Pakistan

Telecommunications Network Expansion Project

External Evaluator: Junko Saikawa

Field Survey: November 2005

1．Project Profile and Japan's ODA Loan

Map of Project Area

Islamabad International Telephone Exchange Facilities

1.1 Background

Pakistan's telecommunications sector had continuously expanded through a series of five-year development plans, but due to budget constraints, there remained a major shortage of telecommunications facilities capacity, and equipment was notably aging. Consequently, the state of telecommunications in the country was extremely poor. Pakistan has also fallen behind in adapting to various developments, including the rapid advance of telecommunications technology, the expansion of international communications, and the diversification of telecommunications networks.

1.2 Objective

The objective of this project was to improve telecommunications service both qualitatively and quantitatively by expanding domestic transmission lines and international communications facilities in accordance with the installation of 446,000 new telephone lines under the seventh five-year plan, and thereby contribute to vitalizing commercial and industrial activity.

1.3 Borrower/Executing Agency

Borrower: The President of the Islamic Republic of Pakistan

Executing agency: Pakistan Telecommunication Corporation (PTC) (at the time of

Loan Agreement)
Pakistan Telecommunication Company Limited (PTCL) (at the time of ex-post evaluation)

1.4 Outline of Loan Agreement

Loan Amount/ Disbursed Amount	5,422 million yen/2,974 million yen
Exchange of Notes/Loan Agreement	August 1990／June 1922
Terms and Conditions - Interest Rate - Repayment Period (Grace Period) - Procurement	 2.5%/year 30 years （10 years） Partially untied
Final Disbursement Date	September 1998
Main Agreement	Sumitomo Corporation
Consulting Agreement	None
Feasibility Study (F/S) etc.	1987: Telephone and Telegraph Department, Ministry of Communications (T&T）

2. Evaluation Results

2. 1 Relevance

2.1.1 Relevance at the time of appraisal

A major expansion of telecommunications networks, including the installation of 446,000 new telephone lines, was planned under the seventh five-year plan (July 1988 - June 1993) for the telecommunications sector with three priority policies: (1) to clear away the backlog in meeting telephone demand, (2) to improve the efficiency of the telecommunications by introducing new technologies such as digitization, and (3) to promote the shift to domestic production of telecommunications equipment. Under this plan, a total of 13.264 billion rupees was planned to be invested in the telecommunications sector to expand the following types of facilities so as to achieve major improvements in the state of telecommunications: (1) the domestic telecommunications network (terminal equipment, switchboards, and transmission lines), (2) the international telecommunications network, (3) the telex and fax network, and (4) research and training facilities. This project aimed to expand domestic transmission lines and

international telecommunications facilities in conjunction with the installation of new telephone lines, and thus was consistent with the policies and objectives of the five-year plan.

2.1.2 Relevance of the plan at the current time

The strategic objectives of the current 10-year development plan (2001-2011) include providing high-quality services at appropriate cost by introducing new technologies and improving the IT infrastructure (optic-fiber transmission lines, microwave systems, and satellite systems). Specifically, a total of 250 billion rupees is planned to be invested in the activities of the PTCL including: (1) installation of five million new lines and replacement of one million lines, (2) establishment of an international telephone exchange, (3) renovation of networks, and (4) management of a long-distance telephone network. As such, the objective of this project is in line with these challenges of the current development plan.

International telecommunications traffic volume has been growing steadily since the 1990s, suggesting the increase in international telecommunications demand. Moreover, the importance of optic-fiber cable has been increasing in light of the necessity for large capacity telecommunications due to the increase in the Internet demand. Therefore, the project has relevancy at the present time as well.

2.1 Efficiency

2.1.1 Outputs

The table below compares the plan with its actual outcomes. The principal changes from the plan and the reasons for these are as follows:

- It was initially planned to establish a system of optic-fiber transmission lines connected with three links including one spare link, but because the system is highly reliable, it was not installed for a spare link.
- Additional IDR facilities and DCME were installed to respond to the expansion of the capacity of international lines.
- It was initially planned to expand the existing international telephone exchange, but because this telephone exchange was aging, it was decided to establish a new exchange. This modification required connection between the newly-established Islamabad international telephone exchange and the Malachh earth station, and it was decided to establish a digital microwave link instead of an optic-fiber link because of the rocky terrain.
- The number of lines in the Islamabad international telephone exchange was

