

BASIC DESIGN STUDY REPORT ON THE PROJECT FOR EXPANSION OF  
THE EDUCATIONAL TV CHANNEL IN THE ISLAMIC REPUBLIC OF PAKISTAN

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DECEMBER, 1994

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NHK Integrated Tech  
R and D International

*NHK Integrated Technology Inc.  
R and D International Consultants*

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JAPAN INTERNATIONAL COOPERATION AGENCY  
MINISTRY OF INFORMATION AND BROADCASTING  
THE ISLAMIC REPUBLIC OF PAKISTAN

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THE PROJECT FOR EXPANSION  
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R and D International Consultants*

## PREFACE

In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct a basic design study on the Project for Expansion of the Educational TV Channel and entrusted the study to the Japan International Cooperation Agency (JICA).


JICA sent to Pakistan a study team headed by Mr. Masatomo Murakami, Deputy Director, HDTV Promotion Office, Satellite Broadcasting Division, Broadcasting Bureau, Ministry of Posts and Telecommunications and constituted by members of NHK Integrated Technology Inc. and R and D International Consultants, from June 20 to July 31, 1994.

The team held discussions with the officials concerned of the Government of the Islamic Republic of Pakistan, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Pakistan in order to discuss a draft report and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation extended to the teams.

December 1994



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Kimio Fujita  
President

Japan International Cooperation Agency

December 1994

Mr. Kimio Fujita  
President  
Japan International Cooperation Agency  
Tokyo, Japan

Letter of Transmittal

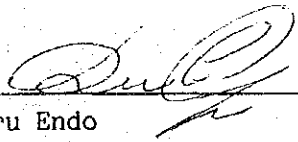
We are pleased to submit to you the basic design study report on the Project for Expansion of the Educational TV Channel in the Islamic Republic of Pakistan.

This study was conducted by NHK Integrated Technology Inc. and R and D International Consultants, under a contract to JICA, during the period of June 15, 1994 to December 24, 1994. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Pakistan and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, and the Ministry of Posts and Telecommunications. We would also like to express our gratitude to the officials concerned of the Ministry of Information and Broadcasting, Economic Affairs Division, Pakistan Television Corporation Ltd., the JICA Pakistan Office, the Embassy of Japan in Pakistan for their cooperation and assistance throughout our field survey.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



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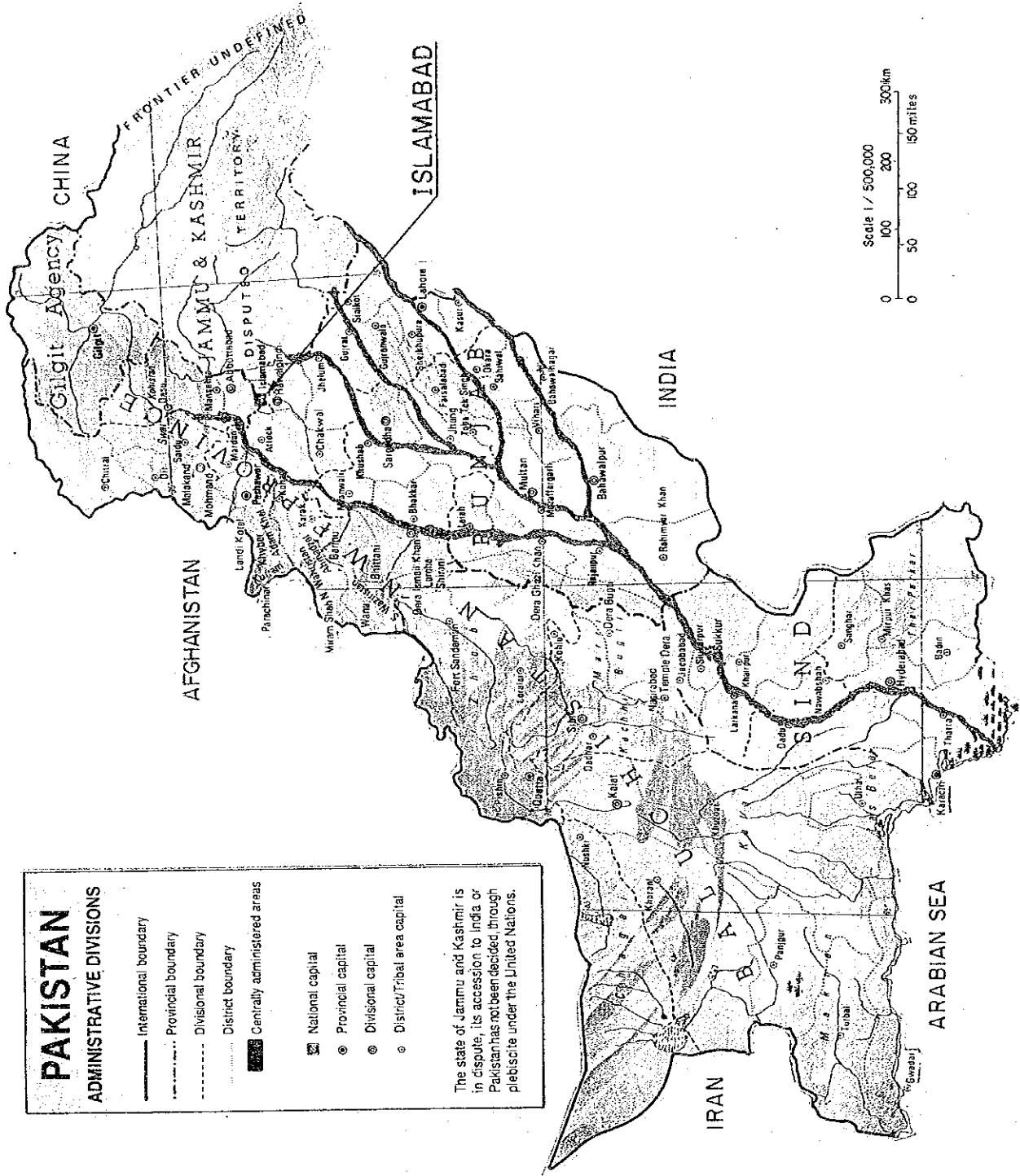
Toru Endo  
Project manager,  
Basic design study team on  
the Project for Expansion of  
the Educational TV Channel  
NHK Integrated Technology Inc.

**PAKISTAN**  
ADMINISTRATIVE DIVISIONS

- International boundary
- - - Provincial boundary
- - - - Divisional boundary
- ..... District boundary
- Centrally administered areas

- ☐ National capital
- Provincial capital
- Divisional capital
- District/Tribal area capital

The state of Jammu and Kashmir is in dispute, its accession to India or Pakistan has not been decided, through plebiscite under the United Nations.



**THE ISLAMIC REPUBLIC OF PAKISTAN**



## Summary



## Summary

The Islamic Republic of Pakistan is located from 23°30' to 36°45' north latitude, and from 61° to 75°31' east longitude.

It stretches for 750 kilometres along the coast of the Arabian Sea, and for 2,000 kilometres from the south-west to the north-east. It shares its borders to the north and north-west with Afghanistan, its border to the north-east with China across the Karakoram Mountains, its border to the south-east with India, and its border to the west with Iran.

Pakistan covers an area of 796,000 square kilometres, and is 2.1 times as large as Japan.

The country is multi-racial and multi-lingual. National statistics (estimates) show the population as of 1994 to be 124.45 million.

The national language is Urdu. There are four major regional languages (Punjabi, Sindhi, Pashto, and Baluchi), and English is the common official language.

Islam is the national religion, and ninety-seven percent of the people are of the Islamic faith.

In the 7th Five Year National Development Plan (1988-1993), the Government of the Islamic Republic of Pakistan planned the establishment of an educational television channel, intending to raise the literacy rate, help deal with the population problem, improve the status of women and so forth. The Government of the Islamic Republic of Pakistan requested the Government of Japan to conduct a study of the plan.

In 1989, the Japan International Cooperation Agency (JICA) carried out a feasibility study on "The Establishment of the Second TV Channel for Education", and completed a report on a five-year development plan.

Installation of the facilities and equipment for the first two years of the five-year development plan (the Initial Two Year Plan) was implemented with grant aid cooperation from the Government of Japan. On November 26th, 1992, Educational Television (ETV) started

its official broadcasts as the second TV channel for education of the Pakistan Television Corporation (PTV).

As a public television broadcasting corporation of Pakistan, PTV currently runs two channels, General Television Service (GTV) and the above mentioned Educational Television Service (ETV).

GTV has five production centres, in Islamabad, Karachi, Lahore, Peshawar and Quetta, while ETV has one, in Islamabad. GTV has thirty-two rebroadcast stations, covering 88% of the population. ETV has sixteen rebroadcast stations, covering 56.5% of the population.

The diffusion number of television receivers in Pakistan is 2.46 million sets (one set per about 50 persons), as of June 1994.

The Government of the Islamic Republic of Pakistan plans to make effective use of the educational television channel for improving the literacy rate (at 36.8% as of 1994), for more widespread education, and for transmitting useful information regarding sanitation, the environment, etc.

However, the sixteen rebroadcast stations installed in the Initial Two Year Plan cover only 56.5% of the whole population. Many of the people still cannot enjoy the benefits of ETV.

The Government of the Islamic Republic of Pakistan has again requested the Government of Japan for continued funding support through grant aid to implement the later three years of the development plan (the Later Three Year Plan), to expand the coverage area and improve the programme production capabilities.

Based on this request, the Government of Japan has decided to conduct a basic design study on "The Project for Expansion of the Educational TV Channel in the Islamic Republic of Pakistan". JICA sent a basic design study team to Pakistan for forty-two days from June 20th, 1994 to July 31st, 1994.

The draft final report of the study was explained to the Pakistani officials concerned over ten days from October 11th to October 20th, 1994.

The request from the Government of the Islamic Republic of Pakistan involved installation of 28 new rebroadcast stations and establishment of satellite receiving/communications system, as well as production facilities and equipment for construction of studio centres in Karachi and Lahore, installation of programme production equipment for regional centres, etc.

However, safety reasons prevented on-site surveys at thirteen of the twenty-eight sites, so the study team only conducted surveys at fifteen of the sites.

The ETV Centre in Islamabad, provided under the Initial Two Year Plan, was not working at full capacity due to a shortage of programme production staff. The main reason for the staff shortage was caused by the prohibiting of the new recruitment of government employees. However, this ban was lifted on July 1st, 1994, and since then PTV has been trying to reinforce and to train the production staff at the ETV Centre as quickly as possible to make full use of its capacity.

Regarding new equipment for the programme production facilities as requested, this will be excluded in this Project since the existing facilities are not fully utilized as explained above. Further consideration will be given to this matter upon confirmation of complete utilization of the existing facilities.

The main items of the Project selected from the above-mentioned survey are as follows. If the Project is to be carried out with grant aid from the Government of Japan, the Project will be implemented in two phases.

Phase I

Equipment	Quantity	Contents
<p>1. Rebroadcast stations</p> <p>(1) Mingora 1 kW VHF Transmitting Equipment</p> <p>(2) Layyah 1 kW VHF Transmitting Equipment</p> <p>(3) Quetta 500W VHF Transmitting Equipment</p> <p>(4) Karachi 10 kW VHF Transmitting Equipment</p>	<p>1 set</p> <p>1 set</p> <p>1 set</p> <p>1 set</p>	<p>Equipment for rebroadcasting educational programmes sent from the Islamabad ETV Centre by AsiaSat, through VHF waves on terrestrial transmission. The transmission output depends on the size of the service area.</p>
<p>2. Satellite reception and communications system</p> <p>(1) Satellite receiving equipment for Mingora, Layyah and Quetta</p>	<p>3 sets</p>	<p>Device for receiving educational programmes sent from the ETV Centre via AsiaSat. The device will input signals to the transmitter. (Karachi has been already equipped with the receiving device in the Initial Two Year Plan.)</p>

## Phase II

Equipment	Quantity	Contents
1. Rebroadcast stations		Equipment for rebroadcasting educational programmes sent from the Islamabad ETV Centre by AsiaSat, through VHF or UHF waves on terrestrial transmission. The transmission output depends on the size of the service area.
(1) Morasar 50W VHF Transmitting Equipment	1 set	
(2) Chitral 50W VHF Transmitting Equipment	1 set	
(3) Dir 100W VHF Transmitting Equipment	1 set	
(4) Thandiani 500W VHF Transmitting Equipment	1 set	
(5) Pasrur 3 kW UHF Transmitting Equipment	1 set	
(6) Faisalabad 3 kW UHF Transmitting Equipment	1 set	
(7) Sahiwal 10 kW VHF Transmitting Equipment	1 set	
(8) Bahawalnagar 2 kW VHF Transmitting Equipment	1 set	
(9) Mailsi 1 kW VHF Transmitting Equipment	1 set	
(10) Khewra (Haranpur) 1 kW VHF Transmitting Equipment	1 set	
(11) Gulibagh 100W VHF Transmitting Equipment	1 set	
2. Satellite reception and communications system		Device for receiving educational programmes sent from the ETV Centre by AsiaSat.
(1) Satellite receiving equipment	11 sets	The device to input signals to the transmitter.
(2) Order-wire communications equipment	1 set	The communications devices using AsiaSat among PTV/ETV Centres (Islamabad, Karachi, Lahore, Peshawar, Quetta) and the rebroadcast stations.
- Islamabad ETV Centre		
- Islamabad PTV Headquarters		
- Lahore Centre		
- Peshawar Centre		
- 30 Rebroadcast Stations including Karachi and Quetta		

The time required for Phase I of the Project is estimated to be two months for completing the consultant contract and the detailed design, one and a half months for the tendering and other matters, six months for the manufacturing and shipping of the equipment, and two and a half months for installing the equipment on site and making adjustments and tests.

The time required for Phase II of the Project is estimated to be three and a half months for completing the consultant contract and the detailed design, one and a half months for tendering and other matters, six months for the manufacturing and shipping of the equipment, and six months for installing the equipment on site and making adjustments and tests.

The project cost to be borne by Pakistan is estimated at about Rs 2.78 million for Phase I and Rs 45.79 million for Phase II, or Rs 48.57 million in total.

This Project will enlarge the service area covered by Educational Television, from the current 56.5% of the population (about 70 million people) to 75% (about 93 million). The Project will enable an additional 23 million people to watch educational programmes, literacy programmes, and information on health, sanitation, the environment and agriculture, etc.

Thus, this Project will improve the daily life of the people of Pakistan. Its implementation through Japanese government grant aid cooperation will be significant for Pakistan.

This Project will become even more effective with the following improvements.

- Setting up a regular feed-back system on how much each educational, cultural and information programme is watched by each category of viewer, and how the programmes are being utilized, and reflecting the results in the production of subsequent programmes.



- Securing immediate staffing for running the Islamabad ETV Centre to attain its full operation. This will improve both the quality and quantity of programmes, enhancing programme production both in the studio and outside the Centre, and establishing programme broadcasting in 4 different languages.
- Educational programmes should be produced in sufficient cooperation with the Ministry of Education, Provincial Education Departments, Allama Iqbal Open University, and other related organizations.



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## **Chapter 1 Background of the Project**

## Chapter 1 Background of the Project

### 1-1 Background of the Project

The Islamic Republic of Pakistan, a country consisting of 4 provinces, is a multi-racial and multi-lingual nation. The very low average literacy rate of 36.8% (1994) is a factor hindering industrial and social development and improvement of peoples' lives. To alleviate this serious situation, the Government of the Islamic Republic of Pakistan (hereinafter referred to as "the Government of Pakistan") listed development of human resources, emphasizing education and training, as a basic goal in its 7th Five Year Development Plan (1988-93). Chapter 13 of the Development Plan outlines policies to alleviate poverty. It proposes the use of radio, television and other media to overcome the acute shortage in rural areas of information on nutrition, education, and agricultural techniques.

The Government of Pakistan drew up a plan to establish an educational television channel and requested assistance from the Government of Japan to carry out the project. Based on this request, the Japan International Cooperation Agency (hereinafter referred to as "JICA") carried out a feasibility study on "The Establishment of the Second TV Channel for Education". In September 1989, the JICA study team formulated a report (hereinafter referred to as "the Master Plan") to provide for the development project over a period of five years.

