have the need for temporary expert assistance to fill positions in their respective organizations, the "partner" institution will provide such required temporary assistance on the basis of mutually agreed terms of reference and pre-defined fees.

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<sup>2</sup> To be determined by PTA/FAB management.

<sup>3</sup> To be determined by PTA/FAB management.

## **V. Technical Cooperation Arrangement**

The following list gives an example of possible areas of technical cooperation. The list may be modified as PTA and FAB staff and management become acquainted with the actual needs that can be satisfied by using the resources of the "partner" institution. The length of the program will be tailored to the needs of the staff, with hands on experience provided in the areas of expertise.

### **PTA Technical Cooperation Program**

#### **A. Policy and Law**

1. Licensing Policy
2. Regulatory Policy
3. International Affairs
4. Legal Issues

#### **B. Licensing**

1. Service Licensing
2. Radio Licensing
3. FAB/PTA Liaison

#### **C. Engineering**

1. Network Engineering
2. Technical Analysis
3. Service Quality
4. Standards
5. Equipment Testing

#### **D. Corporate Management**

1. Finance
2. Personnel
3. MIS
4. User Complaints

#### **E. Financial and Tariff Analysis**

1. Financial Analysis
2. Finance and Accounting
3. Audits
4. Tariff Analysis
5. Interconnection and Agreement Issues

### **FAB Technical Cooperation Program**

#### **A. Policy and Regulations**

1. Policy Formulation
2. Regulations

- B. Spectrum Planning
  - 1. Frequency Allocation
  - 2. Channeling Plans
  
- C. Spectrum Engineering
  - 1. Propagation and Area Coverage Analysis
  - 2. Interference Analysis
  - 3. Intermodulation Analysis
  
- D. Inspection and Monitoring
  - 1. Inspection
  - 2. Monitoring Database
  - 3. Equipment Maintenance
  - 4. Regional Monitoring Stations
  
- E. Standards and Specifications
  - 1. Radio Equipment Standards Development and Evaluation
  - 2. Antenna Standards Development and Evaluation
  
- F. International and Domestic Coordination
  - 1. Bilateral and Multilateral agreements
  - 2. Inter-agency Coordination
  - 3. ITU Relations
  - 4. International Monitoring and Direction Finding

## **VI. Financial Arrangements**

GOP has applied for a loan from the World Bank to finance part of the cost to develop PTA and FAB. PTA and FAB will finance salaries and social and other charges for their staff, in local currency. The Bank will finance training and other foreign expenditures, e.g travel costs, per-diem of PTA/FAB staff in the "partner" country, the "partner" charges for the coordination and expenses, and the "partner" staff salary, travel costs, and per-diem in Pakistan.

## **VII. Implementation**

The "partner" institution would implement, with the assistance from PTA and FAB, those actions, studies and training programs as specified in the action program. The "partner" and PTA/FAB would assign specific working groups for each of the activities. The program should be carried out over a two year period. The "partner" would provide a senior manager to plan the program and direct and supervise the activities. A joint evaluation of the technical cooperation program would be carried out after the first year. In addition reports on the performance of PTA and FAB trainees would be sent to the respective management on the completion of training of each participant.

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**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

**Training Program**

**I. Introduction**

In recent years, various private companies have been established in Pakistan to provide cellular, data transmission, paging, public card phone, and other services. The Government of Pakistan (GOP) has also decided to privatize the main telephone operator, Pakistan Telecommunications Corporation (PTC). The regulatory system has to be strengthened for the efficient regulation of the increasingly competitive and multi-operator telecommunications sector.

GOP has requested World Bank support for the strengthening of the telecommunications sector regulation and assistance in establishing a regulatory authority, the Pakistan Telecommunications Authority (PTA), and a Frequency Allocation Board (FAB) for the management and monitoring of the radio frequency spectrum. GOP passed a Telecommunications Ordinance on July 13, 1994 which legally established these regulatory bodies and provided a new regulatory system.

The Bank supported "Telecommunications Regulations and Privatization Support Project" will assist GOP in establishing these entities. It is critical that PTA and FAB discharge their responsibilities and manage the overall regulation of the telecommunications sector efficiently. Therefore, the training of PTA/FAB staff represents a major challenge as a substantial number of persons, with a variety of expertise and background, will need to be hired over a relatively short period of time, and then function as a team.

