

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTERIO DE EDUCACION Y CULTO
ADMINISTRACION NACIONAL DE TELECOMUNICACIONES
REPUBLICA DEL PARAGUAY

**STUDY ON
THE ESTABLISHMENT OF EDUCATIONAL
TELEVISION BROADCASTING NETWORK
IN THE REPUBLIC OF PARAGUAY**

**FINAL REPORT
SUMMARY**

SEPTEMBER 1993

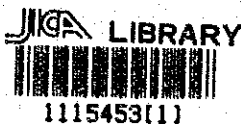
**NHK Integrated Technology Inc.
in association with
Yachiyo Engineering Co., Ltd.**

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Currency Exchange Rate used throughout the Study
US\$1 = 1,700 Paraguayan Guarani = 120 Japanese Yen
as of February, 1993

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SUMMARY

(1) Outline of the Study

The objectives of this study are to formulate and propose a master plan for the establishment of an educational television broadcasting network in the Republic of Paraguay that will be able to offer educational opportunities to the people of the Republic economically and effectively, and to identify priority project and to conduct a feasibility study on the identified priority project. The transfer of technology to the Paraguayan counterparts from the study team during the execution of the study is another purpose of the study.

As a result of the study, through the implementation of the Master Plan whose target is set in the year 2010, it is estimated that 94 % of the total population of the Republic (4.12 million in 1992) can enjoy equal opportunity for education economically by the educational television service.

Taking into consideration the potential capabilities that educational television can offer, and the tasks to be borne by the education of Paraguay, this study proposes as a master plan a multi-faceted utilization of educational television both for schools and the general public.

Educational television broadcasting is the broadcasting of suitable television programs for school education and for the education of the general public. Broadcasting for school education in this project covers primary and secondary school education. On the other hand, broadcasting for the general public include programs for the socially disadvantaged (illiterate persons, children and the like), for the people with specific needs and for the people with general interest.