The Master Plan included an initial two year plan (hereinafter referred to as "Initial Two Year Plan") to provide for areas of urgent importance. An Exchange of Notes for the implementation of the Initial Two Year Plan was concluded in 1989. The Initial Two Year Plan was carried out over two phases with grant aid cooperation from Japan. Broadcasts from the new educational television channel officially commenced on November 26th 1992.

The completion of the Initial Two Year Plan allowed for educational programme production at the Islamabad Educational Television Centre (hereinafter referred to as "the Islamabad ETV Centre") and provision of an educational television broadcast service

covering 56.5% of the population by the installation of 16 rebroadcast stations.

Extending education (improving literacy and school attendance), and improving nutrition, health, the population welfare, and the position of women are major policies in the Pakistani government's 8th Five Year Development Plan (1993-98). Among the policies for each sector, in the mass media sector, the Government of Pakistan aims to expand the educational television service to support social and economic development.

The Government of Pakistan wishes to improve its programme production capacity, and in particular, expand coverage to rural areas which are in need of education in literacy and hygiene. The Government of Pakistan subsequently requested grant aid to complete the remaining three years of the Master Plan (hereinafter referred to as "the Later Three Year Plan").



## 1-2 Outline of the Request and Main Components

The objectives of the request made by the Government of Pakistan are as follows:

- To expand the rebroadcasting network to extend the educational broadcasting service to people (especially women) in areas with few opportunities for education and gaining information necessary for their practical daily lives, thereby improving literacy and the education level of those areas and developing human resources as a foundation for national development.
- To establish programme production capabilities in regional centres, aside from Islamabad, to produce programmes closely in tune with regional areas considering that each of the four provinces of Pakistan has unique cultures and traditions based on different languages, customs, and practices. The exchange of information will allow for all Pakistani citizens to understand the problems affecting each province and foster a sense that they are members of a unified state working together for the prosperity of the nation.

The Pakistan Television Corporation (PTV) is the organization which shall carry out this Plan, with the cooperation of its supervising authority, the Ministry of Information and Broadcasting. The Ministry and PTV have 30 years of experience in television broadcasts since the commencement of experimental broadcasts in 1964. An adequate level of technology and capability to produce programmes, as well as to maintain equipment in an excellent condition, makes PTV a suitable organization to carry out this Plan.

During the study period in Pakistan, it was confirmed that the details and major components of the request by the Government of Pakistan are as follows:

### (1) Facilities

Construction of educational television studio facilities (composed of one television studio, one post-production room, and one set of related facilities) within the existing PTV Karachi Centre's premises.

(2) Equipment

1) Rebroadcast stations

Establishment of rebroadcast stations in 28 sites as planned in the Later Three Year Plan (see Table 1-2-1).

Table 1-2-1 Rebroadcast Stations in the Later Three Year Plan

Rebroadcast Stations	Planned Output (kW)	Planned TV Channel	* Note Site Survey Conducted or not
Mingora	1	-	○
Ghazaband	1	-	×
Khojok Pass	1	-	×
Parachinar	1	-	×
Muzaffarabad	0.1	-	×
Maiwand	0.1	-	×
Gulibagh	0.1	-	○
Layyah	1	11	○
Quetta	0.5	10	○
Loralai	0.1	-	×
Mehtarzai	0.1	-	×
Qila Saifullah	0.1	-	×
Khokhrapar	0.1	-	×
Morasar	0.05	-	○
Ziarat	0.1	-	×
Razmak	0.025	-	×
Jamal Din Wali	10	8	×
Chitral	0.1	-	○
Dir	0.1	-	○
Shikarapur	10	5	×
Thandiani	0.5	-	○
Pasrur	0.5	-	○
Faisalabad	1	-	○
Sahiwal	10	8	○
Bahawalnagar	2	-	○
Mailsi	1	-	○
Khewra (Haranpur)	1	-	○
Karachi	10	4	○

\* Note: Among 28 requested stations, 13 stations could not be surveyed due to security reasons.

○ : surveyed    × : not surveyed

- 2) TV receiving equipment to pick up satellite transmissions for the new rebroadcast stations as well as an order-wire communications system among the PTV/ETV Centres and all the rebroadcast stations including the existing ETV rebroadcast stations.
- 3) TV studio equipment
- a) Karachi 1 set (to be installed in the new studio building)
  - b) Lahore 1 set (to be installed in the existing studio B of the present Lahore PTV Centre and used for ETV)
- 4) EFP equipment
- a) Karachi
    - Post-production 1 set (in the new studio building)
    - VTR Tape Editing 1 set (in the new studio building)
    - EFP (Camera + VCR) 2
  - b) Lahore
    - Post-production 1 set (in the existing Lahore PTV Centre)
    - VTR Tape Editing 1 set (in the existing Lahore PTV Centre)
    - EFP (Camera + VCR) 2
  - c) Peshawar
    - Post-production 1 set (in the existing Peshawar PTV Centre)
    - VTR Tape Editing 1 set (in the existing Peshawar PTV Centre)
    - EFP Vehicle 1 set (with 3 TV cameras)
  - d) Quetta
    - Post-production 1 set (in the existing Quetta PTV Centre)
    - VTR Tape Editing 1 set (in the existing Quetta PTV Centre)
    - EFP Vehicle 1 set (with 3 TV cameras)

### **1-3 Projects and/or Programmes of Other Donors**

During the survey period, the study team confirmed that there are no other projects similar to this Project being offered or prepared by other countries or by any international organization.

However, this Project is expected to strongly support the Social Action Programme which has been jointly advocated by the World Bank, UNDP and UNICEF. It is necessary to maintain intensive cooperation and close contact with those international organizations.

### 1-4 Education in Pakistan

Pakistan's education system is depicted in Figure 1-4-1. The education system is based on a 5-year primary, 3-year middle, and 2-year high school system, and also offers secondary vocational schooling and tertiary education in the form of colleges and universities.

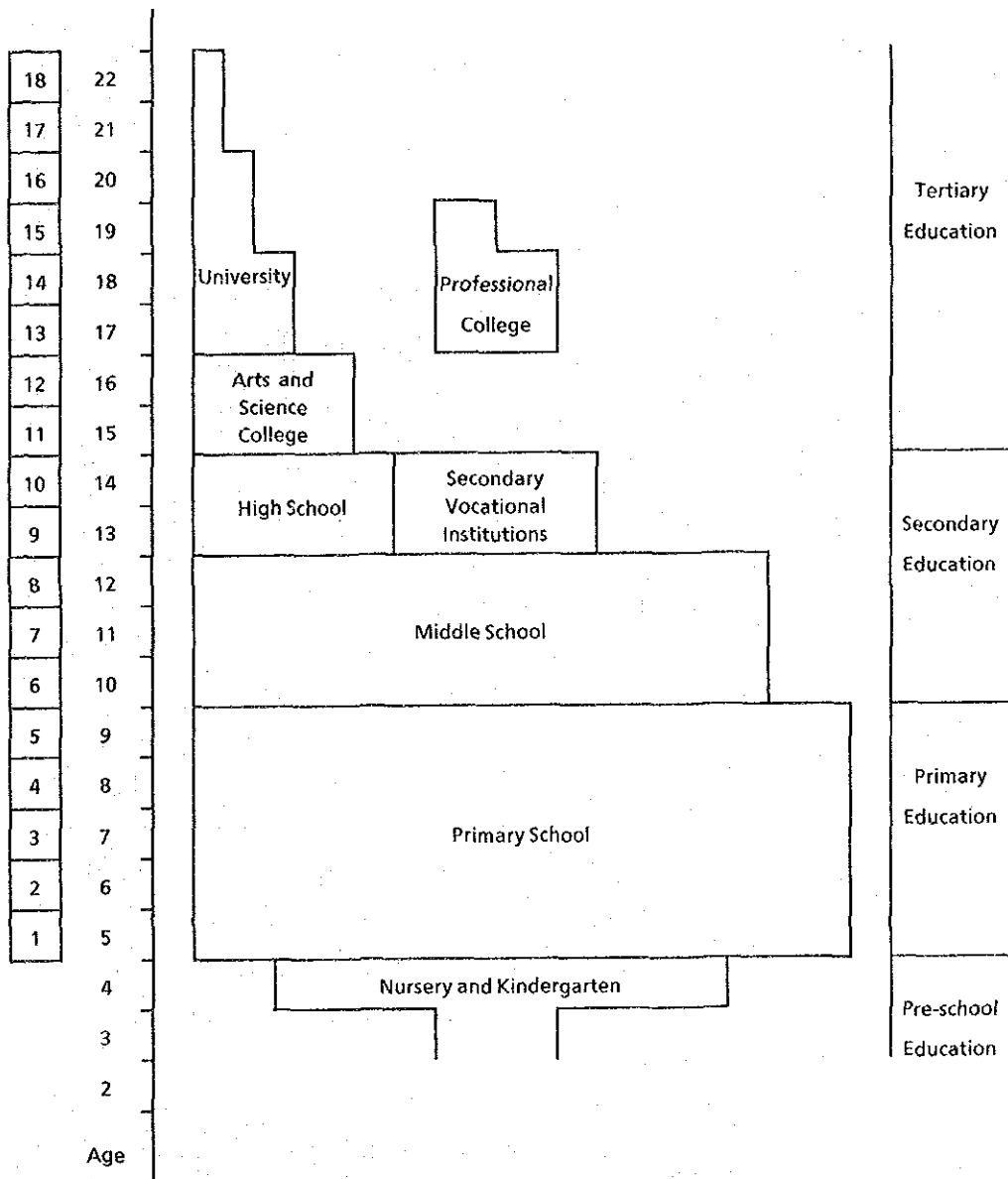


Figure 1-4-1 Diagram of School System in Pakistan

Compulsory education system is yet to be established. In 1994, only 70.8% of children are attending primary schools. The literacy rate is 36.8%. These rates are the lowest among countries with a similar GNP and the reasons for the low levels of literacy and attendance are listed below. Problems are seen among both the providers and recipients of education.

• Problems from the Standpoint of the Providers of Education

In Pakistan there is a chronic lack of funding for education. In many nations, government outlays for education account for 3 - 4% of GNP, but in Pakistan the figure is only some 2%. This situation leads to the following:

- ① Lack of Schools - The long distances or complete lack of physical access to schools means many people are not able to receive an education.
- ② Shortage of teachers (an average of 2.4 teachers per primary school) - Low salaries put teachers in an undeservedly low position in society.
- ③ Low quality of teachers - There is a lack of teacher training facilities, thus increasing the number of unqualified teachers, and a lack of opportunities for practical teaching experience.
- ④ Lack of texts - Texts are purchased privately.
- ⑤ Low quality of education curriculums - A shortage of classroom laboratories and facilities reflects on curriculums; the desire to attend school is lowered.

• Problems from the Standpoint of Those Receiving Education

Families in which the parents did not receive an education can impose handicaps in the form of:

- ① Lack of understanding of the need for education - Children do not have a learning environment.
- ② Expense - Families must pay for the texts and tuition of their children
- ③ Children as labour force - In rural areas especially, children are regarded as a part of the labour force.

Table 1-4-1 provides comparisons with the level of education in other countries, which like Pakistan, have a per capita GNP of about US\$350 to \$400; Table 1-4-2 provides data for each level of education in Pakistan; and Table 1-4-3 provides details of literacy rate.

There is an urgent need for the provision of primary education especially to females who have fewer opportunities for education.

**Table 1-4-1 Comparisons of the Level of Education**

	Pakistan	India	Sri Lanka	Kenya
GNP (US\$)	400	330	420	360
Literacy Rate	34%	41%	86%	47%
Compulsory Education	none	8 years	6 years	none
Texts	By private purchase	Free of charge	Lending	Lending
Weekly class hours	40 min. x 45 classes	40 min. x 48 classes	45 min. x 40 classes	35 min. x 50 classes
Tuition (Primary)	Partially charged	Free of charge	Free of charge	Partially charged
Tuition (Secondary)	Partially charged	Partially charged	Free of charge	Partially charged

International Cooperation, issued on Aug. 1990

**Table 1-4-2 Data for Each Level of Education in Pakistan**

	Number of Schools	Number of Students			Attendance Rate			Number of Teachers
		Total	Boys	Girls	Total	Boys	Girls	
Primary School (Class I ~ V)	156,450	15,532,000	10,761,000	4,771,000	70.8%	86.3%	54.9%	383,400
Secondary School (Class VI ~ VIII)	12,638	3,845,000	2,545,000	1,300,000	44.7%	58.0%	30.5%	98,400
High School (Class IX ~ X)	11,445	1,354,000	859,000	495,000	29.1%	37.9%	19.4%	196,500
Secondary Vocational Inst.	712	92,000	62,000	30,000	—	—	—	6,850
Arts and Science College	680	595,000	354,000	241,000	—	—	—	18,960
Professional College	100	77,186	57,944	19,242	—	—	—	4,700
University	24	85,635	74,223	11,412	—	—	—	6,258

93/94 Economic Survey Report

**Table 1-4-3 Literacy Rate in Pakistan**

	1961	1972	1981	1994
Whole of Pakistan	16.7%	21.7%	26.2%	36.8%
Urban Areas	34.8%	41.5%	47.1%	57.0%
Remote Areas	10.6%	14.3%	17.3%	27.5%
Gender				
Male	25.1%	30.2%	35.1%	48.9%
Female	6.7%	11.6%	16.0%	23.5%
By Province				
Punjab	16.1%	20.7%	27.4%	—
Sind	21.0%	30.2%	31.4%	—
NWFP	13.8%	14.5%	16.7%	—
Baluchistan	9.8%	10.1%	10.3%	—

93/94 Economic Survey Report



## **1-5 Importance of Providing Education Through Television Broadcasts**

Educational broadcasts, which appeal to the visual and hearing senses, are recognized as being effective in providing equal opportunities for education. Many nations provide formal educational broadcasts to schools to support school education and non-formal educational broadcasts for general viewers.

Educational broadcasts are usually conducted for the following four reasons:

- Improvement of the level of knowledge of the people in general including improvement of literacy rate.
- Shortage of capable teaching staff to spread and improve education nationally.
- Lack of funds and time for provision of schools, teaching materials, and training of teachers to establish nationwide education system for modernization of country.
- Large number of children unable to attend school.

The present education situation found in some countries makes them unable to invest sufficiently in education, which in turn exacerbates the problems of education authorities, schools, teachers, families and regional areas. The vicious circle wherein social improvement is needed to improve government revenues, and social improvement can only be attained through the nationwide provision of education, has not been ended. Thus, the above four reasons for providing educational broadcasting may apply to Pakistan.

On the other hand, "the World Declaration on Education for All" adopted at "the World Conference on Education for All" held in Thailand in 1990, states that education is "an indispensable key to individual improvement and betterment of society, even though it may not be sufficiently developed." The declaration also provides that education is "a basic right for people of both sexes and of all ages." The declaration further says that to fulfill this basic right, the means and scope of basic education "should be expanded flexibly in given situations."

New education which is "expanded flexibly under given circumstances" can correspond to new communications being utilized as a technique of increasing availability. It can also effectively surpass the traditional style education in schools and communities. Finally, the scope of education transcends the constraints of time and distance, making education available to all citizens. The economic burden on people associated with their education must be lower than with traditional means of education.

From these considerations, the importance of educational broadcasts can be recognized in many countries, as the means of extending education to all citizens and improving the level of education.

More concretely, educational broadcasts seem to contribute to solving the problems of education described below:

- ① Educational broadcasts widely transmit to the nation various programmes on such topics as literacy, health, child care, agriculture, etc. utilizing the advantages of their extensive and simultaneous nature.
- ② For women, educational broadcasts are the means to communicate with society and to improve their position and participation in society.
- ③ Educational broadcasts can broadly inform people of the value of education, and further become a turning point to foster a learning environment.
- ④ High quality lesson contents can be offered by incorporating the lessons of able teachers into a programme format.
- ⑤ Production and broadcasts of programmes showing scientific experiments which are expected to be done in the classroom but are not implemented because of the lack of facilities, can be realized.

- ⑥ The social position of teachers is improved by the development of their capabilities with educational broadcasts and by greater understanding among the people of the importance of education.
- ⑦ Educational programmes affording an appropriate level of knowledge to children who have been unenthusiastic about attending schools create fresh interest in children and arrest their drift away from schools through the influence of high quality lessons, curriculums and teachers.