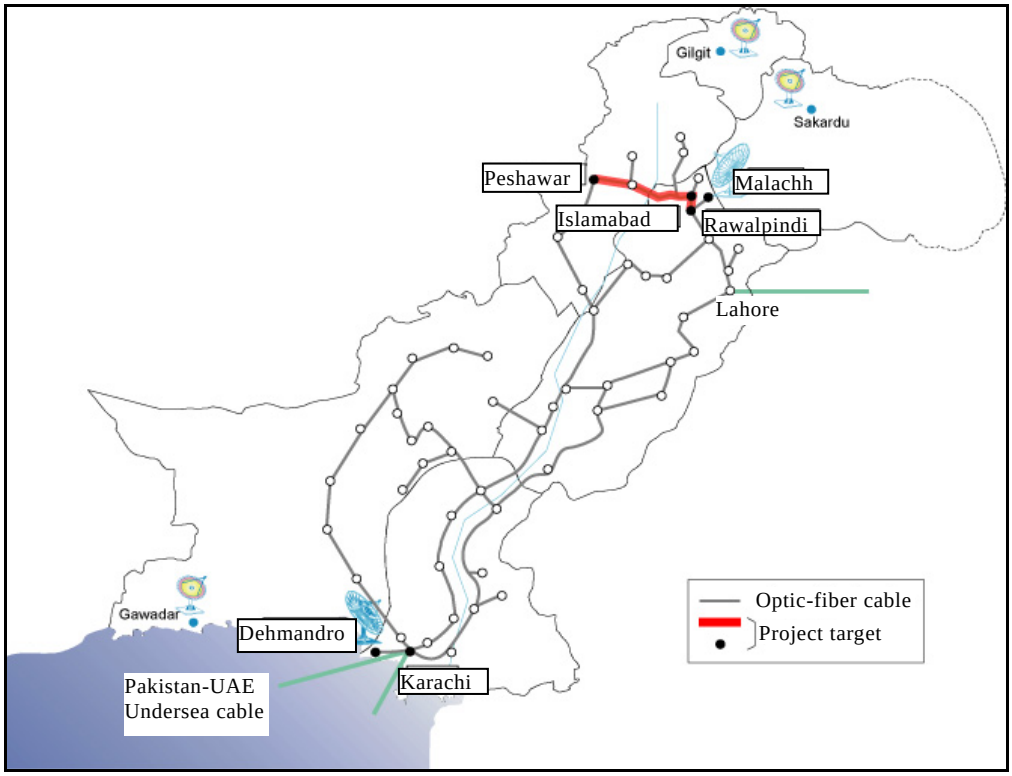
increased to meet the growing demand for international telecommunications.

Table 1. Comparison of Project Scope at the Time of Appraisal and Actual Performance

Item	Plan	Actual performance
(1) Optic cable transmission line construction Rawalpindi- Peshawar	18 cores, 220km 565Mbps × 3 (2+1) links	18 cores,192km 565Mbps × 2 (2+0) links
(2) Expansion of earth station Islamabad (Malachh) Karachi (Dehmandro)	1) IDR facilities DEMOD: 18+1, MOD: 13+1 U/C: 10, D/C：10, HPA: 1+1 2) DCME: 13+2 3) 34 Mbps 6 Fiber: digital optic-fiber link (Islamabad) 4) 140 Mbps 8 GHz: digital microwave system (Karachi)	1) IDR facilities DEMOD: 28+4, MOD: 22+3 U/C: 7, D/C：7, HPA: 3 2) DCME: 22+3 3) 155Mbps (1+1) : digital microwave system 4) Almost as planned
(3) Islamabad international telephone exchange	Expansion of telephone exchange International capacity: 1,500 lines Domestic capacity: 2,400 lines ROP: 16 cities, 48 units	New construction of telephone exchange International capacity: 4,680 lines Domestic capacity: 7,080 lines ROP: 1 city, 88 units
(4) Renovation of maritime telecommunications facilities	1) Operation stations/ Reception stations a) Telegraph Console: 2 b) MF/HF Telephone Console: 2 c) HF Telegraph & Telex Console: 4 d) VHF Telephone Console: 2 e) VHF FM Radio:2 f) UHF Multiplex Radio:1 2) Transmission stations 1kW MF transmitter: 2 5kW MF transmitter: 1 5kW HF transmitter: 6 MF antenna: 1, HF antenna: 6	1) Operation stations/ Reception stations a) Telegraph Console: 1 b) MF/HF Telephone Console: 1 c) HF Telegraph & Telex Console: 1 d) VHF Telephone Console: 4 e) VHF FM Radio: 12 f) UHF Multiplex Radio: 0 2) Transmission stations Almost as planned