Staff training under the project could include: (i) a technical cooperation arrangement, involving staff exchanges with relevant foreign regulatory agencies, information sharing and formal and informal contacts, and advice; (ii) seminars and courses offered on a periodic basis by private firms, universities and associations, and dealing with specialized regulatory issues and general regulatory methods; (iii) research fellowships in universities for the study of regulatory and telecommunications issues; (iv) a tour of regulatory agencies in other countries; (v) in-house training with classroom facilities in Pakistan; and (v) training in the operation and maintenance of the equipment for spectrum management and monitoring.

**II. Objectives**

The objectives of such a training program would be to:

- (i) provide sustained staff training aimed at building and strengthening PTA and FAB to the point where they can independently regulate all aspects of a complex telecommunications sector and manage the radio spectrum;
- (ii) transfer specific know-how to PTA and FAB staff; and
- (iii) assist in the development and implementation of the procedures and practices required by PTA and FAB.

### **III. Training Arrangements**

The following lists the areas of regulatory and technical training. The list may be modified as PTA and FAB management and staff become acquainted with their actual needs.<sup>4</sup> Staff of the Ministry of Communications (MOC) may also require some training, especially in telecommunications policy. The length of the program will be tailored to the needs of the staff.

#### **PTA Training Program**

The training of PTA personnel needs to be carefully coordinated with the Technical Cooperation Arrangement to avoid duplication. The training program will have to be specifically tailored to the needs of PTA and the background and experience of the staff to be trained. The training will consist of special courses and seminars offered by Associations, Universities and private forums. A tour of regulatory agencies in the US, UK, and Canada by Members of PTA and Bureau Heads involving meetings with regulatory agency members and staff is also envisaged. The facilities available at special Regulatory Institutes, such as the National Regulatory Research Institute at Ohio or Columbia Institute of Tele-Information at New York, US, could be used. In addition in-house training with classroom facilities will be provided for in Islamabad, Pakistan.

#### **A. Seminars/courses for Members, Bureau Heads, and MOC Officers**

- (a) one month trips for each member covering a tour of regulatory agencies in the US, UK, and Canada;
- (b) two month special courses for each of the six Bureau Heads covering the following areas of their job responsibilities:
  - 1. Licensing Policy
  - 2. Service Licensing
  - 3. Financial Analysis
  - 4. Public Information and Complaints
  - 5. Technical Analysis
  - 6. Tariff Analysis
  - 7. Interconnection Arrangements

#### **B. Training of personnel at the US Telecommunications Training Institute (USTTI) and National Regulatory Institute (NRI)**

Training in special courses related to telecommunications regulations on an average of two months duration for ten PTA employees. The training at the NRI will have to be tailored for the Pakistani students. The training at USTTI are standard courses which are offered every semester.

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<sup>4</sup> (i) Reference Annex 13 - Project Description and Annex 14 - TOR for TA through Technical Cooperation Arrangement. (ii) A part of FAB training will be undertaken under the equipment supplier as agreed upon with GOP. (iii) Detailed planning on staff training requirements/ schedules will be dependent on the skill level of personnel recruited by PTA and FAB. PTA and FAB management will indicate their own personnel needs (number and specialties) and expected training results.

C. Special Internships for University Graduates

Three one-year internships should be provided for three university graduates in the specialized areas of regulation, particularly telecommunications policy, financial and tariff analysis and telecommunications technology.

**FAB Training Program**

The training of FAB staff would consist of series of courses in a repetitive series in order that new employees can begin to absorb the necessary new skills that will make them trainable in more advanced topics. A series of eight courses will be offered a total of three times over a three year period. These are:

(i) Systems Managers Course

A system manager in a complex information network must be well trained in the details of the specific hardware and software being used in a particular application. The person must have an administrative grasp on the daily operation of the network. When the network goes into operation, the senior system manager will control how and when users can access the network, and will be responsible for seeing that all network accounting and financial systems are maintained on an ongoing basis. This course should provide the requisite training.

(ii) UNIX Course

UNIX based servers will be utilized in FAB (and PTA) as speed, processing throughput and reliability in the server computer is important. Over time a number of regulatory systems will be developed and placed on the servers, and it is important to have a cadre of staff personnel who can work on UNIX.

(iii) ORACLE Course

A substantial number of staff persons who are expected to work on the ORACLE database management system (DBMS) for either database management or regulatory system development will have to be trained on this system.

(iv) Network Operation Course

Maintenance of the frequency management and monitoring network will require travel to all of the network location working with equipment from a variety of suppliers, and ensuring that the network remains operational. The course will focus on the need for maintenance personnel to readily handle equipment from a variety of suppliers to isolate and rectify faults.