(2) General Review of Master Plan

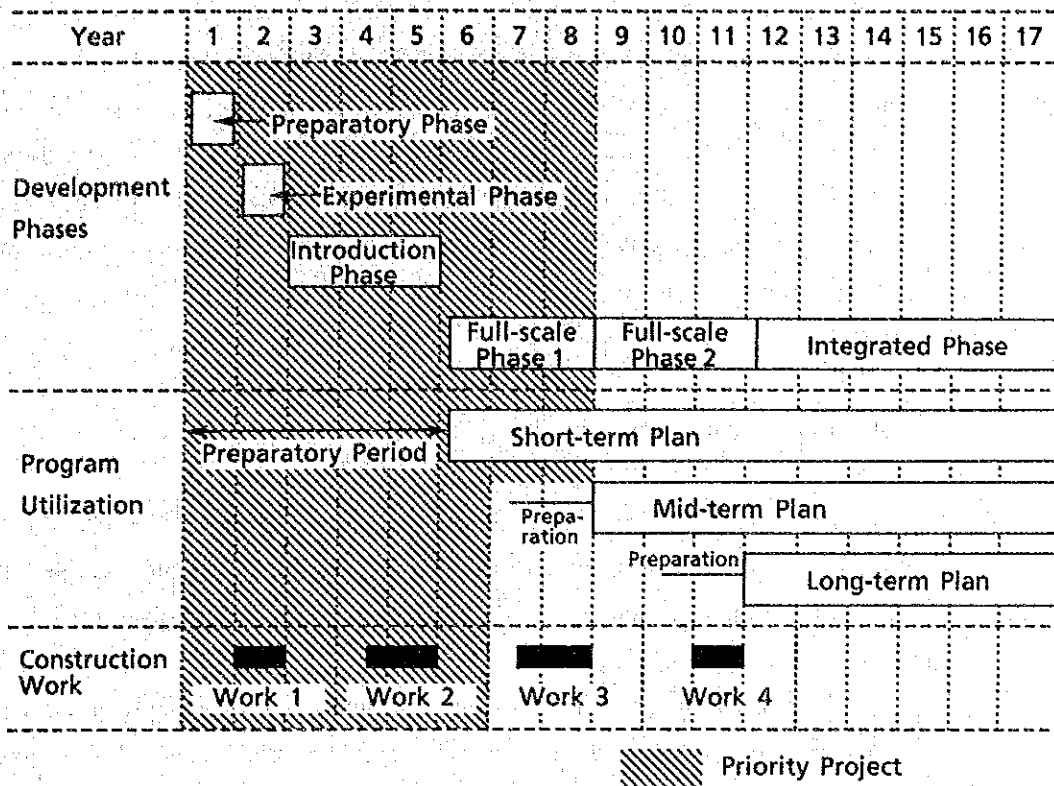
1) Fundamental Policies for Master Plan

The final goal of the Master Plan with its target set in 2010, is the implementation of each of the items in the development program, which may require concentrated long-term efforts. These plans can be carried out effectively by clearly defining each step of the development process.

The development plan or scenario is formulated by establishing priority project and interim goals in the master plan for the educational development of Paraguay so that the whole process is progressive and developmental.

In particular, it is considered essential to allow some period of time to fit the educational broadcasting service into the existing Paraguayan educational systems, to prepare sufficient broadcast program materials beforehand and to train manpower for the educational broadcasting. From these considerations, the plan is so formulated that after five years of preparation the proposed full-scale broadcasting service will start. Each phase of the project development and a series of construction work are shown in the diagram below.

Development Schedule



- Work 1: Asuncion Transmitting Station, and re-inforcement of Exsit. Studios
- Work 2: Educational Television Center (ETV Center) in Aunci3n and Major 3 Local Transmitting Stations
- Work 3: 9 1st Plan Stations
- Work 4: 10 2nd Plan Stations

2) Plans for Utilization of Educational Television Broadcasting

i) Short-term Plan

Improvement and enhancement in quality of primary school education, promotion of teacher training, diffusion of education and its enhancement for the socially-disadvantaged and for the general public are the short-term targets of this educational television network project.

ii) Mid-term Plan

It is expected that along with the improvement of primary education the demand for secondary education will increase remarkably in the future. In order to respond directly to the demand of human resources required for national economic development, educational broadcasting to cater for the diffusion and improvement of secondary education including training in technological fields are planned.

iii) Long-term Plan

Educational television broadcasting responding to the broad needs for education of the general public and providing lifelong education as well as secondary-level correspondence education are planned.

This project to establish an educational television network in Paraguay has objectives and contents to be implemented as a social undertaking for the fulfillment of basic human needs of the people of Paraguay.

3) Fundamentals of Development Plans

i) Construction of Facilities

Considering the future development of the educational television broadcasting network in Paraguay, a step-by-step broadcasting facilities construction is planned and scheduled. The construction work is divided into four phases as follows:

Work 1 Construction of a television transmitting station in Asuncion, which covers 40% of Paraguayan population, and reinforcement of existing studio facilities (US\$4.7 million)

Work 2 Construction of the ETV Center in Asuncion and construction of stations in three major regional cities, which increases total population coverage to 62 % (US\$19.3 million)

Work 3 Construction of remaining nine regional transmitters of 13 1st- plan stations, which increases total population coverage to 84 % (US\$10.8 million)

Work 4 Construction of ten 2nd-plan regional stations, which increases total population coverage to 94 %, and construction of studios in major regional stations (US\$10.6 million)

To minimize the construction cost and operating expenses, the existing ANTELCO facilities are used in common for nine first plan educational television stations and six second plan stations.

ii) Cost of Construction

The total construction cost for this project is estimated to amount to approximately 45.4 million US dollars. At 1993 price level, this is equivalent to 77,180 million Paraguayan Guaranes or 5.45 billion Japanese yen.

iii) Organization and Operation

For the operation of the educational television broadcasting service, a new public organization is proposed to be formed, which consist of Ministry of Education and Culture (MEC) and National Telecommunications Administration (ANTELCO) under Ministry of Public Works and Communication (MOPC).