## 1-6 Outline of Development Plan Related to the Project

### 1-6-1 The 8th Five Year National Development Plan

#### (1) Major Policies and Administrative Strategies

The 8th Five Year National Development Plan covers the period from July 1st of 1993 to the end of June in 1998. Its major policies and strategies are as follows:

- 1) Promotion of administrative reform (decentralization to regional provincial governments, reform of regional government structure, promotion of democratization)
- 2) Development of women and handicapped people (equalization of employment opportunities, enlargement of women's fields of activity)
- 3) Promotion of social justice and eradication of social ills (raising literacy rates and school enrollment rates, mass education on adequate nutrition, health care and population welfare, decentralization of economic development to rural areas, rectification of maldistribution of wealth)
- 4) Promotion of social economic welfare (freedom from unemployment, self-supply of food, development of competitive industries, adequate investment of social funds, consideration of environmental pollution)

This Project has a close relationship with every item listed above (especially underlined portions) to support and promote the administration policies with its powerful, economical and realtime dissemination of information through television which is now indispensable in modern societies.

(2) Sectoral Targets of the 8th Five Year Plan

As the focus of the 8th Five Year Plan, the targets for each sector are excerpted as follows:

1) Social Sectors

• Education and Training

a) Raise primary participation rate:

Boys from 85% to 95%.

Girls from 54% to 82%.

b) Increase literacy rate from 35% to 48%.

c) Output of technicians to increase by 50% - from 85,000 to 127,000 per annum.

d) Qualitative improvement in the education system.

• Health

a) Engage 33,000 village health workers - First major effort for health extension at the village level.

b) Full immunization of mothers and children.

c) Coverage of preventive services to be raised from 80% to 90%.

d) Life expectancy to go up from 61.5 years to 63.5 years.

e) Infant mortality rate to decline from 8.6% to 6.5%.

f) Control of micro-nutrient deficiencies.

g) Reduction of incidence of low birth weight babies from 25% to 15%.

h) Universal access to iodized salt for consumption purposes.

• Population

a) Population Planning coverage to increase from 20% to 80%.

- urban 54% to 100%

- rural 5% to 70%

b) Contraceptive availability to be doubled - from 14% to 28%.

c) Population growth rate to decline from 3.0% to 2.7%.

- Rural Water Supply & Sanitation
  - a) Coverage of rural water supply to increase from 47% to 71% of population.
  - b) Rural sanitation coverage to go up from 14% to 32%.

## 2) Physical Infrastructure

- Water
  - Construction of a number of canals and bank outfall drains
- Energy
  - Construction of various hydro and thermal plants and electrification of 19,700 small villages

## 3) Production Sectors

- Agriculture
  - a) Integrated management of agriculture, irrigation and drainage.
  - b) Shift of emphasis to efficient resource use - particularly input management and research linkage. Enhancing crop production by improving efficiency of input and research.
  - c) Better soil management, improved response to fertilizer use.
  - d) Introduction of sprinkler and trickle irrigation.
  - e) Increased cultivation of oil seeds and pulses.
  - f) Integrated pest management.
- Industries and Minerals
  - a) Development of small-scale sector and improvement of linkage with large-scale sector.
  - b) Major shift to value-added products. Improved production quality and marketing.

(2) Educational TV with Sectoral Policies and Programmes

The utilization of educational TV is addressed in Part III of the 8th Five Year Plan as follows:

III-9 Education and Training

63 Media in Education

New knowledge is arising so fast that rapid communication of the new developments in science and technology to students through textbooks alone is becoming difficult. The wide availability of electronic technology at lower cost has made it possible to disseminate new knowledge rapidly through electronic media. During the 8th Plan, special programmes of video lessons based on school and college curricula, particularly on complicated science and technology topics, will be produced and disseminated through electronic media. Copies of these video lessons will also be made available to libraries and individuals on a non-profit basis for use through VCR's etc. Special enrichment programmes on new scientific disciplines will be made accessible to learners both through electronic media and video cassettes. Besides intensive use of the studio facilities available through the Second Educational TV Channel, the production facilities at AIOU will also be updated.

III-11 Population Welfare

Among rural strategies for population welfare, it is stated that "Electronic communication media such as radio and television will play an increasing role in disseminating appropriate family planning information." With regard to raising the social acceptability of contraceptives, it is stated that "The Ministry will provide support for promotional marketing, i.e. through mass media, packaging training, etc."

As for population education, the 8th Five Year Plan states as follows:

37 Population Education through the formal school system in classes IV to X which was started in 1981, has been taken over by the Ministry of Education to strengthen awareness among teachers and students about the implications of rapid population growth for social and economic development.

38 The goals would be achieved through a number of activities covering curriculum development, textbook reviews and development, teacher training and developing instructional material and audio-visual aids.

### III-15 Mass Media

In the beginning, the Plan states that "The role of mass media as a catalyst for change and advancement is universally accepted. Media has a supportive role in economic development, social change, education, modernization and environmental improvements."

As to the expansion of TV coverage, the Plan explains that "The future expansion of the area covered by TV signals would be in hilly, thinly populated and scattered areas of Baluchistan, NWFP, Azad Jammu & Kashmir, Northern and Tribal areas. The expansion of TV signals to these areas based on the conventional microwave network and off-air reception is highly un-economical besides being time consuming. It is planned to switch over to satellite broadcasts during the 8th Plan."

With regard to the 2nd TV channel (ETV), the Plan states that "The 2nd TV channel was introduced during the 7th Five Year Plan period and was at first welcomed as the pioneer channel of satellite broadcasting in Pakistan, but due to limited programme contents, and concentration on less entertaining areas, repetition of PTV news, current affairs and entertainment programmes, its impact remains insignificant. The presently viable TV broadcasting is still virtually lacking satellite facilities."

Among the targets of the 8th Plan, the following items are related to this Project.



- Expansion of 2nd television channel to the excluded pockets of the country including Baluchistan, Azad Kashmir and northern areas.
- During the Plan's Phase II period (Later Three Year Plan), upgrading of the 2nd channel will be initiated which will increase the transmission time of this channel to 10 hours a day.
- Introduction of satellite transmissions in television broadcasting.

## 1-6-2 Social Action Programme (SAP)

### (1) Objectives and Strategy

1) A disturbing feature of the economic performance of Pakistan in the past has been a persistent imbalance between a respectable rate of economic growth and only a marginal improvement in social indicators. It has maintained an average GDP growth rate of 6% during the past three decades. Based on an inter-country comparison, according to the data compiled by the World Bank on GDP growth rate during the 1980s, Pakistan occupies the 6th position in Asia after South Korea, China, Hong Kong, Singapore, and Sri Lanka. According to a quality of life comparison, Pakistan ranks 132 compared with 86 for Sri Lanka and 101 for China (Human Development Report by UNDP 1993).

2) In key social indicators like adult literacy, life expectancy, nutrition, access to clean water and sanitation, Pakistan does poorly compared with countries like India, Egypt and Indonesia, which have enjoyed lower growth and are in the same per capita income range in terms of purchasing power parity. With an adult literacy rate of 36.8%, Pakistan has one of the worst profiles in the world. Life expectancy is low. The maternal mortality rate is the highest in the world. Nutrition is inadequate. Access to clean water and sanitation is patchy. The situation is worse if gender, rural, urban, and regional disparities are taken into account. Population growth is among the highest in the world. Some of the major indicators of

Pakistan viz-a-viz the selected countries in the following Table 1-6-1 testify to this lamentable state.

Table 1-6-1 Key Indicators of Selected Countries

Indicators	Egypt	Indonesia	India	Pakistan
Growth Rate (%)	4.9	4.8	1.8	4.2
Population Growth (%)	2.4	2.2	2.2	3.0
Infant Mortality Rate (per thousand live births)	62	61	84	86
Under Five Mortality Rate (per thousand live births)	85	86	126	134
Fertility Rate	4.3	3.3	4.2	6.2
Low Birth Weight Babies (%)	10	14	33	25
Contraceptive Prevalence Rate (%)	38	48	34	11
Average Life Span	60.3	61.5	59.1	57.7
Calorie Supply per Capita (% of Daily Requirement)	127	120	94	92
Access to Safe Drinking Water (% of Population)	89	58	75	60
Access to Sanitation (% of Population)	65	39	16	30
Public Expenditure on Education (% of GNP)	6.8	6.9	3.2	2.4
Public Expenditure on Health (% of GNP)	1.1	2.1	0.9	0.7

3) The maternal mortality rate has been 500 per 100,000 live births, largely because many of the pregnancies are too early, too late, or too close together. There are only two countries in the world with a higher percentage of low birth weight babies than Pakistan's 25%. Although Pakistan's infant mortality rate has fallen from 148 in 1960 to 86 in 1994, the progress has not been as significant as the average for low income countries.

4) In the economic sphere investments in human capital have been found to be no less important than investments in physical capital. Pakistan could have bettered its own record of growth by investing more in social sectors. In addition to gains in productivity, investment in social services increases the quality of development, provides equal opportunities and opportunities for specialization, and contributes to the alleviation of poverty. The poor are disproportionately disadvantaged, particularly the rural poor. SAP would thus promote productivity, reduce poverty, and encourage smaller, healthier, better educated families. Provision of basic social services would bring women into the mainstream of economic activity. Education, nutrition, health, family planning, water and sanitation generate mutually reinforcing benefits and enhance the economic capabilities of the poor. Education, particularly of women, helps bring down fertility and stimulates demand for health care and sanitation, thereby easing pressure on the environment. Improvement of hygiene, in turn, reduces infant mortality and contributes to population control. It also reduces the burden on curative health services. The Social Action Programme would thus bring benefits which are greater than the aggregate of its components.

5) Eradication of illiteracy will be taken up as a motivational campaign and as one of the main foci of the SAP. Special incentives will be devised to eliminate it. These efforts will be supplemented with the support of larger current expenditure, community participation and better management of social sectors. The accelerated development funding is required not only to sustain physical facilities and provide salaried staff but also to increase non-salary components to improve and maintain the quality of services. The participation of NGOs is sought to expand the reach of programme activities, evolving a partnership between Government and Non-Government sectors, and closing the communication gap between the government and the people, particularly those living in rural areas. The services will no longer be unwanted, under-used or poorly maintained. The SAP will include a programme to explore new approaches for involving

communities, testing innovative ways to deliver social services at the door steps.

6) The Social Action Programme (SAP) was launched in 1992-93. Initially a 3-year SAP (92/93 to 95/96) was formulated, which was overlapped by the 8th Five Year Plan. Hence a 5-year SAP (93-98) has been formulated.

7) In order to make the programme manageable, SAP was given a tight definition designed to address the basic social services. The SAP has five major components:

- Basic education
- Primary health
- Nutrition
- Population welfare
- Rural water supply & sanitation.

Within these areas, the focus is on the most vulnerable or marginalized groups of society, e.g., female education, infant care, remote rural inhabitants.

To achieve the above targets, this Project will play an important role in disseminating the necessary information and education to the people through mass media utilizing its advantages of simultaneous dissemination and wide coverage.

## (2) "Literacy Through Television" Project

According to the Social Action Programme, a project called "Literacy Through Television" was formulated in February 1994 by the Ministry of Education, aiming at raising the literacy rate of the nation.

The project is sponsored by the National Education and Training Commission (NETCOM) and will be executed by the following organizations.

- a) National Education and Training Commission, Islamabad
- b) PTV/ETV
- c) Allama Iqbal Open University, Islamabad

- d) Provincial Social Welfare Departments, Punjab & Baluchistan
- e) Provincial Education Departments, NWFP and Sind
- f) Local Government & Rural Development Department, Punjab
- g) NGOs

The execution period required for the project is 38 months, commencing from May, 1994. (Execution of the project has been slightly delayed.)

This project is one of the measures being taken to achieve the long-term target of raising the literacy rate from 36.8% to 70% by the year 2002. It is imperative to promote literacy in a scientific manner to meet the needs of a modern developing state, while developing the mental and moral faculties of the youth. The dream of achieving a 70% literacy rate by the year 2002 cannot be attained without an organized multi-pronged literacy programme.

1) Integrated Project's Objective and Strategies

a) To develop and offer educational facilities to 0.12 million youth who are out of school and other illiterate males/females who for any reason could not benefit from the formal education system by establishing 300 TV Literacy Centres (TLC) and through individual volunteer teachers. Table 1-6-2 shows the annual phasing of physical work and financial requirements of the Project.

b) To strengthen other existing literacy and basic education programmes.

c) To provide continuous guidance to literacy teachers and follow up activities for neo-literates.

d) To provide continuing education, i.e., post literacy, quality of life improvement and income generating programmes.

e) To provide awareness to millions of viewers outside the Television Literacy Centres and to enable them to benefit from literacy lessons through their own private arrangements.

f) To create a favorable climate for promotion of functional literacy and basic education.

**Table 1-6-2 Annual Target and Expenditure**

Year	Illiterate to Literate (persons)	Expenditure (1,000Rs)
1993-94	—	1,565
1994-95	40,000	6,237
1995-96	40,000	6,433
1996-97	40,000	5,659
<b>Total</b>	<b>120,000</b>	<b>19,894</b>

2) Main Features of the Project Scope

It is proposed to establish 300 TLC's throughout the country. Besides these centres, individual volunteers would guide one learner each.

a) The Television Literacy Centres to be opened will be distributed on the basis of population keeping in view the population density and availability of electricity.

b) 300 TLC's will be sponsored by NETCOM and NGOs shall also be encouraged to establish their own TLC's if they so desire.

c) There would be 11,000 volunteer teachers who will guide one learner each during a cycle.

d) Literacy primers shall be provided by NETCOM free of cost. TV sets will be arranged on rent at @ Rs. 200/- per month by the NGOs/Communities.

e) To supplement tele-lessons, part-time literacy teacher shall be provided. After the TV lesson, the teachers shall be available for individualized instructions to interested persons.

f) The programme will be monitored and evaluated periodically by NETCOM in collaboration with PTV/ETV, AIOU and Provincial Education, Social Welfare and LG & RD Departments.

### 3) Telecast Schedule

It can hardly be overemphasized that the clientele would benefit most if the literacy lessons were telecast daily at the time best suited to the majority of them. The programme, "Literacy through Television", shall be telecast twice daily (six days a week) on the national network. Both males and females, particularly those falling in age group 10-35, shall benefit from the programme. In view of the weather/climatic variations in the country, the following schedule is proposed.

- a) Two lessons telecast daily, each of 30 minutes duration.
- b) First TCL cycle : (July - January)
- c) Second TCL cycle : (February - April)
- d) TCL Morning Programme : 10:30 am to 11:00 am
- e) TCL Evening Programme : 6:30 pm to 7:00 pm
- f) Broadcast period : 1994-95  
1995-96 } Two cycles each year  
1996-97 }

### 4) Broader Aspects of the Programme

To start with, the programme shall be telecast in Urdu only. However, on completion of the pilot cycle and the subsequent cycles, the programme may be telecast in the regional languages and re-organized as a medium of instruction up to the primary level.

As described above, the Literacy Through Television Project enables functional illiterates including those who cannot attend TLC's not only to read and write the Urdu language, but also to acquire basic knowledge on such matters as health and hygiene which are indispensable for their daily life, at a grassroots level.

The literacy lesson programmes will be telecast through the ETV nationwide network provided by the Project for Expansion of the Second TV Channel for Education.



## 1-7 Present Status of Implementing Organization

### 1-7-1 Pakistan Television Corporation (PTV)

In Pakistan, TV started experimental broadcasts under the supervision of the Ministry of Information and Broadcasting in 1964, and regular broadcast service started in 1965. In 1967, the Pakistan Television Corporation (PTV) was established.

PTV is now operating two channel services, General Television Service (GTV) and Educational Television Service (ETV). Programme centres are located in Islamabad, Lahore, Karachi, Peshawar and Quetta, and are producing GTV programmes. On the other hand, ETV programmes are produced in the Islamabad ETV Centre.

At present (July 1994), there are 32 rebroadcast stations of GTV, of which 20 stations are broadcasting GTV only, and 12 stations are broadcasting both GTV and ETV programmes. Besides, 4 stations are broadcasting ETV only.