(v) Frequency Management Course

This course will focus on the basics of frequency management. It encompasses the licensing of transmitters, operators, equipment dealers, ham radio operators, etc. It also includes type acceptance of equipment and antennas, planning of new spectrum services, and enforcement of the terms and conditions of licenses and permits. This course will teach the theory and technique of radio interference management rather than specific tools. Training on specific software tools will be provided by the supplier of the frequency management software in a more advanced course.

(vi) Monitoring Course

This course will cover the theory of monitoring , and the operation of fixed sites for both monitoring and direction finding. All operators of monitoring sites, both fixed and mobile, will be required to take this course.

(vii) Mobile Monitoring Course

The mobile monitoring course is an advanced course which builds on the fundamentals of the monitoring course. since the problems in mobile operation are different from those of fixed sites, this course will be required for all mobile monitoring site operators.

(viii) Equipment Calibration Course

The type acceptance laboratory supplier will offer a course in type acceptance testing. This course will build on the skills taught by the manufacturer, but will focus on equipment calibration, in a more advanced manner. This course will be open only to those who have had the type acceptance testing course.

The contractor will maintain office and classroom facilities in Islamabad for three full years, and shall supply all office training materials and training aids. It is anticipated that more advanced training will be offered by the manufacturers who supply the various subsystems for the frequency management and monitoring system. The supplier of the various subsystems will be required to support training on the use of their systems on a scheduled basis while installation and acceptance testing are underway. After acceptance of the subsystems by PTA and FAB, training access to critical systems will be coordinated with the management teams of these two organizations.

#### **IV. Financial Arrangements**

GOP has applied for a loan from the World Bank to finance part of the training cost for PTA and FAB. PTA and FAB would finance all local costs. The Bank would finance training and other foreign expenditures, e.g travel costs.

#### **V. Implementation**

PTA and FAB will prepare a detailed plan to implement the training program. The main part of the training program should be carried out during the first year of PTA/FAB's operations. An evaluation of the training program would be carried out after the first year. Reports on the performance of PTA and FAB trainees would be sent to their respective managers on the completion of the training of each participant.

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Project Cost (Summary)  
(Base Costs as of June 1995)

Components	Estimated Cost (US\$ '000) (a)		
	LC	FC	TOTAL
(a)			
<b>MOC:</b>			
Studies to Support Sector Reform Program	190.0	200.0	390.0
Project Implementation Support	330.0	0.0	330.0
<b>Subtotal:</b>	<b>520.0</b>	<b>200.0</b>	<b>720.0</b>
<b>PTA:</b>			
Type Acceptance Laboratory	520.0	1,300.0	1,820.0
Frequency Management Equipment	1,316.0	3,290.0	4,606.0
Computers, Office Equipment and Vehicles	365.0	500.0	865.0
Land, Buildings, A/C, Power Supply (b)	1,718.0	170.0	1,888.0
Training	280.0	700.0	980.0
Technical Assistance (24 m-m)	240.0	600.0	840.0
<b>Subtotal:</b>	<b>4,439.0</b>	<b>6,560.0</b>	<b>10,999.0</b>
<b>FAB:</b>			
Frequency Management and Monitoring Network	2,182.0	5,455.0	7,637.0
Satellite Monitoring Station	400.0	1,000.0	1,400.0
HF/MF Stations (4)	520.0	1,300.0	1,820.0
UHF/VHF Regional Stations (16)	2,124.0	5,310.0	7,434.0
UHF/VHF Remote Stations (5)	560.0	1,400.0	1,960.0
VSAT Network	308.0	770.0	1,078.0
Mobile Monitoring Stations (3)	800.0	2,000.0	2,800.0
Site Activation:			
- Land, Buildings (b)	2,200.0	0.0	2,200.0
- Air Conditioning, and Power Supply (b)	132.0	330.0	462.0
- Shipment, Installation, Test	160.0	400.0	560.0
System Documentation	280.0	700.0	980.0
Systems Engineering and Project Management	920.0	2,300.0	3,220.0
Computers, Office Equipment, and Vehicles	746.0	1,040.0	1,786.0
Training	480.0	1,200.0	1,680.0
Technical Assistance:			
- Project Implementation (48 m-m)	480.0	1,200.0	1,680.0
- Operations & Maintenance (24 m-m)	240.0	600.0	840.0
<b>Subtotal:</b>	<b>12,532.0</b>	<b>25,005.0</b>	<b>37,537.0</b>
<b>TOTAL BASE COST:</b>	<b>17,491.0</b>	<b>31,765.0</b>	<b>49,256.0</b>
Physical Contingencies (c)	874.6	1,588.3	2,462.8
Price Contingencies (d)	635.1	1,240.0	1,875.1
<b>TOTAL ESTIMATED PROJECT COST:</b>	<b>19,000.6</b>	<b>34,593.3</b>	<b>53,593.9</b>

LC: Local Costs. FC: Foreign Costs.