The manpower and annual expenses required for the operation are estimated as follows;

a. Operating Manpower

In the stage of the Full-scale Phase 1, approximately 50 program producers and 80 engineering staff members are required.

After the Full-scale Phase 2 when the regional broadcasting network is to be expanded, the engineering staff shall increase to about 140, and the number of producers increase to 60 in the Integrated Phase.

In Paraguay, where two commercial television stations, 18 cities CATV stations, one Pay-TV station in Asunción and several private program production houses have been established and maintained, private training institutes are in operation to cater for the manpower demands of the industry. In particularly the program production area, the required manpower can be obtained from those who have experiences in practice or of training overseas, the Mass Media Course at Catholic University, the teachers working at present and the graduates of the Teacher Training College. And in the engineering sector, the manpower can be tapped from the graduates of the Institute of Paraguayan Telecom-munications (IPT) of ANTELCO and the vocational training schools of SNPP.

b. Annual Operating Expenses

The annual operating expenses for the implementation of the Master Plan includes costs of staff salary, program production, video tapes, microwave network, electricity, facilities maintenance and general administration. They roughly amount to US\$2.5 million in the 5th year right before the Full-scale Phase, \$4.6 million annually from the 6th to 8th years in the Full-scale Phase 1, \$ 5.6 million from the 9th to 11th years and \$6.5 million per year after the Full-scale Phase 2.

iv) Results of Financial Analysis

In 1992, the total annual budget of the Ministry of Education and Culture (MEC) amounted to US\$165 million and that of National Telecommunications Administration (ANTELCO) \$144 million, and considering the expected income from the advertising activities after the Full-scale Phase, it is estimated that the budgets can safely accommodate these expenditures. In the expanding government budget, the share of MEC to the total amount has been increasing rapidly from 11 % in 1990 to 17 % in 1993. The new constitution, effective from 1992, stipulates that more than 20 % of the total government budget should be allocated to education. In this regard, the expenses for the implementation of the Master Plan, particularly the operating expenses, and the deficits of the commercial incomes can be balanced with the government budget.

4) Social and Economical Benefits of Implementing Master Plan

A number of social and economical benefits are expected as follows through the implementation of the Master Plan;

- i) In Paraguay, due to the decrease of number of upper grade pupils by repeating classes and drop-out, only about 50 % of pupils entering the primary schools can graduate the school. The educational broadcasting service for primary schools can contribute much to the improvement of this situation.**
- ii) Training of teachers already at work, including those who are not qualified, will become effective and efficient.**
- iii) The differences and gaps found between the educational systems in the urban and rural areas will be corrected.**
- iv) Effective instruction at schools will be possible by utilizing the audio-visual materials offered through the educational broadcasting, which are scarce at present.**

- v) Educational television broadcasting can provide effective literacy programs for illiterate adults, who accounted for nearly 20% of the total population in 1992.
- vi) The educational and developmental broadcasting for the general public will lead to appropriate and effective societal education for the people of Paraguay, which is facing a large socio-economic changes caused by the planned unification of the markets of Paraguay, Brazil, Argentine and Uruguay. The education and information required for nation's democracy can also be offered. Paraguay has only two commercial television stations and no national educational television station at present. This project can also dispel and eliminate the fear that constant viewing of foreign programs will cause the Paraguayan people to lose their traditional culture.

(3) Priority Project

1) Selection of Priority Project

The Priority Project is the project to achieve the Short-term Plan mentioned above, and covers from the 1st year to the 8th year of the plan. The priority coverage areas for the educational television network are in the capital city of Asuncion and three other major cities of Ciudad del Este, Encarnacion and Villirica.

2) Utilization and Development in Priority Project

Regarding the utilization of educational television broadcasting, early implementation of the short-term plan in the Master Plan is scheduled, in which efforts will be made to improve and enhance in quality of primary school education, to promote teacher training, and to spread social education. For the construction of the educational television broadcasting network, Work 1 and 2 are taken up as initial steps of the Master Plan.