With regard to the service coverage, GTV covers 39% of the total area of Pakistan and 88% of the total population. ETV covers 24% of the area and 56.5% of the population.

Installation of GTV low power rebroadcast stations is planned to fill in blank spots in NWFP and Baluchistan provinces. As for ETV coverage, since its present coverage rate remains at 56.5% of the total population, expansion of its coverage up to the same level of GTV is urgent.

As for the transmission of programmes between stations, the GTV network utilizes a terrestrial microwave network operated by the Pakistan Telecommunications Corporation (PTC), while ETV relays on satellite transmissions using AsiaSat which is no longer of limited accessibility.

GTV broadcasts programmes 11 hours daily from Saturday through Thursday and 15 hours and 40 minutes on Friday in the morning and in the evening until midnight.

ETV transmission time was 7 hours daily from 17:00 to 24:00 when it started regular transmission in November 1992. Since January 1994, the broadcasting time has been shifted to 6 hours daily from 13:00 to 19:00, followed by GTV programme transmissions via satellite from 19:00 to midnight (until signing off of GTV). ETV programmes are still being transmitted in this format at present.

The respective present statuses of PTV's services and facilities as of July 1994 are shown in the following tables and figure.

GTV Weekly On-air Timetable (July-September 1994) in Table 1-7-1

ETV Weekly On-air Timetable (July-September 1994) in Table 1-7-2

List of Present PTV Centres and Rebroadcast Stations (June 1994)  
in Table 1-7-3

Coverage Map of PTV Rebroadcast Stations (June 1994)  
in Figure 1-7-1

Table 1-7-1 GTV Weekly On-air Timetable (July - September 1994)

Saturday - Thursday		Friday	
Time	Programme	Time	Programme
7: 00 -	Morning Wide (Quraan, Health, Legal Advice, Cooking, Picture Art, Music, Sports, Interview with Dignitaries, Noted Places, Handicapped People, Environment, etc.)	7: 00 -	Morning Wide (same as left)
9: 00 -	Sing off  (9:00-15:00 Off the Air)	10: 30 -	Sports
15: 00 -	Bismillah Baseerat	12: 40 -	Sign off  (12:40-14:00 Off the Air)
15: 10 -	Al-Quraan	14: 00 -	Bismillah Baseerat
15: 20 -	Wafa (Drama Series) [Repeat]	14: 10 -	Information
16: 10 -	Hav Taan hai Deepak (Music) [Repeat]	14: 15 -	Sports Relay
16: 35 -	Ainak Wala Jin (Children's Drama) [Repeat]	16: 25 -	Al-Quraan
17: 00 -	Al-Akhbar (Arabic News)	16: 35 -	Documentary
17: 05 -	Khabrain (Local News)	17: 00 -	Al-Akhbar (Arabic News)
17: 10 -	Bachon Ke Liye (English Film)	17: 05 -	Khabrain (Local News)
17: 35 -	TV Encyclopedia	17: 10 -	Sesame Street (For Children)
18: 00 -	Local News	18: 00 -	Local News
18: 10 -	Stage Show (Local Language)	18: 10 -	Stage Show (Local Language)
19: 00 -	English News	18: 35 -	Music
19: 20 -	World of Sports	19: 00 -	English News
20: 00 -	Drama Series	19: 20 -	Comedy
21: 00 -	Urdu News	20: 00 -	Drama Series
21: 25 -	Commercial News	21: 00 -	Urdu News
21: 35 -	PTV File	21: 25 -	PTV File
21: 40 -	Aaj Ka Akhbal (Arabic News)	21: 35 -	Aaj Ka Akhbal (Arabic News)
21: 45 -	Current Affairs	21: 40 -	Current Affairs
22: 10 -	Drama Series	22: 05 -	Drama Series
23: 00 -	English Film	23: 30 -	English Film
23: 50 -	Today's News	23: 50 -	Today's News
23: 55 -	Farman-E-Elahi (Quraan Reading)	23: 55 -	Farman-E-Elahi (Quraan Reading)
24: 00 -	Sign off	24: 00 -	Sign off

Table 1-7-2 ETV Weekly On-air Timetable (July - September 1994)

	Sat.	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.
13:00	Bismillah Baseerat (E)						
13:10	Regional Centres' Programmes (Q) (L)		(P)	Science & Technology (F)	Regional Centres' Programmes (Q) (P) (K)		
14:00	Drama / Show						
14:30	(L)	(P)	(Q)	(I)	(K)	(L)	(K)
14:50	Computer (F)	An Exceptional Child (F)	Invention/ Curiosity (F)	Music (I)	Rivers (F)	Animal Kingdom (F)	Physics in Action (F)
15:20	AIOU Courses						
15:45	Sports Time (F)	World of Audubon (F)	Alternative Energy (F)	Advanced Chemistry (F)	Fragile Earth (F)	Discover the World of Science (F)	Family Classics, Literature for Students (F)
16:35	Follow Me (English Lesson) (F)			Space Science (E)	Follow Me (English Lesson) (F)		
17:00	Literacy (E)	Literacy (E Rep.)	Literacy (E Rep.)	Literacy (E)	Literacy (E Rep.)	Literacy (E Rep.)	Arithmetic (E)
17:30	Arithmetic (E Rep.)	Arithmetic (E Rep.)	Religion (I)	Science Show (F)	Comedy (I)	Music (I)	Religion (I)
17:55	ETV Quiz (E)	ETV Lab. (Physics) (E)	Health Topics (E)	Agriculture (E)	Drama (E)	Art/ Culture (E)	Computer/ Biology (E)
18:25	AIOU Courses						
18:50	Arabic News (I)						
19:00							

\* After 19:00, GTV transmission

\* (Origins)

E : ETV Islamabad

I : GTV Islamabad

L : GTV Lahore

K : GTV Karachi

P : GTV Peshawar

Q : GTV Quetta

F : Foreign Programmes

Rep. : Repeated

Table 1-7-3 Present PTV Centres and Rebroadcast Stations (June 1994)

PTV Centres & Rebroadcast Stations	Power Output (kW)		Channel No. (ch)		Population Coverage (Million) *1)	Area Coverage (km <sup>2</sup> )	TV Set Count (Set No.)	Estimated Total Viewers *2)
	GTV	ETV	GTV	ETV				
PTV Lahore Centre					47.31	108,614	942,835	6,316,996
Kala-Shah Kaku	20	30	5	25	11.08	10,780	429,290	2,876,243
Shujabad	10	10	8	5	8.54	14,000	142,530	954,951
Sahiwal	10	—	10	—	6.86	19,700	62,565	419,186
Jamal Din Wali	10	—	10	—	5.19	20,700	29,075	194,803
Faisalabad	1	—	6	—	10.53	18,234	196,450	1,316,215
Pasrur	0.5	—	10	—	5.02	15,200	82,925	555,598
Layyah	1	—	5	—	0.09	10,000	(—)	(—)
PTV Islamabad GTV/ETV Centres					28.19	90,805	571,870	3,831,529
Murree	10	30	8	21	14.35	43,000	456,920	3,061,364
Sakesar	10	30	4	23	12.97	43,000	83,900	562,130
Thandiani	0.5	—	6	—	0.19	3,625	30,470	204,149
Mangla	0.01	—	6	—	0.05	7	580	3,886
Muzaffarabad	0.1	—	10	—	0.63	1,173	(—)	(—)
PTV Karachi Centre					24.35	76,124	852,945	5,714,732
Karachi	20	10	7	4	7.82	10,360	650,800	4,360,360
Thanabulakhan	10	—	9	—	2.38	6,250	71,070	476,169
Shikarpur	10	—	8	—	5.19	19,700	67,975	455,433
Nurpur	10	10	5	10	3.74	19,700	27,180	182,106
Tando Allah Yar	20	20	11	6	5.22	20,114	35,920	240,664
PTV Quetta Centre					1.35	19,173	27,142	181,852
Quetta	0.5	—	8	—	0.51	2,600	18,860	126,362
Kohlu	—	0.03	—	5	0.03	2,500	110	737
Lak Pass	1	1	4	11	0.34	3,367	665	4,456
Khuzdar	—	0.1	—	11	0.04	1,000	922	6,177
Sibi	0.5	0.5	6	10	0.19	3,239	3,130	20,971
Loralai	0.1	—	5	—	0.02	1,000	(—)	(—)
Ghazaband	1	—	5	—	0.12	2,820	110	737
Kalat	0.1	0.01	9	7	0.04	2,547	2,900	19,430
Gwadar	—	0.03	—	5	0.06	100	445	2,982
PTV Peshawar Centre					7.88	23,030	68,315	457,711
Peshawar (Landikotar)	—	—	—	—	0.06	90	47,100	315,570
Cherat	10	10	10	5	5.71	14,500	16,795	112,527
Razmak	0.025	—	6	—	0.36	4,600	3,650	24,455
Mingora	1	—	7	—	0.19	7	110	737
Morasar	0.05	—	6	—	1.02	170	110	737
Parachinar	1.0	—	10	—	0.34	3,380	(—)	(—)
Chitral	0.05	—	9	—	0.04	18	110	737
Gulibagh	0.1	—	9	—	0.02	5	110	737
But Khela	0.01	—	9	—	0.01	30	110	737
Skurdu	—	0.03	—	5	0.06	50	110	737
Gilgit	0.1	0.1	5	7	0.07	180	110	737
Total	—	—	—	—	109.08	317,746	2,463,107	16,502,820
Total 6 Production Centres and 36 Rebroadcast Stations					For Total Population	For Total Area		
					GTV : 88.1%	38.8%		
					ETV : 56.5%	23.6%		
Note *1) Based on 1981 Population Census Report plus 3% rate per annum up to 1994.								
*2) Estimated at a rate of 6.7 persons per family.								

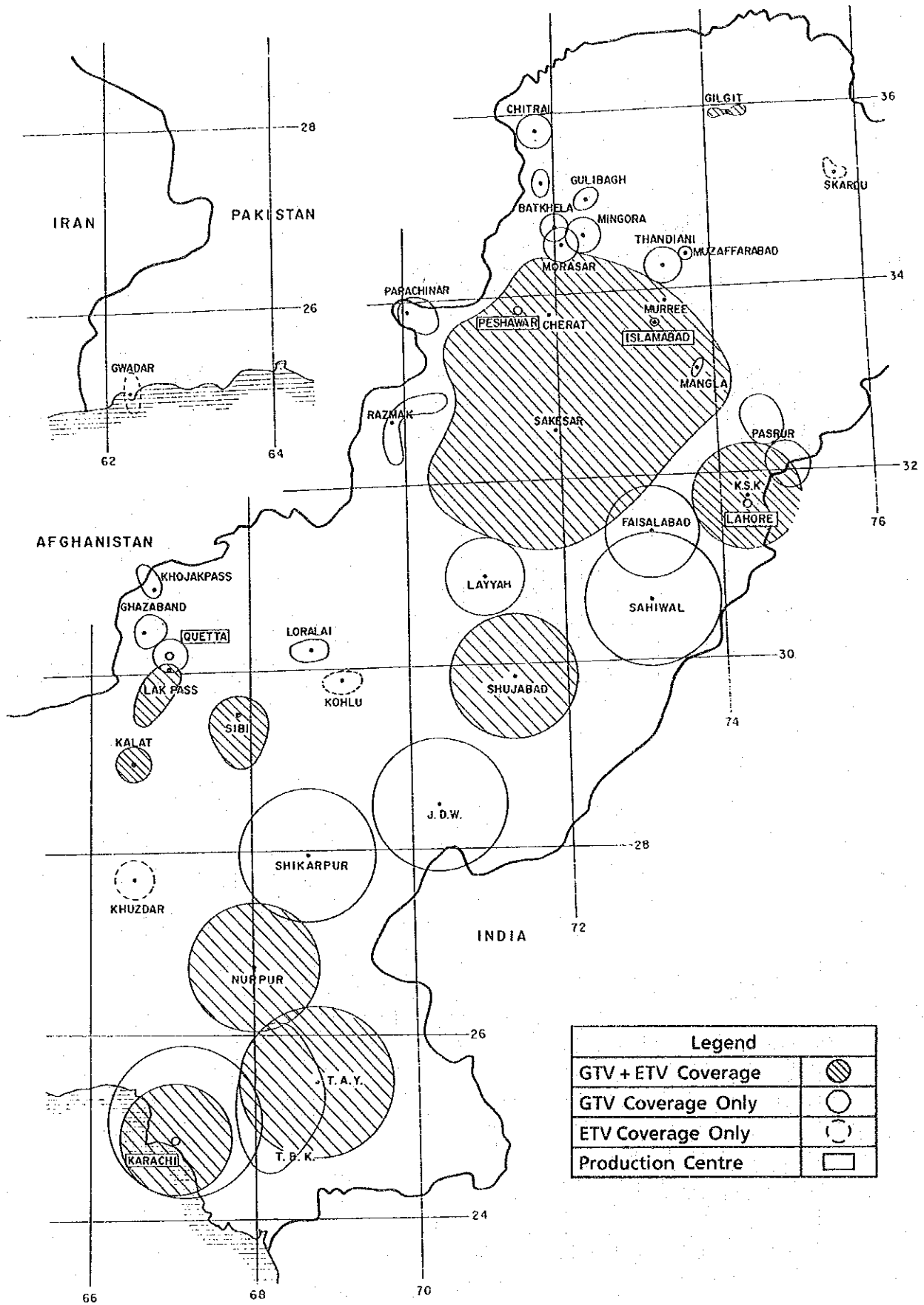


Fig. 1-7-1 Coverage Map of PTV Rebroadcast Stations (June 1994)

## 1-7-2 Operation of PTV

### (1) Management

PTV is run as a public corporation with an authorized capital of 2,000 million Rupees and a paid-up capital of 690 million Rupees. All its shares are held by the Government of Pakistan. The Corporation's Board of Directors is comprised of 14 members, namely Managing Director, Deputy Managing Directors and other Directors responsible for each division.

The total number of corporation employees is 5,208 (as of April 1994).

PTV's Headquarters in Islamabad has ten Divisions: Programmes, Finance, Administration & Personnel, Engineering, International Relations, Current Affairs, Sports, Educational Television, News and PTV Academy. Each Division is headed by a Director who advises the Managing Director on formulation of policies and day-to-day implementation.

### (2) Programming

As a sole general nationwide TV network, GTV has a great responsibility to provide an ideal blend of various programmes: Drama & movies (36% of total programmes broadcasted in the timetable during July - September 1994), information programmes (26%), news (12%), sports (10%), etc. Among total programmes broadcasted during July - September 1994, GTV produced about 78% of indigenous programmes including rebroadcasting. On the other hand, 22% (including rebroadcasting) are purchased programmes. PTV aims at the establishment of a more innovative and effective programme production system in order to join the era of multi-media with such services as a commercial TV station (STN) and direct telecast satellite programmes via AsiaSat.

### (3) News

GTV news has been the most important source of information since the inception of PTV service in 1964. The Urdu (national language) news, English news and Arabic news are produced in the news bureau and transmitted on the national network. The news bureau is supported by

four news sections at Lahore, Peshawar, Quetta and Karachi which also produce bulletins in the regional languages.

Regular news is telecast 8 times for a total of 85 minutes on weekdays and 7 times (total of 75 minutes) on Friday.

PTV's international news is fed from VISNEWS and ASIAVISION by daily satellite feeds.

#### (4) Current Affairs

Varied programmes are produced on national and international current affairs themes. The total weekly programme duration of current affairs programmes is 175 minutes (25 minutes daily) on average.

Short documentaries depicting national development, and projecting the priorities and policies of the government in rural areas, are quite popular. Special reports on national events, press conferences and engagements of visiting dignitaries, statesmen and scholars are also televised.

#### (5) Sports

GTV sports is one of the most popular programme segments. It provides wholesome entertainment to all audiences.

GTV sports coverage of national and international events has gone a long way in popularizing various sports in Pakistan. All major national and international events are telecast either live or recorded.

Over the years GTV sports has added the transmission of regular coverage of international sports events - the Asian Games, the Olympics, World Hockey, World Cup Football, World Championship of Cricket, etc.

GTV sports programmes are televised weekly, normally on Friday morning and afternoon with a time frame of more than two hours respectively.