Note: IDR=Intermediate Data Rate, U/C=Up Converter, D/C=Down Converter, HPA=High-Power Amplifier, DCME=Digital Circuit Multiplex Equipment, ROP=Remote Operation Panel

Fig. 1 Map of Project Target Area



2.1.2 Project period

The period of this project was from June 1992 to November 2003 (137 months), 4.6 times longer than the period initially planned, which was to be from June 1992 to December 1994 (30 months).

Fig. 2 Microwave System Relay Station

This extension of the project period stemmed from delays in implementing various project components. Installation of the an earth station equipment was delayed for 38 months (2.6 times longer than planned) because of a delay in tendering associated with a change in the quantity of the equipment and a shift to a new technical standard. With regard to the microwave transmission line linking the Islamabad international telephone exchange with the Malachh earth station, site acquisition for the relay station was substantially delayed, and establishment and commissioning was not completed until November 2003, which was 5.75 times longer than planned.[1] In addition, the renovation of maritime telecommunications facilities was

[1] Because the acquisition of a permanent site for the relay station was delayed, a transponder was installed in the existing

delayed for 45 months (three times longer than planned) because contract conclusion was delayed for more than two years in order to hold a second bidding, and there was also a delay in the supply and installation of equipment.

2.1.3 Project cost

Project cost amounted to 3,184 million yen, 47.2% of the planned 6,747 million yen. The disbursed amount of the yen loan was 2,974 million yen, less than the approved loan amount of 5,422 million yen. The reduction in project cost was the result of a narrowing of the scope of the project and an alteration of specifications associated with the technical change from analog to digital, which lowered prices.

2.2 Effectiveness

(1) Number of subscriber lines and the telephone penetration rate

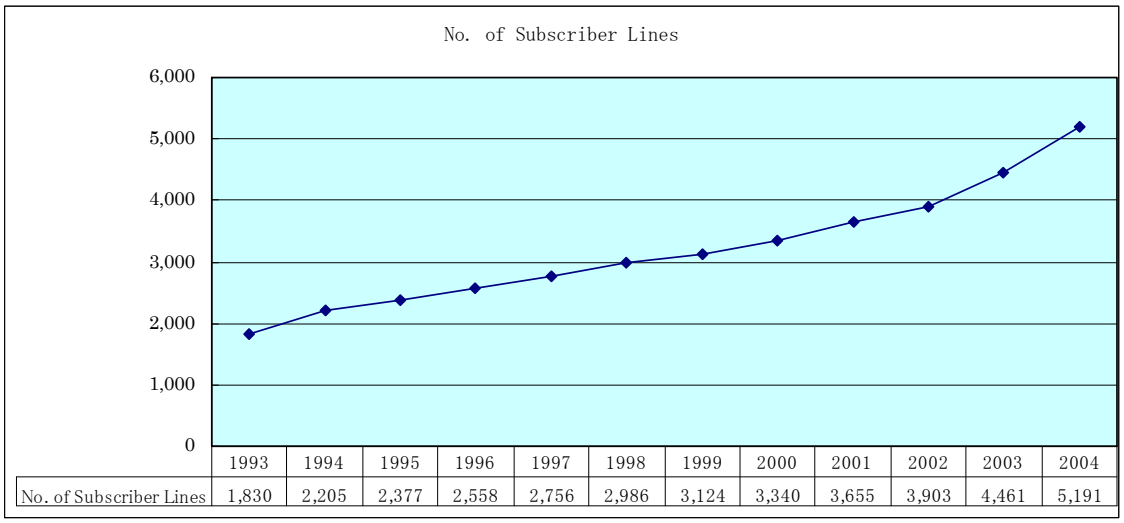
While according to the seventh five-year plan it was planned to install 446,000 new lines during the period of its implementation of the plan (1988-93), the actual number installed was 1.19 million, well above the planned target. During the period of the eighth five-year plan (1993-98), moreover, 1.16 million new lines were installed, in contrast to the targeted 2.5 million. Thus, the increase in the number of subscriber lines during the period of the seventh and eighth five-year plans, which covers the period of this project, was 80% of the planned number[2], and contributed to achieving project objectives. Meanwhile, the telephone penetration rate doubled from 1.55% in 1993 to 3.46% in 2004[3].

tower as a provisional measure in September 1998, and though limited, it functioned as a microwave link.