Notes:

- (a) Local costs include about 40% customs duties and taxes for imported goods and services, and 10% taxes for local goods and services.
- (b) Tentative cost pending final site inspections, availability and valuation of land and buildings.
- (c) 5% for both foreign costs and local costs of equipment-related items.
- (d) Anticipated international price escalation: 2.0% in 1996, 1.6% in 1997, 2.1% in 1998, 2.4% in 1999.
  - Equipment costs include spare parts.
  - Customs duties and taxes (estimated at 40%) are included in local costs.
  - Totals may not be exact due to rounding.

**Pakistan**  
**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

**Project Costs (Yearly Expenditures)**  
**(US\$ '000)**

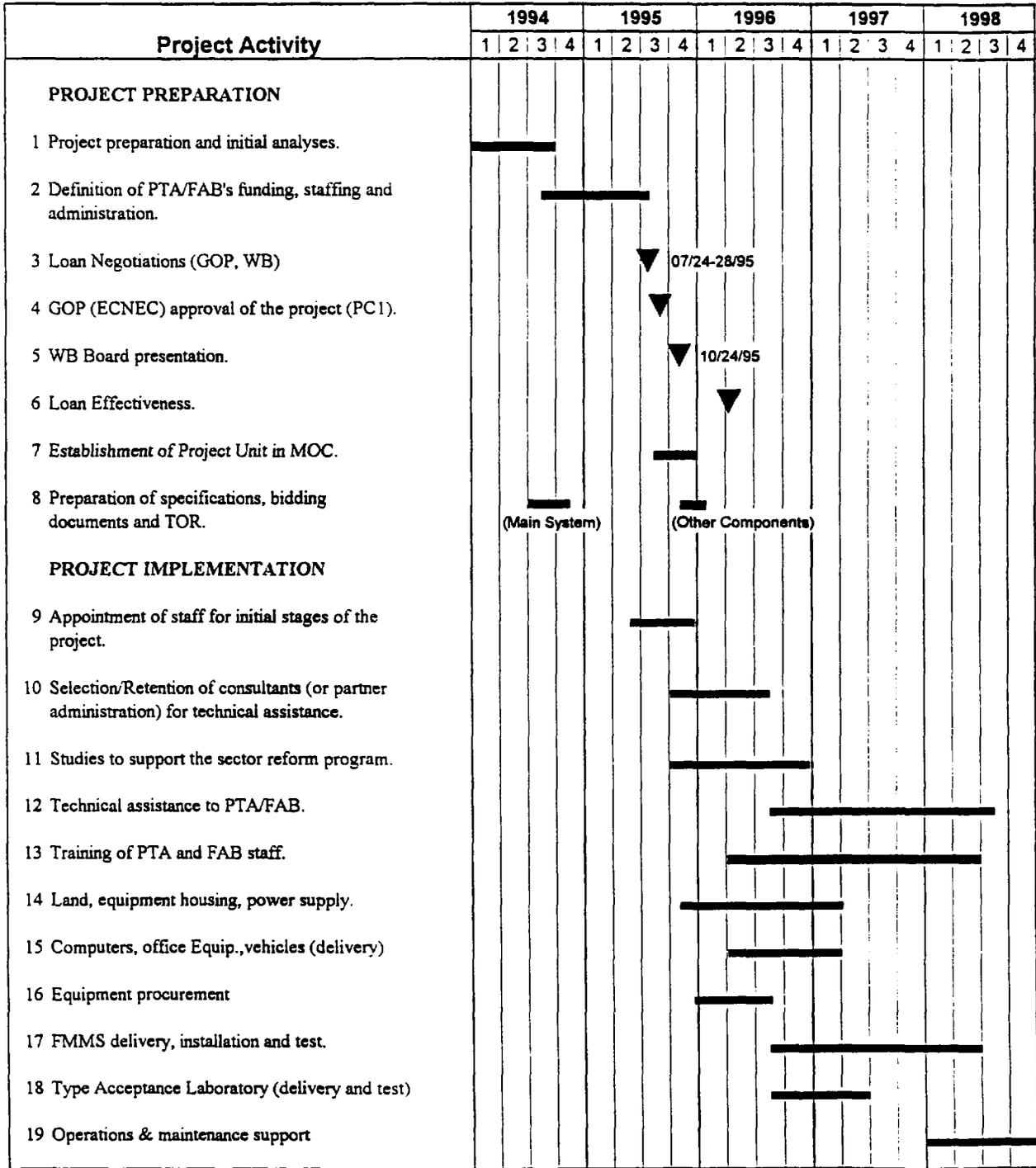
Project Components	(Calendar Years)														
	1996			1997			1998			1999			Total		
	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
<b>MOC</b>															
Support to Sector Reform Program	142.5	150.0	292.5	47.5	50.0	97.5	0.0	0.0	0.0	0.0	0.0	0.0	190.0	200.0	390.0
Project Implementation Support	49.5	0.0	49.5	99.0	0.0	99.0	99.0	0.0	99.0	82.5	0.0	82.5	330.0	0.0	330.0
Subtotal:	192.0	150.0	342.0	146.5	50.0	196.5	99.0	0.0	99.0	82.5	0.0	82.5	520.0	200.0	720.0
<b>PTA</b>															
Type Acceptance Laboratory	52.0	130.0	182.0	416.0	1,040.0	1,456.0	52.0	130.0	182.0	0.0	0.0	0.0	520.0	1,300.0	1,820.0
Frequency Management Equipment	1,184.4	2,961.0	4,145.4	131.6	329.0	460.6	0.0	0.0	0.0	0.0	0.0	0.0	1,316.0	3,290.0	4,606.0
Computers, Office Equipment and Vehicles	328.5	450.0	778.5	36.5	50.0	86.5	0.0	0.0	0.0	0.0	0.0	0.0	365.0	500.0	865.0
Land, Buildings, A/C, Power Supply	1,288.5	153.0	1,441.5	429.5	17.0	446.5	0.0	0.0	0.0	0.0	0.0	0.0	1,718.0	170.0	1,888.0
Training	56.0	350.0	406.0	112.0	280.0	392.0	112.0	70.0	182.0	0.0	0.0	0.0	280.0	700.0	980.0