#### (6) International Relations

PTV has a close relationship with a lot of international television networks and news agencies. Many international production and news teams conduct news gathering activities in Pakistan. PTV has also participated in major international festivals and conferences by sending delegates and programmes.

Television networks in European countries, China, the USA, Japan, Canada and some African countries have bought PTV programmes for their local consumption. To meet the demand for GTV programmes at home and abroad, PTV has made arrangements with a recording company to produce and market its programmes on VHS cassettes.

#### (7) Educational Television

Responding to the compelling need of the country to promote literacy education and the objectives of the national education policy, PTV had set up an ETV Division as one of the PTV Divisions before the commencement of the 2nd channel for education, and continued to produce/telecast programmes covering adult functional literacy and school/college education. PTV once broadcasted programmes of Allama Iqbal Open University on its GTV network but has telecasted them on its ETV network since establishment of the ETV channel. The present status of ETV will be described in detail in Section 1-8.

### 1-7-3 PTV's Organization and Number of Staff

#### (1) PTV's Organization

Figure 1-7-2 shows PTV's organization chart (as of June 1994).

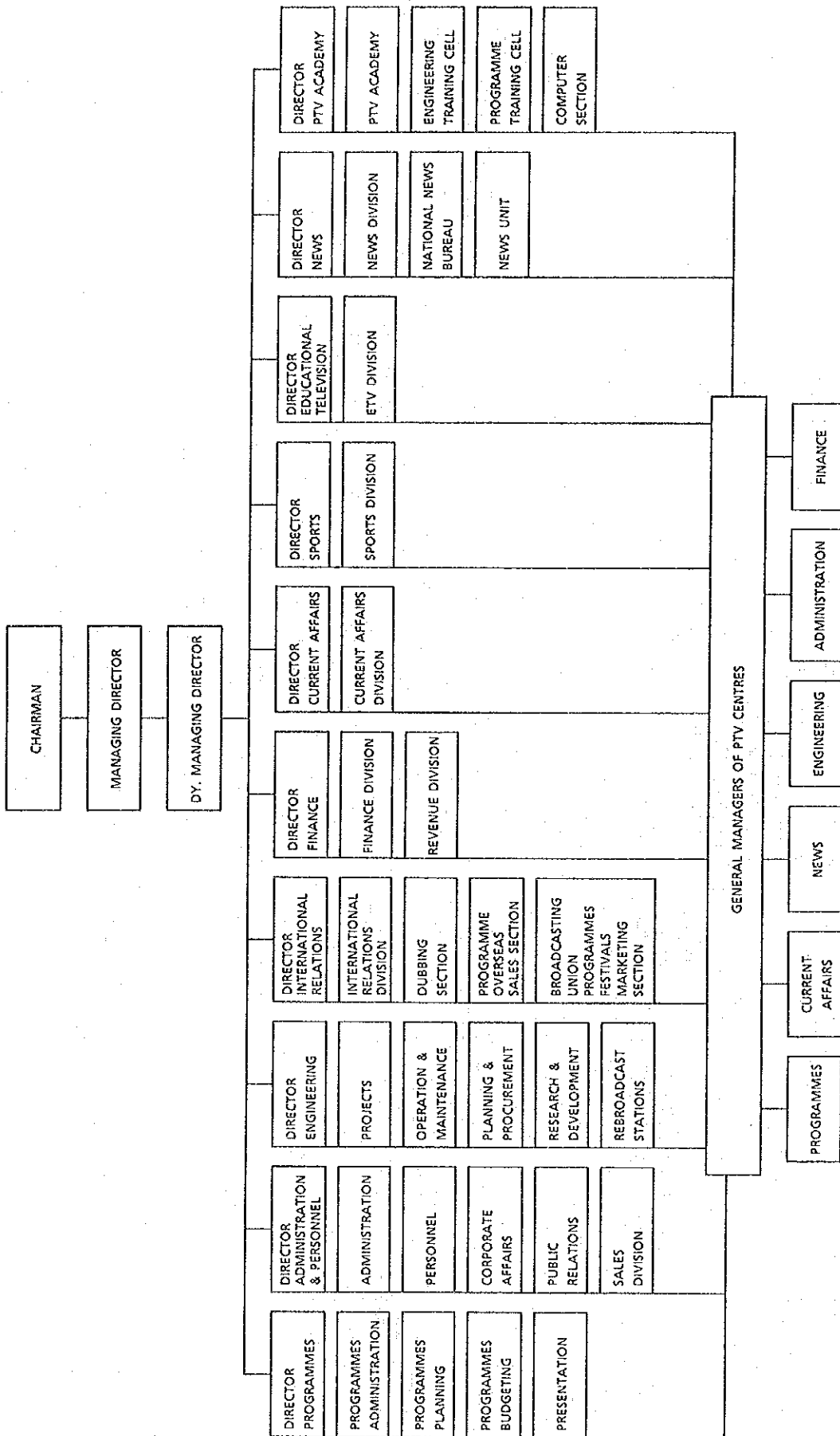


Fig. 1-7-2 Organization Chart (as of June 1994)

(2) Number of PTV Staff

Table 1-7-4 shows the sanctioned staff number per division (total 5,901 as of June 1994). Compared to the sanctioned staff number, the actual staff number is 5,208 (as of April 1994).

Table 1-7-4 Divisionwise Sanctioned Staff Number

	Staff Number of Each Centre and RBS										Islamabad Headquarters
	Karachi	Lahore	Islamabad	Peshawar	Quetta	C.S.O.	RBSS.	ETV			
ETV	—	9	—	—	—	—	—	—	—	—	34
Current	14	15	29	6	5	—	—	—	—	—	855
Administration & personnel	181	172	163	155	150	41	418	74	—	—	195
Finance	29	42	22	21	22	45	—	27	—	—	56
News	53	38	143	37	22	—	—	—	—	—	13
Camera Facilities	62	56	55	38	31	—	—	13	—	—	9
Engineering	239	234	201	171	178	—	235	42	—	—	17
Programmes	244	214	158	143	139	—	—	97	—	—	23
Sales	—	24	8	5	4	67	—	—	—	—	108
Total	822	804	779	576	551	153	653	253	—	—	1,310
Grand Total	Sanctioned Staff 5,901 (Actual Staff 5,208)										

## 1-8 Present Status of ETV Channel

### 1-8-1 The Project for the Establishment of the Second TV Channel for Education (Master Plan)

The outline of the Master Plan which was formulated by the JICA Feasibility Study Team in 1989 is as follows.

The entire 5-year project period has been divided into the initial two years and the later three years. Fiscal 1989-90 would be the Project's first year, and the Project would be implemented during the Seventh and Eighth National Development Plans of Pakistan.

The daily broadcasting target on completion of this Project was set at 10 hours, which would consist of a one-hour educational programme from the Allama Iqbal Open University (AIOU), 6 hours of educational programmes produced at the Islamabad ETV Centre together with 4 provincial ETV Centres. (Karachi, Lahore, Quetta and Peshawar), 1.5 hours of purchased foreign programmes and 1.5 hours of GTV rebroadcast programmes.

At the end of the initial 2 years of the Project, a total of eight hours a day of ETV programming was envisaged, comprising one hour of AIOU programmes, 2 hours of programmes by the Islamabad ETV Centre, one hour of imported programmes and 4 hours of GTV rebroadcast programmes.

In the production of ETV programmes, EFP (Electronic Field Production) equipment would be made full use of.

As regards the population coverage of ETV broadcasting, the targets were 86% at the end of the 5-year project and 56.5% upon completion of the Initial Two Year Plan.

Regarding the programmes to be broadcast on ETV, it was proposed that a broadcasting system wherein the same picture with four different regional languages is simultaneously transmitted should be adopted, in view of the fact that the objective of ETV lay in mass education of people on the grassroots level, with the aim of overcoming the difficulty of being a multi-language nation. When this system was put into operation, each of the terrestrial transmitting stations would select, from the four languages transmitted, the language that suits the local audience, and retransmit the programme.

An ETV Centre building with a total floor space of 2,600m<sup>2</sup> would be constructed at the H-9 site in Islamabad city which is adjacent to

the existing PTV Academy during the initial two years. An administrative building would also be constructed at the inner part of the site by PTV. During the later three years of the Project, an ETV Centre building containing a TV studio for ETV production would be constructed at both Karachi and Lahore, while at Quetta and Peshawar, modification would be planned for the existing buildings to install production equipment.

Programme transmission from the Islamabad ETV Centre to the rebroadcast stations under the Project was to be conducted by satellite, in place of the terrestrial microwave link.

As to the terrestrial ETV rebroadcast stations and their transmission scale (the transmitter output power and its coverage), the planning principles were that they should be constructed on the same site and scale as the existing GTV rebroadcast stations.

A total of 16 stations would be installed during the Initial Two Year Plan, and the remaining 28 stations would be included in the Later Three Year Plan.

As to the overall operational plans of ETV, while the organization of the ETV channel was closely related with the existing PTV, ETV was anticipated to become an independent operational body after the completion of the Project due to the fact that ETV was going to be a non-commercial medium planned in line with Pakistan's national policy to enhance the living standards of the general public, many of whom are living in remote areas, on the grassroots level. This, in turn, means that the ETV channel is going to be an operational body depending on a government subsidy for the greater part of its revenue. However, this form of organization of ETV was, of course, subject to final government approval after the completion of ETV, before the new ETV channel eventually takes the form envisaged by PTV.

As to the required number of staff members, it has been estimated at 1,353 by the time the 5-year plan has reached completion. The breakdown is as follows: Islamabad (625), Lahore (153), Karachi (153), Quetta (111) and Peshawar (111), at their respective ETV Centres. Added to these are 200 people to be assigned to the rebroadcast stations so the total would be 1,353 as mentioned above. In 1992, at the time the Initial Two Year Plan would be completed, a staff of 700 would be required. This comprised 625 at the Islamabad ETV Centre plus 75 assigned to 16 regional rebroadcast stations.

## 1-8-2 Present Status of ETV Administration

### (1) Organization and administration of ETV

In the Master Plan, it was envisioned that ETV would be an independent body from PTV in the future. However, it will require more staff and facilities to run an independent operation, and accordingly more financial arrangements will be necessary.

Thus, the Ministry of Information and Broadcasting intends to position ETV as one of PTV's divisions with a view to a rational operation of TV media in the future.

Namely, PTV will operate both the current general television service as the first channel (GTV) and educational television as the second channel (ETV).

In actual fact, in the financial management during the initial two years, PTV has compensated for the deficit of ETV with the surplus of GTV, and furthermore, the operation of rebroadcast stations is being run by GTV and ETV together, so it is actually difficult to be independent of each other.

However, as can be seen in the budget allocations, and the balance sheets of PTV (attached in Appendices 5.2~5.6), PTV clearly separates the financial treatment of its viable projects and non-viable projects as the PTV limited corporation on the one hand and as a public organization responding to the requirements of the government on the other hand. ETV is a non-viable project and therefore its balance is cleared apart from GTV.

The expenditure for ETV programme production is paid directly from the national treasury according to the consent of the related ministries and/or user agencies based on the programme goal and its education targets.

In both the 1992-93 and 1993-94 fiscal years, an amount of 150 million Rupees was allocated for ETV programme production. But as described below, due to the lack of sufficient production staff, ETV could not produce enough programmes and the actual income was 82 million Rupees in 1992-93 (55% of 150 mRs) and 42 million Rupees in 1993-1994 (28% of 150 mRs).

The 55% in 1992-93 was achieved by more new programmes including pre-produced programmes from March 1992 when the ETV Centre was completed up to the inauguration date on November 26th, 1992, but in

the next year, due to no stock programmes, the lack of staff was directly reflected in the lower income (28%).

Produced programmes and the user ministries/agencies in 1992-93 with the respective incomes are shown in Appendix 5.7.

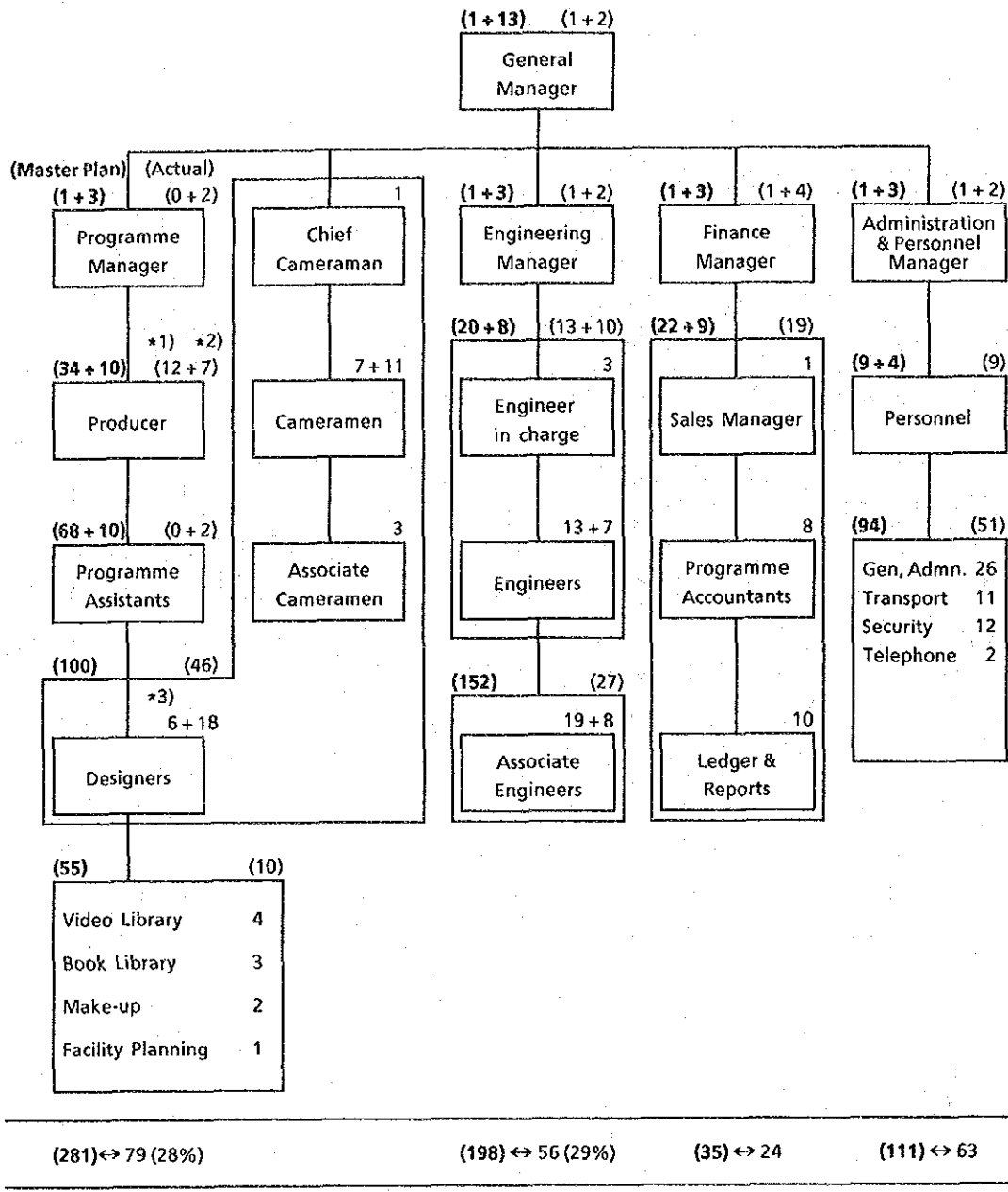
The total revenue balance of PTV in 1992-93 showed a 3.2 million Rupees surplus, but in 1993-94 the balance showed a 96.7 million Rupees deficit.

This reveals that PTV's management circumstances are becoming strained so it will be difficult to cope with the advent of commercial TV stations and satellite broadcasts and therefore re-inforcement of ETV programme production is urgently required.

Among the expenditure items of ETV, the actual figures of "Operation and Maintenance" in 1992-93 and in 1993-94 were 76.5 million Rupees and 100 million Rupees respectively, which are almost half (48%, 53%) of total expenditure. This is because ETV is paying annually 1.2~1.4 million U.S. dollars for the leasing fee of an AsiaSat transponder and in addition has to pay the same amount of Rupees as a domestic tax.