[2] The planned number of new lines to be installed during the period of the seventh and eighth five-year plans was a total of 2.946 million. In actuality, 2.35 million were installed, 80% of the planned number.

[3] In the rural areas, however, the penetration rate remains less than 1% in some regions.

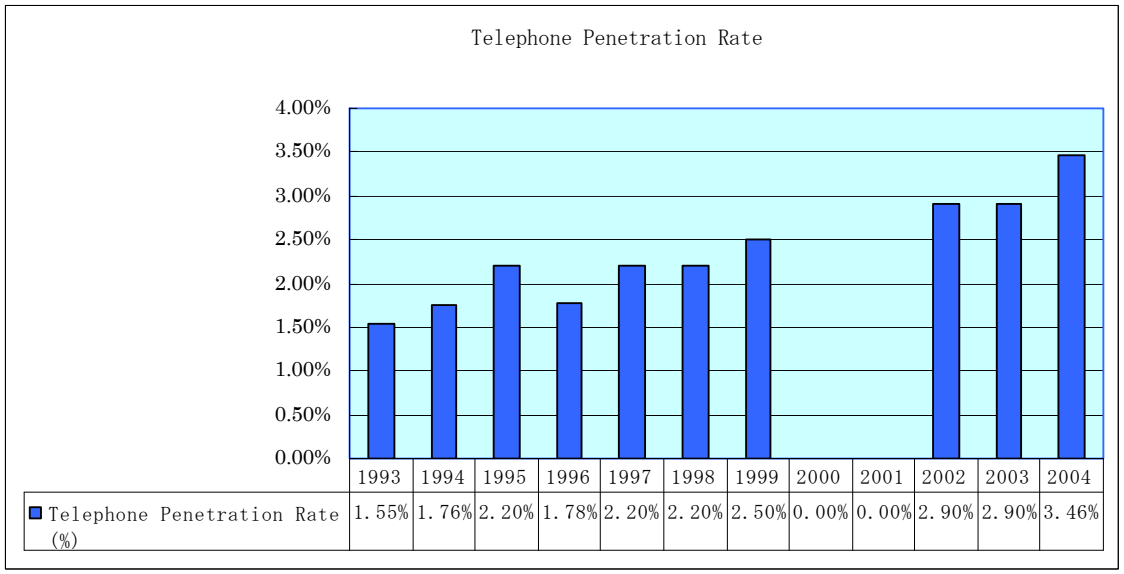
Fig. 3 Number of Subscriber Lines (1,000 lines)



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
No. of Subscriber Lines	1,830	2,205	2,377	2,558	2,756	2,986	3,124	3,340	3,655	3,903	4,461	5,191

Source: PTCL

Fig. 4 Telephone Penetration Rate (%)



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Telephone Penetration Rate (%)	1.55%	1.76%	2.20%	1.78%	2.20%	2.20%	2.50%	0.00%	0.00%	2.90%	2.90%	3.46%

Source: PTCL

(2) Telecommunications traffic volume

a) Optic-fiber transmission lines

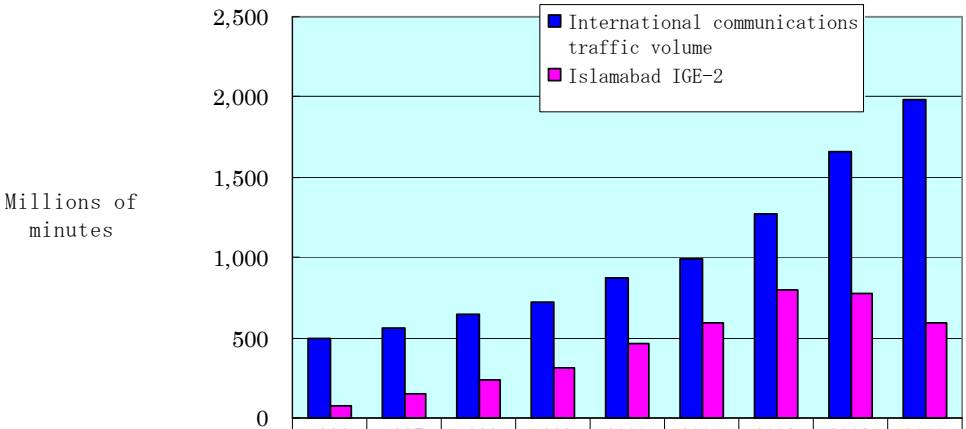
The optic-fiber transmission line (Rawalpindi–Peshawar, 192km) that is a