Technical Assistance	48.0	120.0	168.0	96.0	240.0	336.0	96.0	240.0	336.0	0.0	0.0	0.0	240.0	600.0	840.0
Subtotal:	2,957.4	4,164.0	7,121.4	1,221.6	1,956.0	3,177.6	260.0	440.0	700.0	0.0	0.0	0.0	4,439.0	6,560.0	10,999.0
<b>FAB</b>															
Frequency Management System	825.4	2,063.5	2,888.9	4,952.4	12,381.0	17,333.4	2,476.2	6,190.5	8,666.7	0.0	0.0	0.0	8,254.0	20,635.0	28,889.0
Computers, Office Equipment and Vehicles	671.4	936.0	1,607.4	74.6	104.0	178.6	0.0	0.0	0.0	0.0	0.0	0.0	746.0	1,040.0	1,786.0
Land, Buildings, A/C, Power Supply	1,749.0	297.0	2,046.0	583.0	33.0	616.0	0.0	0.0	0.0	0.0	0.0	0.0	2,332.0	330.0	2,662.0
Training	96.0	600.0	696.0	192.0	480.0	672.0	192.0	120.0	312.0	0.0	0.0	0.0	480.0	1,200.0	1,680.0
Technical Assistance	144.0	360.0	504.0	288.0	720.0	1,008.0	216.0	540.0	756.0	72.0	180.0	252.0	720.0	1,800.0	2,520.0
Subtotal:	3,485.8	4,256.5	7,742.3	6,090.0	13,718.0	19,808.0	2,884.2	6,850.5	9,734.7	72.0	180.0	252.0	12,532.0	25,005.0	37,537.0
<b>TOTAL BASE COST</b>	<b>6,635.2</b>	<b>8,570.5</b>	<b>15,205.7</b>	<b>7,458.1</b>	<b>15,724.0</b>	<b>23,182.1</b>	<b>3,243.2</b>	<b>7,290.5</b>	<b>10,533.7</b>	<b>154.5</b>	<b>180.0</b>	<b>334.5</b>	<b>17,491.0</b>	<b>31,765.0</b>	<b>49,256.0</b>
Physical Contingencies (a)	331.8	428.5	760.3	372.9	786.2	1,159.1	162.2	364.5	526.7	7.7	9.0	16.7	874.6	1,588.3	2,462.8
Price Contingencies (b)	139.3	180.0	319.3	284.4	599.7	884.1	197.8	444.6	642.4	13.5	15.8	29.3	635.1	1,240.0	1,875.1
<b>TOTAL ESTIMATED PROJECT COST</b>	<b>7,106.3</b>	<b>9,179.0</b>	<b>16,285.3</b>	<b>8,115.4</b>	<b>17,109.9</b>	<b>25,225.3</b>	<b>3,603.2</b>	<b>8,099.6</b>	<b>11,702.8</b>	<b>175.8</b>	<b>204.8</b>	<b>380.5</b>	<b>19,000.6</b>	<b>34,593.3</b>	<b>53,593.9</b>

(a) 5% for both foreign costs and local costs of equipment-related items.