## (2) Staff Assignment

Figure 1-8-1 shows the organization chart of ETV Centre and the actual present staff number in comparison with the scheduled number according to the Master Plan.



- Note
- \*1) Among 12 producers, 4 are working in Regional Centres (3: Lahore, 1: Karachi). Hence, current producers in the Islamabad area number only 8.
  - \*2) Among 7 supporters, 3 are in Lahore.
  - \*3) Among 6 designers, one is in Lahore.

Fig. 1-8-1 Islamabad ETV Centre's Organization Chart and Staff Number (as of July 1st, 1994)



Against the planned staff number directly related to programme production in the Master Plan, the actual staff numbers of programme and engineering sections are only 28% and 29% respectively.

### (3) Programme Production

Since its inauguration, ETV has produced a total of 838 programmes (18,220 minutes) as shown in Table 1-8-1. Dividing by studio workdays for the 1.5 years, (365 days - 52 holidays)  $\times$  1.5 years = 469.5 days, produced programme time per day was 38.8 minutes/day ( $\approx 18,220 \div 469.5$ ) on an average.

The production capability in the Master Plan was figured as below.

Islamabad ETV Centre Studio A	40 min.
Islamabad ETV Centre Studio B	50 min. (25 min. $\times$ 2)
ETP production	30 min.
<hr/>	
Total 120 min. (2 hours)	

The actual result was 32% of the planned target.

However, notwithstanding the shortage of production staff caused by the ban on new recruitment, the present 8 producers from GTV have been producing about 40 minutes of programmes a day. The efforts of each producer can be evaluated highly.

As can be seen from Table 1-8-1, ETV has produced and telecast various educational programmes for its target audience, thus ETV has been contributing greatly to the nation's development.

Educational programmes of AIOU have also been telecast on the ETV channel.

Table 1-8-1 ETV Produced Programmes

No.	Programmes	User Ministries/ Agencies	Series No. and Duration
1.	Bismillah	Education	365 progs. x 10'
2.	Hamara Qaeda I .	Education	52 progs. x 30'
3.	Hamara Qaeda II .	Education	26 progs. x 30'
4.	Easy Mathematics I .	Education	26 progs. x 30'
5.	Easy Mathematics II .	Education	13 progs. x 30'
6.	Wonders of Physics	Education	13 progs. x 30'
7.	Completion for Culture, History (Quiz Programme for Youth)	Education	12 progs. x 30'
8.	Child Care Guidance for Young Mothers	Health	13 progs. x 30'
9.	Self Employment. New Ways to Earn Money	Labour & Manpower	13 progs. x 30'
10.	Computers	Education	12 progs. x 30'
11.	Parental Guidance for Preschool Education	Education	13 progs. x 30'
12.	Our Agriculture	Agriculture	13 progs. x 30'
13.	Family Programme	Pop. Welfare	11 progs. x 30'
14.	Cancer	Health	6 progs. x 30'
15.	Our Companion (Our Friends)		42 progs. x 30'
16.	Health Programme, First Aid	Health	19 progs. x 30'
17.	Agriculture Programme	Agriculture	18 progs. x 30'
18.	Prevention Better than Cure	Health	13 progs. x 30'
19.	Basic Scientific Education for General Public	Education	15 progs. x 30'
20.	How to Store Chemical Goods in Home	Women Dev.	13 progs. x 30'
21.	Next Step (about population problem, welfare)	Pop. Welfare	6 progs. x 30'
22.	Sports Show	Education	19 progs. x 50'
23.	Leather Industry of Pakistan	Industry	6 progs. x 30'
24.	Skilled Man (Vocational Programme)	Labour & Manpower	10 progs. x 30'
25.	Step by Step (for women)	Women Dev.	13 progs. x 30'
26.	My Book (for Adult Education)	Education	26 progs. x 30'
27.	Animal & Our Economic Livestock Programme	Agriculture	14 progs. x 30'
28.	General Science Programme	Education	6 progs. x 30'
29.	ETV Quiz	Education	13 progs. x 30'
30.	Sammar School (Fruit Education)	Education	7 progs. x 30'
31.	Population & Progress, Development	Pop. Welfare	10 progs. x 30'
Total			838 progs. 18,220min.

(4) ETV Rebroadcast Station

By the use of AsiaSat's satellite transmission, ETV programmes can be transmitted to every corner of the country, even to far remote areas which the terrestrial microwave line cannot reach. It has become possible to construct ETV rebroadcast stations prior to GTV stations which depend on terrestrial microwave transmission, and therefore the four ETV rebroadcast stations at Skardu, Khuzdar, Kohlu and Gwadar, where there were no GTV stations, have been constructed in the Initial Two Year Plan.

Table 1-8-2 shows operation parameters of 16 ETV rebroadcast stations constructed under the Initial Two Year Plan.

**Table 1-8-2 Operation Parameters of ETV Rebroadcast Stations in Initial Two Year Plan**

RBS	Output (kW)	Channel	Population Coverage in Master Plan (million)	Area Coverage (km <sup>2</sup> )
Karachi	10	4	7.82	10,360
Sakesar	30 (UHF)	23	12.97	43,000
Murree	30 (UHF)	21	14.35	43,000
Kala Shah Kaku	30 (UHF)	25	11.08	10,780
Cherat	10	5	5.71	14,500
Sujabad	10	5	8.54	14,000
Nurpur	10	10	3.74	19,700
Tando Allahyar	20	6	5.22	20,114
Lakpass	1	11	0.34	3,367
Sibi	0.5	10	0.19	3,239
Kalat	0.1	7	0.04	2,547
Gilgit	0.1	7	0.07	180
Kohlu	0.03	5	0.03	2,500
Khuzdar	0.1	11	0.04	1,000
Gwadar	0.03	5	0.06	100
Skardu	0.03	5	0.06	50
Total			70.26	188,437
Coverage Ratio			56.5%	23.6%

The service areas of the above ETV rebroadcast stations are basically all electrified because the original design had been made to cover already electrified and comparatively densely inhabited areas.

Concerning electrification in Pakistan, about 80% of villages have been already electrified except for in NWFP. Five thousand to six thousand households per year are going to be electrified mainly in the NWFP area, according to a WAPDA report, and electrification of main areas will be achieved within several years.

A problem being faced is that due to power demands far exceeding the available power generation capacity, there are frequent load sheddings in peak demand times in NWFP which depends on hydro power, thus TV viewing is often hindered in the region.

As Sind, Baluchistan and Punjab provinces depend on thermal power (some of which is nuclear power) and the supply of power is more stable, only occasional power interruptions occur due to mal-distribution in the network or at peak demand periods.

Since the ETV coverage is 56.5% of the total population, people living out of the service areas strongly desire installation of ETV transmitters in their districts, and have sent a number of request letters to ETV.

#### (5) Operation and Maintenance of Islamabad ETV Centre.

##### 1) Operation of the production facilities

The programme production facilities in the ETV Centre are being used as follows (as of July, 1994).

Among the two TV studios (A and B), only studio A is being used daily (6 days a week except for Friday) from 9:00 to 17:00 and is allocated for recording a 30-minute programme.

As to the VTR editing rooms, one room is used for complete programme packaging and the other is used for editing of programmes from 9:00 to 17:00 daily (6 days a week).

The post-production room is used for production of two programmes from 9:00 to 13:00 and 14:00 to 17:00 daily (6 days a week).

On an average, 38.8 minutes of programmes are produced daily, which means 32% production as opposed to the 120 minutes in the Master Plan.

2) Maintenance of the equipment and the facilities.

a) Islamabad ETV Centre's Building

Construction of the building was completed in September of 1991, and operations were officially started from November, 1992. Almost two years have passed since its completion, and the maintenance of the building has been fairly good. There are no problems in the function of water supply and drainage facilities nor in the appearance.

While almost all the rooms of the ETV Centre are being used as planned in the Master Plan, the administrative building which was to be constructed by PTV next to the ETV Centre building on the same premises has not yet been completed, which affects the ETV Centre. The general manager's office and programming meeting room which were planned to be accommodated in the administrative building, are now located in the Centre, thus the rehearsal room is occupied by those rooms and actual rehearsal is now conducted in Studio B.

b) Maintenance of the production equipment

The broadcasting equipment of Studio A, Studio B, the post-production room, two VTR editing rooms, and the 3 sets of EFP's and the master control room are all well maintained.

In order to prepare spare parts including consumables such as studio lighting bulbs, VTR head tips, etc., inventory sheets for all spare parts are made. The sheets show records of the parts consumed and newly purchased, and how many parts are now in stock. When some of them become in short supply, purchase of replacements is conducted by submitting an order sheet.

In the maintenance room, the contents of each item of repair work are recorded and kept on the maintenance sheet.

### 1-8-3 Achievement of Initial Two Year Plan in Master Plan

#### (1) Programme Contents and Compilation

Programmes produced by ETV so far are all in line with the national development policy promoted by the Government of Pakistan as mentioned before, and are considered to be bringing about some desired effects.

The problem, however, is in the fact that because of the shortage of production capability, ETV has not been able to attain the initial target in terms of its planned programme compilation.

In the Master Plan, the on-air-time of the second year was to be 9:00 to 12:00 and 17:00 to 23:00, but the current transmission time is 13:00 to 19:00, and after 19:00 is followed by GTV transmission via satellite, because of the following reasons.

- 1) The most preferable timing of educational programmes for women, farmers and students is considered to be around 16:00~19:00, and the main ETV self-produced programmes and AIOU programmes are broadcasted in this time zone accordingly.
- 2) There exists a strong demand for GTV news and entertainment programmes transmitted at night via satellite among viewers living outside of the country and also among people living in far remote areas which are only covered by ETV transmitters. (PTV is now proceeding with the two-channel operation of both GTV and ETV transmitters for each rebroadcast station, so it is in a transition period at present.)

Almost all programmes produced by ETV at present are so-called non-formal education programmes for viewers at home, so in order to raise the viewership and to be accepted among the masses, much more attractive and varied programmes should be produced and telecast, but this has not been achieved yet.

After only one and a half years of operation, it may be quite difficult to measure the effects of educational telecasts, but the literacy rate and population control in Pakistan are improving as

shown in tables 1-8-3 and 1-8-4 that follow (extracted from the Economic Survey Report) and it is believed that ETV programmes have contributed to the improvement to some extent.

**Table 1-8-3 Improvement of Literacy**

Year	Total	Rural	Urban	Remarks
Literacy Rate in 1981	26.2%	17.3%	47.1%	
Literacy Rate in 1992	34.0%	—	—	
Literacy Rate in 1993	35.0%	—	—	(After one year of ETV transmission)
Literacy Rate in 1994	36.8%	27.5%	57.0%	(After one and a half years of ETV transmission)

93/94 Economic Survey Report

From this table, the literacy rate of 34.0% in 1992 has been improved by 2.8 points up to 36.8% as of 1994.

ETV is telecasting a series of basic Urdu literacy programmes (30 min.) from 17:00, followed by basic arithmetic educational programmes to 17:55 daily (7 days a week). Although there is no statistical data on the actual viewership among illiterate people, about one thousand letters from such people saying that they have become able to read and write the Urdu language have been sent to ETV.

**Table 1-8-4 Infant Mortality Rate and Compound Population Growth Rate**

Year	Total estimated population (million)	Infant mortality rate (per 1,000)	Compound population growth rate
1992	117.32	97	3.1%
1993	120.84	—	3.0%
1994 (Jan. 1st)	124.45	86	2.98%

93/94 Economic Survey Report

ETV telecasts a 30-minute drama series (Agla Qadam = Next Step) on the themes of family planning and welfare which was produced entirely in rural locales using EFP. The drama series was planned on the problem of population growth and its impact on society, resources and the economy, and was well received.

ETV has telecast a series of 13 programmes aiming at advising young mothers on how to care for their babies from birth to one year of age.

Thus, it can be said that although only 1.5 years have passed since its inauguration, the respective ETV programmes have steadily given certain benefits. However, as described before, ETV's self-produced programmes remain less than 40 minutes of production per day so far as opposed to the planned production target of two hours in the first year of the Initial Two Year Plan. Especially, with the current level of only 6 hours of daily ETV broadcasts from 13:00 to 19:00, the general impact of ETV cannot be so significant, and regrettably the initial target in terms of programme production and compilation has not been achieved yet.

## (2) Operation of Post-production Room

Although the post-production room of ETV Centre has the function of audio dubbing from foreign languages into Urdu for imported programmes as well as the dubbing of four regional languages (Punjabi, Sindhi, Baluchi and Pashto) for basic educational programmes such as literacy, health care, hygiene, etc., these audio dubbing operations have not been conducted yet.

This was because of the shortage of production staff, but ETV will utilize those audio dubbing functions as soon as possible with an increase of the staff.

The four-language production and transmission will be implemented steadily and be fixed in ETV's daily operations after new staff recruitment in the very near future.



## **Chapter 2 Outline of the Project**



## Chapter 2 Outline of the Project

### 2-1 Objectives of the Project

This Project was requested to achieve the below-mentioned targets such as improvement of literacy, improvement of women's status, etc., projected in the 8th Five Year National Development Plan.

- (1) Improvement of literacy
- (2) Expansion and improvement of school attendance in primary and middle-level education
- (3) Improvement of the status of women
- (4) Dissemination of knowledge on health, hygiene, and family planning
- (5) Vocational education for farming, industry, and fishing
- (6) Re-education of teachers
- (7) Dissemination of the latest technical and scientific information

Six among the 15 rebroadcast stations to be installed under this Project will be in North-West Frontier Province in which there is a lack of educational opportunities and information for practical living.

The following people in particular will benefit from this Project:

- Illiterate persons
- Women
- Children and students
- Farmers and self-employed persons
- Primary and middle school teachers
- Young working people

## 2-2 Study and Examination of the Request

### 2-2-1 Scope of Cooperation

The Government of Pakistan wishes to fully implement the terms of the Later Three Year Plan of the Master Plan. The Basic Design Study Team surveyed only 15 of the 28 planned rebroadcast station sites. Thirteen of the sites could not be surveyed for security reasons.

Therefore, the basic design is made only for the 15 rebroadcast stations whose sites were surveyed.

The basic design of programme production facilities and equipment is not included in this study, because the Islamabad ETV Centre has not reached the target set in the Initial Two Year Plan at present due to the shortage of production staff caused by a ban on new recruitment.

Thirteen rebroadcast stations are yet to be installed, meaning some regions in Baluchistan, Sind and elsewhere are unable to receive the ETV service.

There is a need for production facilities and equipment in Lahore, Karachi, Quetta, and Peshawar to enable production of programmes for regional areas, providing people with useful information on the regions and furthering mutual understanding among the citizens of Pakistan.

Programme production initially planned for the ETV service was unable to be implemented because of a restriction on the employment of staff. PTV is quickly moving to procure staff since the restriction was lifted on July 1st, 1994. The Islamabad ETV Centre may become fully operational in due course.

ETV is planning to offer programmes such as experimental school and literacy class broadcasts, as well as imported programmes dubbed into Urdu, for which an on-air timetable is shown in Appendix 5.8, after the Islamabad ETV Centre is fully utilizing its production capacities.

The installation of 15 rebroadcast stations in this Plan would expand the ETV service in North-West Frontier Province, Punjab, etc., and increase coverage to 75% of the population (about 93 million) from the current coverage of 56.5% (about 70 million). Twenty-three million people will be newly able to obtain information closely

related to their daily lives such as literacy education, health, sanitation, child care, agriculture, etc.

ETV is currently operating the 16 rebroadcast stations installed under the Initial Two Year Plan. ETV should have no problem in maintaining and operating the new rebroadcast stations considering the fact that 16 stations are operating quite well.

The Basic Design Study Team considered the Project worthy of being implemented with grant aid cooperation from Japan. It confirmed the benefits, practicality, and ability of Pakistan to implement the Project, as well as the appropriateness of the Project to meet the criteria of Japan's grant aid cooperation scheme. In the following, consideration of the project outline and implementation of the Basic Design Study shall be made under the condition that grant aid will be allotted to the Project from the Government of Japan. However, the scope of the Project shall be limited to providing the equipment for 15 rebroadcast stations and a satellite reception and communications system.

#### 2-2-2 Study and Examination of the Request

Provision of the equipment for the following thirteen rebroadcast stations and the programme production facilities and equipment requested by the Government of Pakistan are not included in this Project for the reasons cited above.