component of this project constitutes the Karachi–Peshawar optic-fiber cable link and thus it can be said that it contributed to the improvement of telecommunications traffic throughout Pakistan[4]. However, the two links for which the systems were installed under this project are outdated for two generations and carry only about 2.5% of total telecommunications traffic volume of this interval, which consists of nine links in all.

b) International telecommunications traffic volume

International telecommunications traffic volume has been growing steadily since 1996. In the whole of Pakistan, there are four international telephone exchanges in operation (Islamabad IGE-2, 3, Karachi IGE-1, 2). However, the international traffic volume via Islamabad IGE-2 which was established by this project and its proportion in total international traffic volume have also been increasing steadily, and as of 2002 reached 794 million minutes, 62% of the total.[5]

Fig. 5 International Communications Traffic Volume (one million minutes)



	1996	1997	1998	1999	2000	2001	2002	2003	2004
International communications traffic volume	491	565	642	727	875	995	1,277	1,665	1,982
Islamabad IGE-2	80.5	150.4	232.3	315.3	463.8	592.1	793.9	776.4	596.7

Source: PTCL

[4] Although this project's Rawalpindi-Peshawar sector (192km) now accounts for about 2% of the total length of optic-fiber cable throughout Pakistan (10,246km as of 2005), in 1995, immediately after establishment of this sector, this percentage was 7.1%.

[5] In 2002, IGE-3 commenced operation, replacing the aging Islamabad IGE-1. Compared to Islamabad IGE-1 and 2, IGE-3 has large capacity of the international lines and introduced a new system, thus the volume of international telecommunications traffic via IGE-3 has increased relatively in the total since 2003, while traffic via IGE-2 has decreased.

(3) Improvement of the state of telecommunications

Improvements to the state of telecommunications following this project were evaluated by means of a beneficiary survey (sample size: 40 residential households and 89 companies). All of the residents responded that after implementation of this project, the sound quality of telephones had improved, that uncompleted calls had decreased, and that there was no longer any waiting time until the telephone connection was made. Similarly, the majority of company respondents indicated that the state of telecommunications had improved.

Table 2. Results of Company Survey (figures are number of companies)

Sound quality	Local calls	Large improvement 69, Improvement 7, No change 13
	Long-distance calls	Large improvement 74, Improvement 14, No change 1
	International calls	Large improvement 77, Improvement 12
Frequency of disconnected calls	Local calls	Large reduction 74, Reduction 3, No change 12
	Long-distance calls	Large reduction 82, Reduction 7
	International calls	Large reduction 86, Reduction 3
Waiting time until connection	Local calls	No waiting time 74, Reduction 1, No change 13
	Long-distance calls	No waiting time 85, Reduction 4
	International calls	No waiting time 83, Reduction 6

(4) Maritime telecommunications traffic volume

Due to the aging of the Karachi maritime telecommunications facilities, there were some problems with public maritime telecommunications and with distress, emergency, and safety communications services. After renovation of facilities through this project, however, these services were provided with no difficulty and they have contributed to ensuring maritime safety. Nevertheless, even though traffic volume increased during the period one or two years after installation of facilities (January 1998), the improvement of other public communications and changes in communications tools caused a decline in the use of maritime telecommunications for public

Fig. 6 Maritime Telecommunications Facilities
VHF Telephone Console

communications, with a consequent decline in traffic volume[6]。

Table 3 Karachi Maritime Traffic Volume

Fiscal Year	VHF radio (mins)	MF/HF radio (mins)	Telegraph／Telex Local (words)		Telegraph／Telex Overseas (words)		Weather broadcast (words)	Navigation alert (words)
			Transmission	Reception	Transmission	Reception		
1997/08	46,000	9,149	4,436	22,960	1,609	24,207	312,714	993,990
1998/99	51,472	12,335	2,947	9,595	729	13,368	319,405	850,755
1999/00	16,433	14,527	1,338	1,646	0	1,601	371,185	908,922
2000/01	8,256	11,469	528	1,690	37	1,607	430,496	1,142,784
2001/02	3,376	4,314	16	284	0	109	416,824	644,976
2002/03	1,650	6,919	0	195	0	0	331,712	397,248
2003/04	212	4,862	0	0	0	0	382,286	876,056
2004/05	79	1,316	0	0	0	0	378,460	681,560