(b) Anticipated international price escalation: 2.0% in 1996, 1.6% in 1997, 2.1% in 1998, 2.4% in 1999.

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Project Implementation Plan



(Calendar Years)

Project Completion Date: December 31, 1998  
Loan Closing Date: June 30, 1999.

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Procurement Schedule - Target Dates

General Procurement Notice (GPN)	10/15/95
GOP Approval of PC1	09/30/95

EQUIPMENT

	FMMS - Main System	Other Project Components (a)
Technical Specifications	10/28/94	01/30/96
Bidding Documents	04/12/95	01/30/96
No Objection to Bidding Documents by the WB	08/31/95	02/20/96
Invitation for Bids	12/13/95	02/23/96
Pre-Bid Conference	02/07/95	03/21/96
Bid Opening	03/06/96	04/18/96
Bid Evaluation by MOC and Report to the WB	04/30/96	06/12/96
No Objection to Contract Award by the WB	05/20/96	07/02/96
Contract Negotiations and Award	07/12/96	08/26/96

(a) Satellite Station, Type Acceptance Laboratory, VSAT Network, Vehicles, Computers and Office Equipment.

TECHNICAL COOPERATION/CONSULTING SERVICES

	Cooperation Arrangement	Consultant Firm
TOR	(Annex 15)	02/23/96
Short Listing of Partners/Consulting Firms	(b)	02/23/96
No Objection by the WB to TOR and Short List	---	03/07/96
Identification of Partners/Negotiations	03/04/96	---
Submission of Proposals	04/17/96	04/17/96
Proposal Evaluation and Report to the WB	05/28/96	05/28/96
No Objection by the WB to Agreement/Contract	06/17/96	06/17/96
Agreement/Contract Award	08/09/96	08/09/96

(b) Possible partners were discussed during loan negotiations.

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**Schedule of Disbursement**  
**(US\$ Million)**

IBRD FY and Semester Ending	Disbursement in Semester	Cumulative		Standard Disbursement Profile (%) (*)
		%	Through Semester	
<b>1996</b>				
June 30, 1996	0.8	2.3	0.8	0.0
<b>1997</b>				
December 31, 1996	8.0	25.1	8.8	3.0
June 30, 1997	1.5	29.4	10.3	14.0
<b>1998</b>				
December 31, 1997	15.0	72.3	25.3	22.0
June 30, 1998	5.5	88.0	30.8	34.0
<b>1999</b>				
December 31, 1998	3.5	98.0	34.3	46.0
June 30, 1999	0.7	100.0	35.0	54.0
<b>2000</b>				
December 31, 1999				62.0
June 30, 2000				70.0
<b>2000</b>				
December 31, 1999				82.0
June 30, 2000				94.0
<b>2001</b>				
December 31, 2000				98.0
June 30, 2001				100.0

(\*) Standard disbursement profile for telecommunications projects in the South Asia (August, 1995)

**PAKISTAN**  
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**Disbursement Categories**

1. The table below sets forth the categories to be financed out of the proceeds of the Loan, amounts allocated to each Category and the percentage of expenditures to be financed in each Category:

<b>Category</b>	<b>Amount of the Loan allocated (US\$ million)</b>	<b>Expenditure to be financed (%)</b>
1. Equipment	25.6	100% of foreign expenditures and 100% of local expenditures (ex-factory cost)
2. Computers, vehicles and office equipment	1.4	100% of foreign expenditures and 100% of local expenditures (ex-factory cost) and 75% of local expenditures for other items procured locally
3. Consultants' services and training	4.5	100%
4. Unallocated	3.5	
<b>TOTAL</b>	<b>35.0</b>	

**PAKISTAN**  
**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

**Project Performance Indicators**

**I. Project Implementation**

- (a) timely achievement of the implementation plans for each project component (Annex 17);
- (b) progress of TA and training measured in number of staff trained and their performance regards regulatory tasks (such as ability to handle interconnection, pricing, licensing, frequency monitoring functions) (Annex 15); and
- (c) number and seriousness of observations in the project audit reports.