- ① Facilities
  - ETV studio building in Karachi
  
- ② Equipment
  - Thirteen rebroadcast stations
  - Studio equipment in Karachi and Lahore
  - Outdoor programme production equipment in Karachi, Lahore, Peshawar, and Quetta.

Provision of the equipment for fifteen rebroadcast stations and a satellite reception and communications system are considered the minimum necessary to attain the objectives of the Project.

(1) Rebroadcast Stations

The following guidelines have been set after consultation with PTV as to the output and frequencies at the rebroadcast stations.

- PTV shall continue to increase the number of rebroadcast stations with the goal of attaining nationwide coverage for the GTV and ETV channels. The ETV coverage area shall be made as similar as possible to that of the GTV service by providing similar transmitting conditions.
- VHF band shall be allocated where possible.
- ETV and GTV shall be on the same frequency band (VHF or UHF) where possible.
- In the event ETV and GTV are on the same frequency band, both channels shall have the same transmitting output.
- In the event ETV and GTV are on different frequency bands, the aim shall be to provide for a UHF antenna gain about twice that of VHF antenna gain and a UHF transmitter output three times higher than VHF transmitter output.

On the basis of the above-stated principles, GTV stations already in operation shall be evaluated with respect to the suitability of their coverage areas and transmitting output, and the ETV transmitting output shall be in line with the GTV channel.

The following describes the minimum required output for each new rebroadcast station to enable ETV to reach its target coverage areas.

1) Mingora Rebroadcast Station: 1 kW, channel 11

It is possible for ETV to allocate channel 11. GTV is transmitted on channel 7 at 1 kW. A transmitter for channel 11 at 1 kW output is required.

2) Gulibagh Rebroadcast Station: 100W, channel 12

It is possible for ETV to allocate channel 12. GTV is transmitted on channel 9 at 100W. A transmitter for channel 12 at 100W output is required.

3) LAYYAH REBROADCAST STATION: 1 kW, channel 9

It is possible for ETV to allocate channel 9. GTV is transmitted on channel 12 at 1 kW output. A transmitter for channel 9 at 1 kW output is required.

4) QUETTA TRANSMITTER: 500W, channel 10

It is possible for ETV to allocate channel 10. GTV is transmitted on channel 8 at 500W. A transmitter for channel 10 at 500W is required.

5) MORASAR REBROADCAST STATION: 50W, channel 8

It is possible for ETV to allocate channel 8. GTV is transmitted on channel 6 at 50W. A transmitter for channel 8 at 50W output is required. GTV is currently leasing part of the PTC tower and building. However, a new building and tower are being constructed on a neighbouring site. The ETV transmitting facilities will be established on the new site.

6) CHITRAL REBROADCAST STATION: 50W, channel 7

It is possible for ETV to allocate channel 7. GTV is transmitted on channel 9 at 50W. A transmitter for channel 7 at 50W output is required.

7) DIR REBROADCAST STATION: 100W, channel 12

It is possible for ETV to allocate channel 12. Study of the coverage area found a transmitter output of 100W is required. ETV will precede the GTV service.

8) THANDIANI REBROADCAST STATION: 500W, channel 12

It is possible for ETV to allocate channel 12. GTV is transmitted on channel 6 at 500W. A transmitter for channel 12 at 500W output is required.

9) PASRUR REBROADCAST STATION: 3 kW, UHF

The Pasrur station is on the northern edge of the Punjab Plain near the border with India. Pasrur GTV is retransmitted on channel 10 from the Kalashahkaku GTV signal on channel 5. An Indian station is transmitting on channel 7 near the border.

There is no VHF channel available. Therefore, ETV must be allocated for the UHF band. A 3 kW output is required to enable ETV to reach Sialkot (a city with a population of 400,000), which is 30 kilometres from Pasrur. A UHF transmitter at 3 kW is needed.

Consequently, PTV is planning to replace the current GTV 500W transmitter (channel 10) with a 3 kW UHF transmitter.

10) Faisalabad Rebroadcast Station: 3 kW, UHF

GTV is transmitted on channel 6 at 1 kW output. It was hoped to transmit ETV on the VHF band at 1 kW output, but an on-location study revealed there is no VHF channel available. ETV must be shifted to the UHF band.

Since PTV in principle is to provide GTV and ETV on the same frequency band in a coverage area, it was decided to change over GTV to the UHF band. The current GTV VHF transmitter will be replaced with a 3 kW UHF transmitter by PTV. This changeover will allow ETV to use the VHF band at the Sahiwal rebroadcast station.

11) Sahiwal Rebroadcast Station: 10 kW, channel 6

Sahiwal is situated in the centre of the Punjab Plain. A study revealed there is no VHF channel available. GTV is transmitted on channel 10 with a 10 kW transmitter. In case of the allocation of a UHF Band for ETV, it requires a 30 kW transmitter. In addition it would be very difficult to install a UHF antenna to the existing tower due to the lack of available space. However, if GTV in the Faisalabad station changes its channel to the UHF band, ETV in Sahiwal will be able to allocate channel 6. ETV can make use of a 10 kW VHF transmitter and the existing VHF antenna.

12) Bahawalnagar Rebroadcast Station: 2 kW, channel 11

It is possible for ETV to allocate channel 11. A transmitter for channel 11 at 2 kW is required. Construction work is under way for GTV on channel 7 at 2 kW output.



13) Mailsi Rebroadcast Station: 1 kW, channel 9

It is possible for ETV to allocate channel 9. Study of the coverage area found a transmitter output of 1 kW is required. ETV will precede the GTV service.

14) Khewra (Haranpur) Rebroadcast Station: 1 kW, channel 11

It is possible for ETV to allocate channel 11. Study of the coverage area found a transmitter output of 1 kW is required. ETV will precede the GTV service. GTV will allocate channel 9.

15) Karachi Transmitter: 10 kW, channel 4

ETV is currently using an RCA-made transmitter provided for the GTV channel in 1977. It has been nearly 20 years since it was manufactured and frequent breakdowns occur. Records for the past year reveal 18 breakdowns causing a total of 451 minutes in suspended transmissions. The deterioration of the transmitter and the difficulty of obtaining spare parts (RCA no longer produces transmitters) make its repairing a time consuming process. Each breakdown takes an average of 25 minutes to repair.

The Karachi Station is situated in the nation's largest city. It is a key facility with a large audience. The existing transmitter should be replaced in the scope of this Project. (See Appendix 5.9 for the records of breakdowns).

Operation parameters of the 15 ETV rebroadcast stations to be constructed under this Project are shown in Table 2-2-1 below.

Table 2-2-1 Operation Parameters of ETV Rebroadcast Stations under this Project

RBS	Power Output (kW)	Channel No. (Ch)	Population Coverage (million)
Phase I			
Mingora	1	11	0.19
Layyah	1	9	0.09
Quetta	0.5	10	0.51
Karachi	10	4	( 7.82 )
Phase II			
Morasar	0.05	8	1.02
Chitral	0.05	7	0.04
Dir	0.1	12	0.06
Thandiani	0.5	12	0.19
Pasrur	3	UHF	4.38
Faisalabad	3	UHF	9.18
Sahiwal	10	6	6.86
Bahawalnagar	2	11	0.36
Mailsi	1	9	0.03
Khewra	1	11	0.59
Gulibagh	0.1	12	0.02
Total (except Karachi)			23.52
Coverage Ratio			18.9 %

(2) Satellite Reception and Communications System

1) Satellite Receiving Equipment

Satellite receiving equipment will be necessary to facilitate programme transmission from the Islamabad ETV Centre to the rebroadcast stations via AsiaSat. The receiving equipment will be required in 14 of the above rebroadcast stations with the exception of Karachi which has already been provided with such equipment in the Initial Two Year Plan.

2) Communications System via Satellite

The completion of this Project will mean a total of 30 rebroadcast stations, of which sixteen were provided in the Initial Two Year Plan, for the ETV service. Constant, close communications are required among the broadcasting centres and the rebroadcast stations. A communications system will be established making further use of the order-wire circuits in AsiaSat which are leased for programme transmission in order to make more effective use of the satellite.

## **2-3 Project Description**

### **2-3-1 Executing Agency and Operational Structure**

PTV operates ETV as a second channel, and aims to have all rebroadcast stations carry GTV and ETV. The Plan is to extend ETV to all areas which can be covered by GTV.

The organization and personnel of the ETV rebroadcast stations are inseparably linked to the GTV service. Each rebroadcast station currently providing GTV has 15 - 20 personnel. It is only necessary to include 2 additional staff members at each station to provide the ETV service.

A total of 30 new staff members will be required in the 15 new ETV rebroadcast stations. Given the results of the Initial Two Year Plan, acquisition of staff will not pose a problem. GTV engineers can provide on-the-job training to the new ETV staff.

### **2-3-2 Budget Plan**

The ETV service was commenced in November, 1992. A summary of revenues for ETV and GTV is listed in Table 2-3-1. In 1993-94, GTV had a total revenue of Rs 1,093 million and outlays of Rs 1,068 million, making for a profit of Rs 25 million. ETV revenues totaled Rs 53.7 million with outlays of Rs 188 million. Losses totaled Rs 134.3 million for ETV, which were partially compensated for by Rs. 25 million from the GTV profit, resulting in PTV having a deficit of Rs. 109 million. The 1994-95 budget shows that GTV will make a profit of Rs 42 million but ETV will have a deficit of the same amount, which makes both ends balance.

The approved budgets and balance sheets for 1992-93, 1993-94 and 1994-95 will be found in Appendices 5.2 - 5.6.

Table 2-3-1 Revenue and Expenditure of PTV

(Unit: 1,000Rs)

Item	1992-93 (Actual)			1993-94 (Provisional)			1994-95 (Budget)		
	GTV	ETV	Total	GTV	ETV	Total	GTV	ETV	Total
(Revenue)									
Advertising Income	709,500	20,268	729,768	762,077	2,152	764,229	990,000	60,000	1,050,000
TV Licence	233,932	0	233,932	254,632	0	254,632	270,000	0	270,000
VCR Licence	0	10,907	10,907	0	9,560	9,560	0	10,000	10,000
TBRSA Licence	6,098	0	6,098	10,623	0	10,623	5,000	0	5,000
Programme Sales (GTV)	7,538	0	7,538	4,735	0	4,735	10,000	0	10,000
Programme Production Fee (ETV)	0	82,545	82,545	0	41,995	41,995	0	180,000	180,000
Others	87,762	0	87,762	60,590	0	60,590	50,000	0	50,000
Sum of Revenue	1,044,830	113,720	1,158,550	1,092,657	53,707	1,146,364	1,325,000	250,000	1,575,000
(Expenditure)									
Programme Production & Acquisition	139,437	9,874	149,311	153,835	9,334	163,169	172,694	15,515	188,209
Operation & Maintenance	92,450	76,528	168,978	88,818	100,186	189,004	102,314	109,911	212,225
Salaries & Benefits	544,002	16,036	560,038	609,415	23,564	632,979	719,673	37,828	757,501
Office Expenses	58,794	2,399	61,193	58,419	4,161	62,580	67,830	4,895	72,725
Licence Fee Collection	12,103	558	12,661	16,015	697	16,712	18,214	1,220	19,434
Depreciation	102,180	52,819	154,999	118,120	49,634	167,754	120,853	44,392	165,245
Provision for Tax	4,827	569	5,396	5,160	269	5,429	—	—	—
Others (Contingency, etc.)	13,382	236	13,618	17,721	128	17,849	80,976	78,685	159,661
Sum of Expenditure	967,175	159,019	1,126,194	1,067,503	187,973	1,255,476	1,282,554	292,446	1,575,000
Balance (Total)	77,655	▲45,299	32,356	25,154	▲134,266	▲109,112	42,446	▲42,446	± 0

It can be seen from Table 2-3-1 that while commercial fees and VCR licence fees provide revenue for ETV, the major source of income is programme production fees. ETV programmes are, by nature, not supported by commercials and not profitable. Therefore to support the operation of ETV, programme production fees are provided by the Government of Pakistan. They fall in the item of "Television Service" within the Ministry of Finance's budget category of "Subsidies and Miscellaneous Expenses."

The schedule of the programme production fees is shown in Table 2-3-2.

Table 2-3-2 Tariff for ETV Programmes

Programme Duration	1991-92	1992-93	1993-94
Less than 10 min.	Rs 57,500	Rs 63,825	Rs 70,840
10~15 min.	Rs 73,750	Rs 81,863	Rs 90,962
15~20 min.	Rs 90,000	Rs 99,900	Rs 110,889
20~25 min.	Rs 106,250	Rs 117,938	Rs 130,911
25~30 min.	Rs 122,500	Rs 135,975	Rs 150,932
30~40 min.	Rs 155,000	Rs 172,050	Rs 190,945
40~50 min.	Rs 187,500	Rs 208,125	Rs 231,019
50~60 min.	Rs 220,000	Rs 244,200	Rs 271,062

The ETV programme production fees do not include costs associated with transmitting. PTV is considering a new price scheme which will include transmitting costs in addition to the ETV programme production fees. Broadcasting of repeated educational programmes is also necessary. An adjustment of fees to include costs linked to transmitting would improve ETV's revenues.

The Ministry of Finance appropriated Rs 150 million in both 1992-93 and 1993-94 for ETV programme production. But the small level of programme production by ETV meant only Rs 82.545 million and Rs 41.995 million respectively were actually disbursed. The Ministry of Finance has set aside Rs 180 million for programme production fees in 1994-95. ETV will be able to recruit new production staff and to produce as many programmes as the budget allows.

Since outlays in 1993-94 in the budget category "Subsidies and Miscellaneous Expenses" totalled Rs 14 billion, the Rs 180 million "Television Service" which goes to ETV makes up only a little more than 1% of the total.

It appears there is sufficient capacity for a change to the new fee structure.

### 2-3-3 Operation and Maintenance Plan

#### (1) Personnel

ETV transmitters are installed generally within the same building as the rebroadcast stations for the GTV service. Each station has 15 - 20 personnel. Staff normally live in on-site accommodation. Two more engineering staff in addition to the existing GTV staff are required for the operation of each ETV rebroadcast station. This means a total of 30 new staff is required for the 15 new rebroadcast stations. New ETV staff can learn transmitter operation and maintenance through on-the-job training provided by GTV engineers. In the Project, the new staff shall operate the ETV rebroadcast stations in common with experienced engineers of GTV. This is the same pattern followed in the Initial Two Year Plan. Recruitment and training of personnel will not pose any problem.

#### (2) Increase of Maintenance and Management Costs for New ETV RBSs

Table 2-3-3 provides an estimate for the maintenance and management costs of the 15 new rebroadcast stations based on costs in 1993-94 for similar stations already in operation.

**Table 2-3-3 Increase of Maintenance and Management Costs  
for New Rebroadcast Stations (RBSs)**

(Unit: 1,000Rs)

Expense \ RBS	10 kW VHF (2sts.) per one st.	3 kW UHF (2sts.) per one st.	2 kW VHF (1sts.)	1 kW VHF (4sts.) per one st.	500W VHF (2sts.) per one st.	100W VHF (2sts.) per one st.	50W VHF (2sts.) per one st.
(1) Operation & Maintenance	1,120	1,035	830	750	665	540	480
1) Transmitter Operation	(500)	(450)	(350)	(330)	(300)	(250)	(200)
2) Electricity, Gas, Water	(530)	(500)	(400)	(350)	(300)	(250)	(250)
3) Others	(90)	(85)	(80)	(70)	(65)	(40)	(30)
(2) Personnel Expense	150	150	150	150	150	150	150
(3) Transportation	35	35	35	35	35	35	35
(4) Office Expense	10	10	10	10	10	10	10
(5) Depreciation	1,500	1,200	1,000	950	850	600	550
Sub total per each station	2,815	2,430	2,025	1,895	1,710	1,335	1,225
Total	5,630	4,860	2,025	7,580	3,420	2,670	2,450
Grand Total	28,635						

Table 2-3-3 shows that about Rs 28.64 million will be required for the maintenance and management of 15 new rebroadcast stations, which corresponds to a 1.8% increase from the 1994-95 expenditure budget ( $\approx 28.64 \div 1,575.000$ ).