Source: PTCL

(5) Financial Internal Rate of Return (FIRR)

At the time of the appraisal, the benefit derived from this project was envisaged to be 3% of the deposits, installation charges and operating revenues of 446,000 lines to calculate FIRR. However, the components of this project have varieties and each component provides only partial support; consequently, and measuring the actual contribution of this project to overall benefit was extremely difficult. Further, the date about operation and maintenance costs associated with this project could not be obtained from the executing agency, and thus FIRR could not be recalculated.

(6) Contribution of this project to the development of the telecommunications sector

The proportion of total PTCL investment accounted for by this project's expenditures was an average of 18% during the period of project implementation, and in 1996, when expenditures were highest, this percentage reached 40%. It could be said, then, that the contribution of this project to investment in the expansion of telecommunications facilities was high.

[6] Although there is no charge for distress/emergency/safety communications, public communications by ships have to conclude a contract with wireless companies and the companies pay PTCL. Because telephone/Internet/e-mail communications via cellular phone and satellite are lower in price and higher in quality (in terms of sound quality, maximum amount of communications, coverage area, etc.), users are shifting from PTCL's maritime telecommunications to those communication tools.

Table 4. Project Expenditures, Pct. of PTCL's Fixed Expenditures

Year	Project Expenditures* (millions of yen)	(millions of rupees)	Pct. of PTCL's Fixed expenditures (%)
1995	811.5	2,473.3	17.7
1996	1,699.3	5,033.5	41.9
1997	168.9	495.2	4.3
1998	294.0	722.2	6.4
	2,974.7	8,724.2	17.9

Source: PTCL Annual Report
* Only foreign currency portion

The above figures indicate that the implementation of plans to develop Pakistan's telecommunications sector resulted in an increase in the number of subscriber lines, an improvement of the telephone penetration rate, and growth in the volume of international telecommunications traffic, and this allows the conclusion that the project contributed to the quantitative and qualitative improvement of telecommunications services as part of the plans. In the telecommunications sector, however, because technology and needs change rapidly and investment in this sector was conducted on a continuous basis, at present, the contribution to overall telecommunications service of the facilities expanded through this project is limited.

2.3 Impact

(1) Vitalization of commercial and industrial activity

In a survey of 89 companies, all respondents stated that this project had a positive impact, as specified in the table below. The data indicates that the improvement of the telecommunications state is linked to the expansion of regions of business activity, an increase in customers and an improvement in customer services.

Table 5. Impact of Project According to Company Survey (multiple responses)

	No. of Respondents (companies)	(%)
Improvement of state of telecommunications	78	88
Expansion of regions of business activity	67	75
Improvement of customer service	61	69
Increase in number of customers	57	64
Improvement in access to information	52	58

Increase in business income	52	58

Source: Responses from beneficiary survey

(2) Improvement in terms of convenience of residents

In a survey of 40 households, all respondents stated that the project had a positive impact and enabled improved communication with family and relatives.

Table 6. Impact of Project According to Survey of Residents (multiple responses)

	No. of respondents (households)	(%)
Improvement in contact and communication with family and relatives	40	100
Improvement in contact and communication with public facilities	34	85
Increase in work opportunities	20	50
Increase in household income	19	48

Source: Responses from beneficiary survey

(3) Ensuring the safety of life and property on the sea

After renovation of maritime telecommunications facilities through this project, the number of distress communications increased[7]. This can be attributed to smoother communications with ships in distress and indicates that this project contributed to ensuring maritime safety.

Table 7. No. of Communications Concerning Distress, Emergency, Safety

	1991	1992	1993	1994	1995	1996	1997
Distress	1	0	0	2	1	1	2
Emergency	2	3	4	6	4	1	1
Safety	74	94	111	133	153	150	111
1998	1999	2000	2001	2002	2003	2004	2005
5	47	18	17	18	16	40	22
0	0	0	0	0	0	0	0
81	71	89	82	68	78	91	74

Source: PTCL

(4) Environmental impacts

[7] Data concerning the number of maritime accidents and the number of victims along the coastline of Pakistan was not available.