**II. Efficiency of Regulation**

- (a) area covered by radio frequency monitoring (upon project completion, the HF band will be monitored all over Pakistan and the VHF and UHF frequencies where they are used intensively);
- (b) availability of frequencies for new services (the objective is to ensure spectrum availability for all such services as may be widely offered in more advanced countries, e.g. USA, Sweden, and UK);
- (c) competition in the provision of services (number of service providers, service prices, number of new services offered, etc. as compared with advanced countries);
- (d) licensing regime (new licenses granted for services in (b) above, and ideally no license disputes);
- (e) development of dispute settlement mechanism (number of legal issues resolved)
- (f) quality of service improvements, e.g.:
  - \* call completion rates
  - \* monthly faults/100 lines; and
  - \* percentage of faults repaired the next working day.

The objective is to reach international standards by the year 2000 (Table 2.3)

**III. Contribution to Sector Objectives**

- (a) timely completion of steps in GOP's policy letter (Annex 9);
- (b) PTC's privatization; percentage of equity sold to private investors including strategic investor/s (at least 38% by 1998);
- (c) progress on PTCL license and performance requirements indicators (elimination of waiting list, tariff rebalancing, network expansion, etc. in accordance with the recommendations of the study in Annex 10);
- (d) satisfaction of demand for all basic telecommunications services at cost recovery prices by the year 2000;
- (e) access to service with expansion into all rural and less profitable areas with populations over 1,000 by the year 2000, number of PCOs etc.

**PAKISTAN**  
**TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT**

**Reporting Requirements**

**A. Establishment of the Regulatory Agencies**

By January 31, 1996, MOC will prepare and furnish to the Bank a report on the progress of the staffing of PTA and FAB and a detailed description of necessary training.

MOC will within a month of the end of each calendar quarter furnish to the Bank reports on the progress of PTA/FAB's establishment and on the status of specific consultants studies.

**B. Quarterly Reports**

PTA and FAB will prepare quarterly progress reports and submit them to the Bank within one month of the end of the calendar quarter.

The general contents of these reports are as follows:

- (a) brief description of the major activities executed during the period: contracts signed, studies completed, equipment and materials received, construction, installation, testing, commissioning, etc.;
- (b) description of difficulties encountered that can delay the project implementation or increase its cost, and of the measures proposed or adopted to solve those difficulties;
- (c) revision of detailed timetables for project implementation;
- (d) disbursements during the period and cumulative disbursement;
- (e) revised list of Bank financed contracts, with indication of procurement method, approval dates, signing date, contractor, price, and disbursement categories;
- (f) performance indicators; and
- (g) training activities.

**C. Annual Reports**

1. Within four months after the end of each financial year, a report on PTA/FAB's performance, and developments in the sector including new licenses, proposed policies, new procedures, subscriber complaints, disputes between operators, etc.;

2. Within nine months after the end of each financial year, audited financial statements will be submitted to the Bank as follows:

- (a) project accounts for PTA and FAB, with separate opinions on the Special Accounts and eventual SOEs, and
- (b) financial statements for PTA and FAB.

3. Unaudited accounts will be made available to the Bank within six months of the end of the financial year.

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Supervision Plan

Approximate Date (Month/Year)	Activity	Expected Skill Requirement	Staff Input (Staff-Weeks)
08/95-02/96	Review of bidding documents for procurement of equipment and TOR for consultants.	Financial Analysis Engineering	2.0
04/96-06/96	Review of contracts for equipment and consultants.	Financial Analysis Engineering	2.0
03-04/96	<b>Supervision Mission.</b> Review of PTA and FAB organization and staffing and procurement activities.	Financial Analysis Engineering	6.0
07-08/96	<b>Supervision Mission.</b> Review of training program, consultancy studies and technical assistance.	Financial Analysis Engineering	4.0
1997-1998	<b>Supervision Missions.</b> Two missions per year to review implementation progress, including 1997 mid-term review.	Financial Analysis Engineering	4 x 4.0
01-03/99	<b>Supervision Mission.</b> The mission will also provide instructions for preparation of the Implementation Completion Report.	Financial Analysis Engineering	4.0