Management will be possible considering that the increase of expenditure is made up for by profits from the GTV service and an increase in revenue from the national treasury.

## 2-4 Technical Cooperation

After the completion of the Project, the operations are to be handled by ETV staff who received OJT from experienced staff members of GTV. In view of the high technological level of the GTV staff and the operational conditions after the Initial Two Year Plan, technical cooperation may not be necessary once the Project is underway.

However, it is useful to train ETV staff on the operation and maintenance of equipment using opportunities such as factory inspections in Japan or during installation and adjustment of the equipment at the sites.

PTV strives to improve the overall technological level of its staff members on a daily basis. It provides training opportunities at its affiliated PTV Academy, and would like training sessions in Japan. Japan provides training courses for trainees from abroad on the production of educational programmes and on technological skills. It will be preferable to accept PTV production staff as trainees to support both the technological and production sides.

PTV has requested Japan to send producers and technical staff to Pakistan for educational programme production. Technological transfer from Japan which has longstanding experience in educational programme production can be achieved by dispatching such experts to provide the know-how to local staff.



## Chapter 3 Basic Design



## Chapter 3 Basic Design

### 3-1 Design Policy

This Project embodies the Later Three Year Plan of the Master Plan, following the Initial Two Year Plan which was completed in 1992. Importance was attached to the terms of the Initial Two Year Plan and the establishment of an appropriate scale allowing for efficient, easy, economic and non-wasteful operation and maintenance. The basic design shall be made according to the following guidelines.

(1) Equipment and materials are to be, where possible, of the same specifications as those in the Initial Two Year Plan, thereby allowing for standardization of facilities and cutting down on the need for many different spare parts. This reduces operation and maintenance costs. Staff re-directed to other stations can operate equipment without any need for retraining or a period of familiarization.

(2) The scales of the various equipment and materials are essential to the terms of the Project and are to conform to the local working environments and practices.

(3) Equipment performance and design are to follow ITU-R (International Telecommunications Union - Radio Communication) technical standards, thereby falling within the standards of normal broadcasting facilities. The equipment must be both electrically and mechanically safe, as well as durable.

(4) Equipment is, where possible, to conform to existing equipment and not affect existing facilities.

(5) The Project is to be carried out under grant aid cooperation from the Government of Japan over two phases; the first phase would lead to the completion of 4 rebroadcast stations, and the second phase would lead to the completion of the remaining 11 stations and communications system via satellite.

## 3-2 Study and Examination of Design Criteria

### 3-2-1 Sites for Rebroadcast Stations

Among the 15 stations surveyed on-site, the following eleven have station buildings where GTV transmitting equipment is operating for GTV transmission and ETV equipment to be provided under the Project will be installed.

NWFP: Mingora, Morasar, Gulibagh, Chitral, Thandiani

Punjab: Pasrur, Faisalabad, Layyah, Sahiwal

Baluchistan: Quetta

Sind: Karachi

Currently, four stations do not have station buildings.

NWFP: Dir

Punjab: Bahawalnagar, Mailsi, Khewra (Haranpur)

In Bahawalnagar, PTV is undertaking plans to provide a station for GTV. The location of the rebroadcast station for Haranpur is changed to Khewra in order to avert flood threats. Khewra is the largest city in the objective area, and Haranpur is covered by the station in Khewra.

### 3-2-2 Plan to Establish Rebroadcast Stations

Broadcasting is one-way radio communications covering specific regions. Thus, plans to establish rebroadcast stations will inevitably face restrictions pertaining to radio communications.

When there is a possibility of undesired waves (U) interfering with desired waves (D) at the reception point, D must be far more powerful than U, and the ratio must exceed a certain level. Radio waves weaken with distance, but radio waves that are too weak for service but are strong enough to interfere with broadcasts are abundant. So, it is impossible to use radio waves of the same channel within the region that is six to fifteen times the size of the service area. To cover the vast plains with TV radio waves, a minimum of six channels, or twice as many as the number of channels for dual channel broadcasting, is required.

(1) Realization of Planning and Development

1) Primary planning

In any country, establishment of TV stations starts in metropolitan or large city areas, where cost performance is maximum. These transmitting stations have the power to provide wide coverage beyond the large cities. Hence, generally, mountaintop locations are useful, but in cases where suitable mountains do not exist, steel towers reaching 200 or 300 metres high are used.

2) Secondary planning

After the number of stations increases and coverage areas start to close in on one another, planning of the next stage requires more care and detailed surveys. At this point, channel selection becomes difficult, and later becomes impossible. In other words, there will not be any channels available in the VHF band. In cases where the channel of an operating station is hampering a new station, the operating station should change the channel if that will improve the situation. Change of the channel at a later stage when the need is drastic will be costly and the work involved will be many times harder.

3) More channels

In parallel with the secondary planning, movement toward adopting more channels develops. This refers to the establishment of commercial or ETV stations in addition to GTV. It is desirable that the service area of ETV be the same as that of GTV since ETV is aiming for national coverage just as GTV. The UHF band will be used if all of the channels in the VHF band are used up.

## (2) Characteristics of TV Bands

### 1) Band I

Because of its low frequency, transmission antennas are large in scale, and high gains are unlikely. As reception antennas will also have to be large, high gains are also unlikely and they are vulnerable to wind and birds. However, low frequency waves sustain well and have large diffraction, so they are far reaching. But for this reason, the distance between stations must be great, and the number of usable stations will be limited. They are vulnerable to seasonal irregular propagation and strong city background noises. For the above reasons, Band I is not always suitable for TV broadcasting channels.

### 2) Band II

Pakistan uses this band for FM broadcasting, like many other countries.

### 3) Band III

Most suitable band for TV broadcasting.

### 4) Bands IV and V

The effective length of reception antennas becomes shorter as frequency increases. Thus, bigger reception field strength is needed. So in this case, transmission output is increased and the gain of transmission antennas is enhanced as compared with Band III. Thus, the cost of facilities and the operational expense will increase. Gains of reception antennas are expected to be high because of their small size with more antenna elements available. However, as the feeder line loss, shielding loss and city attenuation increase, it is generally more difficult to secure the same service area as Band III.

### (3) Transmission Scale

A region is a city or a group of cities. First, postulate "h" which is the height of the transmission point above ground level. Then, from the propagation curve, the effective radiation power that covers the required service radius is induced, then transmission output P and transmission antenna gain G are decided. If the ground is level, h is almost equal to the height of the steel tower, and the construction cost is directly related to it. An increase of G is obtained by sharpening vertical directivity. When it is horizontally omnidirectional, 15 dB or so is the limit. When P increases, not only the price of transmitting equipment but also operational costs will increase because more electricity is consumed.

It is important to think of overall balance in the designing stage. If the scale is still too large, the region must be divided into smaller areas. The scale should be kept to a reasonable size and directivity should be decided so that the radio waves do not interfere with other station areas. Particular care should be taken in areas near national borders.

### (4) Channel Selection

The most important task when selecting a channel is the prevention of interference caused by the same channel and adjacent channels. If there is still a degree of freedom after clearing the above problems, planning should be re-designed to leave the maximum possibility for future channel increases.

#### 1) Co-channel interference

Within a radius of 1,000 kilometres, a list of stations (including those in the planning stage) that use the same channel with the entering station should be made to see that none of them will interfere with the new station. If there is a mountain between the two stations, radio waves would weaken. An offset carrier system should be utilized fully, but a method of vertical polarization of radio waves should not be applied to large regions considering the receiving antenna arrangement.

2) Adjacent channel interference

Adjacent channels should not be assigned within the same region. Generally speaking, however, overlapping of adjacent channel areas to some extent will not cause difficulty.

(5) Conditions for Transmitting Station Sites

The following should be investigated when selecting station sites.

1) Broadcasting service

The site should have a good exposure to the objective area. If there is a mountain at a suitable place, it may be utilized.

2) Measures against ghost images

Ghost images are formed when a strong radio wave hits mountains or buildings. Locating stations under such conditions should be avoided.

3) Programme transmission

Programme transmission systems include the domestic microwave network, off-air broadcasting waves, and satellite relays. Conditions for reception should be examined.

4) Impediment factors for sites

Sites should be outside of areas with aircraft restrictions. Sites should not be under any landslide or flood threats.

5) Conditions of infrastructure

Consideration should be given to roads, electricity and water supplies, residential environment and distance from neighbouring cities.



(6) Channels Available in Pakistan

In Pakistan, TV bands I, III, IV and V are usable. Channels in each band are listed in Table 3-2-1 below.

Table 3-2-1 TV Channel Allocation in Pakistan

Band	Channel	Number	Channel Bandwidth (MHz/ch)	Frequency Band (MHz)		System
				Frequency	Bandwidth	
I	4	1	7	61~68	7	PAL-B
III	5~12	8	7	174~230	56	
IV	21~34	14	8	470~582	112	PAL-G
V	35~73	39	8	582~894	312	

The allocation of bands and channels is by the same method used in Western Europe (with the exception of Monaco and Italy). For domestic reasons, in Pakistan, Channels 2 and 3 of band I are excluded.

(7) Problems of Channel Selection due to Geography of Pakistan

1) NWFP

High mountains and deep valleys limit the reach of radio waves, and thus diminish the possibility of interference. Thus, channel selection can be made with relative freedom.

2) Punjab

The northern half of the province is covered by hills. Three mountaintop stations are situated in this area. The service areas of the three stations overlap to create a large region.

The vast plains in the southern half do not obstruct radio waves. The selection of VHF channels for ETV is hardest in this region where numerous radio waves cross from many stations including those from India.

3) Baluchistan

The region is covered with highlands with many ups and downs. Therefore, the scales of stations are small and the

channel selection is rather easy because of limited interference.

4) Sind

The province is a continuation of the plains from Punjab, but the width of the Indus plains becomes smaller. Because stationing is uni-dimensional, there are hardly any problems. The proposed Karachi station is situated in the southern end of the region. On the western side there is an ocean and in the northern part there are mountains. The only entry of radio waves is from the eastern side. Channel 4 for ETV has been operating without any problems.

(8) Policies in ETV Station Planning

1) Priority is on use of the VHF band, but UHF will be used when necessary.

2) GTV and ETV channels should be selected from the same band, where possible.

3) When the two channels are from the same band, transmission output should be the same for GTV and ETV, and one antenna should be used in common.

When the antenna cannot be used in common, directivity and gain of antenna should be kept equal between GTV and ETV.

4) When GTV and ETV are in different bands:

The rule of thumb is that: the gain of the UHF antenna is twice that of the VHF antenna; and the output of the UHF transmission is three times that of the VHF.

5) The above is summarized in Table 3-2-2.

6) The two problems being examined by Pakistan are:

- The allocation of VHF channel offset
- Allocation policies of UHF channels

Table 3-2-2 Applicable Channel

Combination of Bands for G and E	I	III	IV	V
I	Impossible because there is only one channel.	Common use of antenna is impossible. Directivity and gain should be matched with another antenna. Transmission output should be the same.	Common use of Antenna is impossible. The gain of UHF antenna is about twice that of VHF antenna. The UHF transmitter output is about three times that of VHF transmitter.	
III	/			
IV	/		Common use of antenna is possible. Transmitter output shall be the same.	This combination should be avoided because common use of antenna is impossible.
V	/		/	

### 3-2-3 TV Transmitting Equipment

#### (1) Antenna

Basically, a 4-Dipole (4D) antenna is used, but a 2-Dipole antenna is applied where appropriate, considering the size of the service area.

4-D antennas have excellent bandwidth characteristics, and can cover:

All of Band III (Channels 5 to 12) in VHF  
All of Band IV (Channels 21 to 34) in UHF  
or Half of Band V (Channels 35 to 50)  
or (Channels 51 to 73)

Because 4-D antennas have a small number of branches, the feeder system can be simplified.

#### (2) Feeder

When an antenna is used in common by two channels, some stations will have to upgrade their feeder system to increase capacity. If the capacity of the existing feeder system is sufficient, it can be used but damaged feeder cables shall be replaced.

#### (3) Dehydrator

A dehydrator is used for air-filled feeders. New installation is necessary if the station does not have a dehydrator system, or the old one should be replaced if damaged or worn out.

#### (4) Channel Combiner

In most stations, the antenna for ETV will be used in common with GTV. Common use will not take place in stations for ETV use only (Dir, Mailsi, Khewra), or at Karachi station where GTV and ETV are in separate sites.

#### (5) TV Transmitter

Transmitters to be installed in the 15 rebroadcast stations are as follows. For maintenance reasons, solid-state type will be used.

UHF 3 kW : Pasrur, Faisalabad  
VHF 10 kW : Sahiwal, Karachi  
2 kW : Bahawalnagar  
1 kW : Mingora, Mailsi, Layyah, Khewra (Haranpur)  
500 W : Thandiani, Quetta  
100 W : Gulibagh, Dir  
50 W : Morasar, Chitral

(6) Programme Input Equipment

The programme input equipment will be installed in stations of more than VHF 10 kW transmitters.

(7) TVRO

A 3.6 m $\phi$  parabolic antenna and reception device set will be installed to receive programmes sent from the Islamabad ETV Centre via AsiaSat.

(8) AVR

Because of large voltage fluctuations nationwide, AVR will be installed in rebroadcast stations nationwide except for Thandiani which is exclusively a generator-operated station.

(9) Diesel Generator

PTV will install a diesel generator unit in new stations (Dir, Bahawalnagar, Mailsi, Khewra) as a supplementary facility of the building. Five stations (Mingora, Morasar, Gulibagh, Sahiwal and Pasrur) that are to fall into capacity shortage will be provided with a new diesel generator for ETV under this Project.

(10) Measuring Equipment

One set of measuring equipment consisting of the minimum essential for daily operation will be provided for Dir, Mailsi and Khewra which are stations for ETV use only.

One set of measuring equipment consisting of the minimum essential for periodical maintenance and equipment performance confirmation will be provided for common use to all rebroadcast stations.

### 3-2-4 Communications System via Satellite

The system utilizes the order-wire system via AsiaSat in order to improve overall operation of ETV and the communications related to engineering and programmes.

Currently, PTV uses PTC telephone for communications among stations but connections are difficult in some areas.

The total time of telephone calls is 1,490 minutes per day as shown in Table 3-2-3.

**Table 3-2-3 Communications Traffic among PTV Stations Using Telephone**  
(total of calls in minutes)

Receiver Caller	ISB PTV Headquar- -ters	ISB Centre	Lahore	Karachi	Peshawar	Quetta	RBS	Total
ISB PTV Headquarters	—	60	180	180	90	90	10	610
ISB Centre	120	—	30	30	20	20	—	220
Lahore	60	15	—	30	20	20	—	145
Karachi	60	30	30	—	20	20	—	160
Peshawar	60	20	30	30	—	20	—	160
Quetta	60	20	30	30	20	—	—	160
Rebroadcast Station (RBS)	5	10	5	5	5	5	—	35
<b>Total</b>	<b>365</b>	<b>155</b>	<b>305</b>	<b>305</b>	<b>175</b>	<b>175</b>	<b>10</b>	<b>1,490</b>

With reference to the use of PTC telephone and hot lines, the Technology Consultants, which conducted the survey, forecast increases in expenses to PTC as follows.

**Table 3-2-4 Expense Forecast for PTC Circuits**  
(Unit : 1,000 Rs)

	1994	1995	1996
Telephones	12,168	14,601	17,521
Hotlines	10,000	12,000	14,400
<b>Total</b>	<b>22,168</b>	<b>26,601</b>	<b>31,921</b>

By expanding the order-wire system, station-to-station communications can be made easier. This not only contributes to increasing the efficiency of daily ETV operations, but will also make better use of the transponder of AsiaSat.

As a result of expansion of the order-wire system, the operation of communications will become as follows. The current system utilizes a sound produced when one makes a call. After being answered, the call is transferred to an unoccupied channel manually by the staff in the master control room of the ETV Centre in Islamabad. In the expanded system, dialing of a special number for the station summons the system controller installed in the hub station (the Islamabad ETV Centre in this case) which will connect the call by allocating the unoccupied channel to the caller station and the receiver station. The allocation and connection are instantaneous as in conventional telephone systems.

Through the expanded system, various communications between two ETV stations can be made easier and faster, contributing greatly to enhancing operational efficiency.