This project's activities focused mainly on laying optic-fiber underground and installing equipment in existing buildings, and for this reason the environmental impacts on the project's target area were not significant.

2.5 Sustainability

2.5.1 Executing agency

2.5.1.1 Technical capability

As for implementing the components of this project, contractors furnished operation and maintenance (O&M) manuals during the project period, which were used to provide training to operation and maintenance staff, so there is no problem with the level of technical skill.

2.5.1.2 Operation and maintenance system

Pakistan Telecommunication Corporation (PTC) was reorganized in December 1995 as Pakistan Telecommunication Company Limited (PTCL). The company's headquarters is in Islamabad, and it has 11 regional bureaus. The operation and maintenance departments depend on the project's components: For optic-fiber transmission lines, operation and maintenance was performed by the department of the optic-fiber system manager (General Manager, OFS); for the Malachh earth station and the Islamabad international telephone exchange, it was performed by the Overseas Telecom Region (OTR), Islamabad; for the Dehmandro earth station and maritime telecommunications facilities, it was performed by OTR, Karachi.

With respect to privatization, tendering was held on 26%[8] of all stock in June 2005. In March 2006, a stock purchase agreement was concluded with the winning bidder Etisalat (UAE), and transfer of PTCL's rights of management to Etisalat is scheduled to be concluded in April. For this reason, attention should be given to PTCL's operation and maintenance system going forward.

2.5.1.3 Financial status

Since FY1995/96, operating revenues, operating profit and profit of the current period have increased steadily, and in FY2003/4, operating revenues amounted to 74,124 million rupees, operating profit 41,938 million rupees and profit of current period 29,169 million rupees. Return on assets has also improved year by year and reached 20.6% in June 2004. Current ratio, which indicates short-term stability,

[8] The Pakistani government held 88% of PTCL stock. The 26% that was the object of bidding was stock from the government's holding.

and capital adequacy ratio, which indicates long-term stability, have remained above a certain level, and in June 2004, these figures stood at 278% and 77%, respectively. The above suggests that PTCL's financial status is exceptionally sound and that there is no problem with the sustainability of the effect of this project.

Table 8. PTCL Statement of Profit and Loss

(millions of rupees)

	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Operating Revenue	18,678	40,594	46,467	51,187	58,643	62,040	66,427	67,202	74,124	75,972
Domestic	10,531	22,441	27,169	30,310	38,155	42,926	47,178	49,653	54,443	61,033
International	7,882	17,707	18,945	20,573	20,284	18,958	19,141	17,549	19,681	15,535
Other	265	446	353	304	204	156	108	0	0	-596
Operating Expenses	11,818	24,254	26,312	29,462	33,302	31,453	34,716	32,095	32,186	39,609
Operating Profit	6,860	16,340	20,155	21,725	25,341	30,587	31,711	35,107	41,938	36,363
Non-Operating Profit	423	1,241	439	586	1,304	1,544	1,618	2,481	2,095	3,387
Non-Operating Expenses	3,442	5,397	6,024	4,743	3,920	3,161	2,434	1,025	674	455
Net Income Before Taxes	3,841	12,184	14,570	17,568	22,725	28,970	30,895	36,563	43,359	39,295
Taxes	0	0	0	0	9,395	10,816	11,983	13,482	14,190	12,690
Net Income After Taxes	3,841	12,184	14,570	17,568	13,330	18,154	18,912	23,081	29,169	26,605

Source: PTCL Annual Report

Table 9. Return on Assets, Current Ratio, Capital Adequacy Ratio

	1996/06	1997/06	1998/06	1999/06	2000/06	2001/06	2002/06	2003/06	2004/06	2005/06
Return on assets	3.69%	10.49%	11.63%	13.18%	9.53%	12.95%	14.53%	17.65%	20.60%	19.58%
Current ratio	79.31%	74.96%	95.96%	97.83%	96.09%	89.28%	89.98%	96.99%	278.05%	190.51%
Capital adequacy ratio	49.70%	47.39%	48.23%	50.70%	44.19%	49.14%	57.37%	61.11%	77.05%	73.60%

2.5.2 Maintenance

a) Optic-fiber transmission lines

The two links that made up the system under this project used outdated technology for two generations, but the system has been operating without difficulty[9]. With respect to the other seven links, a system has been established and is operating satisfactorily.

b) Earth stations

Operation and maintenance is being performed smoothly in accordance with O&M manuals. Although the manufacture of spare parts has currently been halted, sufficient quantities remain in stock. There are also no problems involving hardware, and the stations can be used for another 5-10 years[10].

c) Islamabad international telephone exchange

More than 85% of the lines installed are in operation without any problem. Although the software is technologically out of date, there are no problems associated with hardware, and the exchange can be used for another two to three years[11].

d) Maritime telecommunications facilities

The manufacture of spare parts was halted five or six years after installation of equipment and there are no spare parts in stock. Up to now, maintenance has been performed by using other spare parts.