3) Benefits and Effects of Priority Project

With the implementation of the Priority Project, four major cities of Paraguay, with a total population coverage of 62 % (based on the 1992 figure) , will be served by the educational television broadcasting network.

The Priority Project is an independent project in itself and at the same time extremely important serving as the first step to achieve the final goal of the Master Plan. The most essential point is to take the steps of preparatory, experimental and introduction phases before the full-scale operation; the process is considered to be vital for the steady implementation of the project and the promotion of utilization of educational broadcasting. Consequently, a detailed study has been made step by step from the 1st to 8th years of the project on the plans for broadcast program, management and operation.

4) Estimated Cost of Priority Project

From the results of the feasibility study for the Priority Project, the cost of construction of broadcasting facilities in Work 1 and 2 are estimated as follows;

Work 1 approx. 7,934 Million Guaranies (4.67 Million US Dollars)

Work 2 approx. 33,337 Million Guaranies (19.61 Million US Dollars)

(4) Conclusions and Recommendations

This project of establishing an educational television network in Paraguay covers the primary education which is the basis of the general education system, the education for socially disadvantaged and the education for the general public of Paraguay, to promote democracy in the country not endowed with significant natural resources and to let the country to stand on an equal footing with other nations in the future. The project has a great socio-economic significance and, to fulfill the basic human needs, it must be implemented steadily to achieve the intended purposes.

The principal financial resources for operating the educational television service should come from the National Treasury, however, taking advertising commercials into the broadcasting without hindering the educational service is also given consideration. In the later part of the Master Plan period, it is expected that the revenue from such commercials will be able to nearly cover the operational expenses.

The Priority Project is vital in establishing the educational television broadcasting in this country and, in particular, the implementation of Work 1 has an important meaning in executing the rights to use educational television channel and having a minimum production studio function, which should be taken up as the first indispensable step of the project as soon as possible.

Considering the scale of the Paraguayan government's developmental budget and the ANTELCO's possible investment, it will be hard to expect those resources to be able to cater for the large initial investments required for the construction. The financial burden of the Government for the priority project investment should be reduced by seeking financial assistance by means of grant-in-aid or soft loan offered by some foreign governments.

PART I INTRODUCTION

I - 1 INTRODUCTION

1.1 Background of the Study

The Republic of Paraguay became independent in 1811 after long years under the rule of Spain. Since then, having had 27 years' national isolation policy, the country's modernization has been hindered due to lack of cultural exchange with foreign countries, although its individual culture had been developed. The Government of Paraguay, therefore, has been trying to overcome the cultural gap by putting emphasis on education for the younger generation.

As a part of this effort, the government is now broadcasting an educational television program produced by the Ministry of Education with the cooperation of a commercial television station. It has become very difficult to get the air-time a week.

The Paraguayan government plans to establish a public educational television broadcasting network which serves educational programs regularly in order to strengthen its youth education, adult education, and re-training of teachers. The Paraguayan government requested the Japanese government in October, 1990, to carry out a study of the Master Plan of this project and give them specific advice for the implementation of such a network.

In response to the request, the Government of Japan dispatched the preliminary study team of Japan International Cooperation Agency (hereinafter referred to as "JICA") to Paraguay in April 1992.

The team had a series of discussions with Paraguayan Government authorities and the both parties agreed on the "Scope of Work" and Minutes of Meeting" in Asuncion on April 14, 1992.

1.2 Purpose of the Study

The purpose of this study is to draw up a Master Plan on the establishment of an educational television broadcasting network throughout the country and to carry out a Feasibility Study of the priority project. Another purpose of the study is to transfer technology to the Paraguayan counterparts during the execution of the study.

1.3 Area Covered by the Study, Scope and Content of the Study

(1) Area Covered by the Study

The entire territory of the Republic of Paraguay.

(2) Scope of the Study

The scope of the study is based on the Scope of Work(S/w) and Minutes of the Meeting (M/M) agreed to on April 14, 1992. It consists of two phases: the first phase, the study of the Master Plan, and the second phase the Feasibility Study of the priority project.