**PAKISTAN**  
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**Documents in Project File**

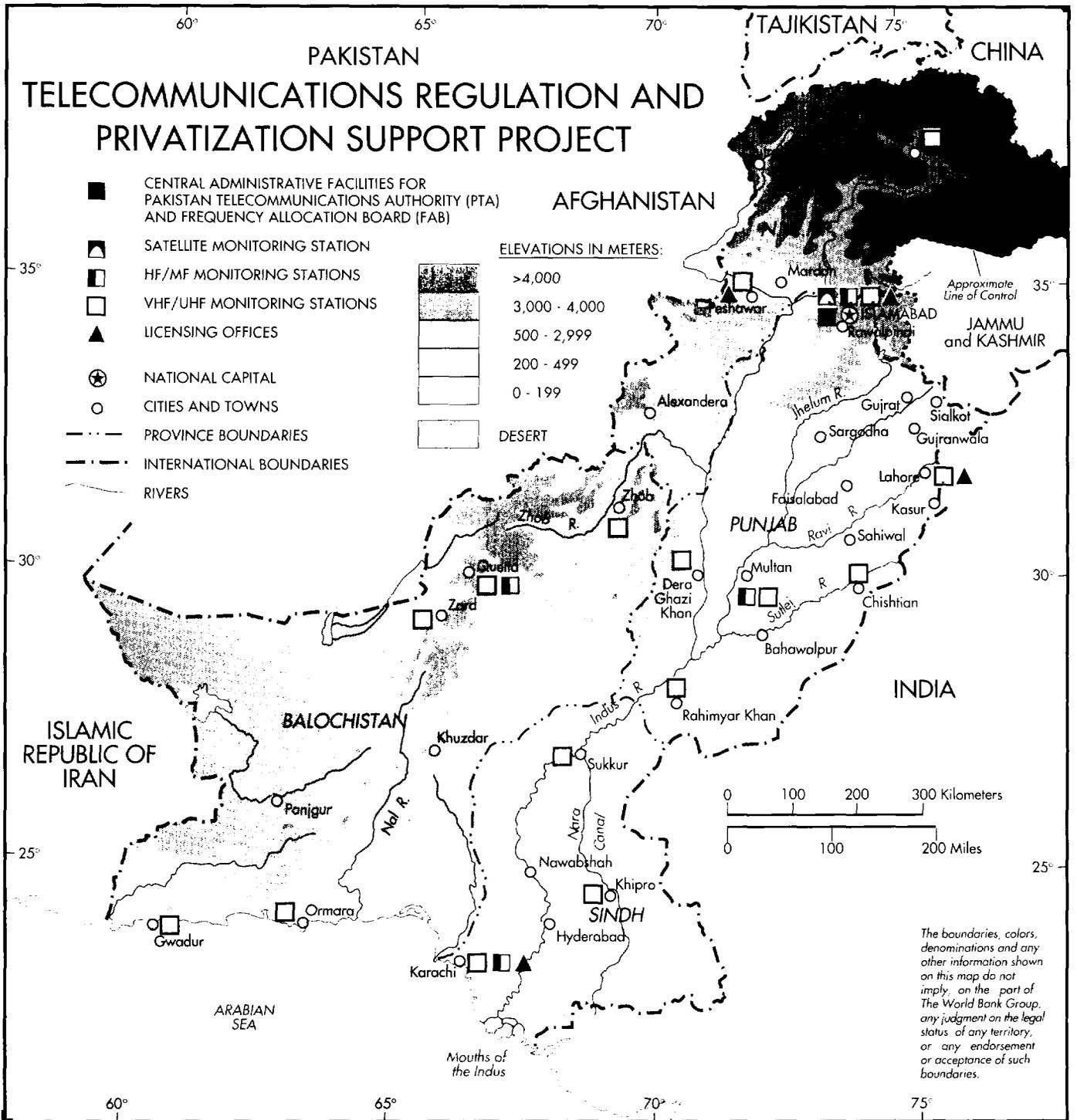
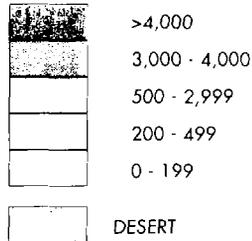
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# PAKISTAN TELECOMMUNICATIONS REGULATION AND PRIVATIZATION SUPPORT PROJECT

- CENTRAL ADMINISTRATIVE FACILITIES FOR PAKISTAN TELECOMMUNICATIONS AUTHORITY (PTA) AND FREQUENCY ALLOCATION BOARD (FAB)
- ▲ SATELLITE MONITORING STATION
- HF/MF MONITORING STATIONS
- VHF/UHF MONITORING STATIONS
- ▲ LICENSING OFFICES
- ★ NATIONAL CAPITAL
- CITIES AND TOWNS
- - - PROVINCE BOUNDARIES
- - - INTERNATIONAL BOUNDARIES
- RIVERS

### ELEVATIONS IN METERS:







IMAGING

Report No: 18096 FAK  
Type: SAR