[9] The life of optical fiber is about 20 years. According to PTCL, the optical fiber provided through this project will continue to be used so long as it operates.

[10] As of October 2005, 6,019 cables lines of international telecommunications traffic were carried via earth station while 12,708 lines were carried via undersea cable, and thus indicating that the importance of earth stations has declined. In addition, undersea cable costs less for its operation. Satellite communications, however, does not involve the risk of cables being cut and thus can retain a function as back up and has actually performed.

[11] According to new information provided by PTCL in August 2006, the exchange was determined to be closed as of September 2006, because of not only mismatch between its equipment and current needs of the government such as prevention of terrorism, but alsofrom the point of view of reducing of operating costs.

In the telecommunications sector, technology and needs change rapidly, and long-term continuous to use of the equipment installed under this project would be difficult in spite of its substantial contribution, and actually some of the devices have already completed their roles. Nevertheless, the technology, structure, and financial health of PTCL are sound, and the company is able to replace existing equipment with others incorporating new technologies. This means that the impact and benefit provided by this project—that is, quantitative and qualitative improvement of telecommunications services—are likely to continue.

3. Feedback

3.1 Lessons Learned

In sectors such as telecommunications, where condition are changing rapidly due to technological innovation, it is necessary to consider a system such as sector loans, whereby the loan can be used flexibly to adjust to change or addition of the project scope.

3.2 Recommendations

None.

Comparison of Original and Actual Scope

Item	Plan	Actual
(1) Outputs 1) Optic-fiber cable transmission line construction Rawalpindi-Peshawar	18 cores, 220km 565Mbps x 3 (2+1) links	18 cores, 192km 565Mbps x 2 (2+0) links
2) Expansion of earth stations Islamabad (Malachh) Karachi (Dehmandro)	1) IDR facilities DEMOD: 18+1, MOD：13+1 U/C：10, D/C：10, HPA：1+1 2) DCME：13+2 3) 34 Mbps 6 Fiber digital optic-fiber link (Islamabad) 4) 140 Mbps 8 GHz digital microwave system (Karachi)	1) IDR facilities DEMOD：28+4, MOD: 22+3 U/C：7, D/C：7, HPA: 3 2) DCME: 22+3 3) 155Mbps (1+1) digital microwave system 4) Virtually as planned
3) Islamabad International Telephone exchange	Expansion of telephone exchange International capacity: 1,500 lines Domestic capacity: 2,400 lines: ：16 cities, 48 units	New construction of telephone exchange International capacity: 4,680 lines Domestic capacity: 7,080 lines ROP: 1 city, 88 units
4) Renovation of maritime telecommunications facilities	1) Operation stations/Reception stations a)Telegraph Console: 2 b)MF/HF Telephone Console: 2 c)HF Telegraph & Telex Console: 4 d)VHF Telephone Console: 2 e)VHF FM Radio:2 f)UHF Multiplex Radio:1 (2)Transmission station 1kW MF Transmitter: 2 5kW MF Transmitter: 1 5kW HF Transmitter: 6 MF antenna: 1, HF antenna: 6	1) Operation stations/Reception stations a) Telegraph Console: 1 b) MF/HF Telephone Console: 1 c) HF Telegraph & Telex Console: 1 d) VHF Telephone Console: 4 e) VHF FM Radio:12 f) UHF Multiplex Radio: 0 (2)Transmission station Virtually as planned
(2) Project period	June 1992-December 1994 （30 months）	June 1992-November 2003 （137 months）
(3) Project expenses Foreign currency Local currency Total ODA Loan Portion Exchange rate	4,914 million yen 1,833 million yen (269.6 million rupees 6,747 million yen 5,422 million yen 1 rupee＝6.8 yen (as of October 1991)	2,974 million yen 210 million yen (66.6 million rupees) 3,184 million yen 2,974 million yen 1 rupee＝3.15 yen (as of 1998)