(3) Content of the Study

1) Master Plan

The Master Plan was formulated on the following plans which are described in PART II of the main report.

- ① Educational Broadcasting Utilization and Development Plan
- ② Organization and Management Plans
- ③ Program Planning
- ④ Broadcasting Network Plan
- ⑤ Facilities Plans
- ⑥ Program Transmission Plan
- ⑦ Operation and Maintenance Plans
- ⑧ Estimates of Project Costs
- ⑨ Project Evaluation
- ⑩ Implementation Program

2) Priority Project

The feasibility study on the Priority Project was conducted on the following items, and described in PART III of the main Report.

- ① The Priority Project
- ② Program Development
- ③ Facilities Arrangement Plan
- ④ Management and Organization Plan
- ⑤ Operation and Maintenance Plans
- ⑥ Implementation Plan of the Priority Project
- ⑦ Project Evaluation

1.4 Configuration of the Report

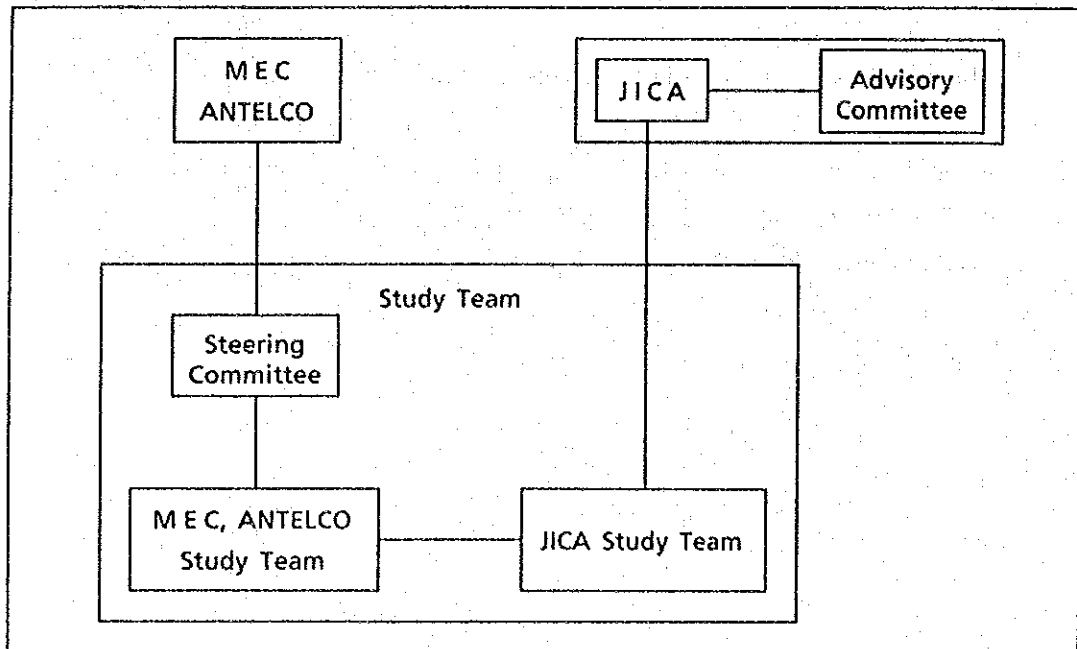
This report consists of the following parts:

- Main Report
- Summary
- Supporting Report
- Data File

1.5 Study Organization

The JICA Study Team is composed of eleven specialists. A separate JICA Advisory Committee was organized to monitor and help the Study Team carry out its work efficiently. The Paraguayan side organized a counterpart team composed of staff from the Ministry of Education and Culture (MEC) and National Administration of Telecommunications (ANTELCO) to cooperate with the JICA Study Team. A Steering Committee composed of representatives from related fields of MEC and ANTELCO was organized to ensure the smooth execution of the study as shown on Figure 1.5.1.

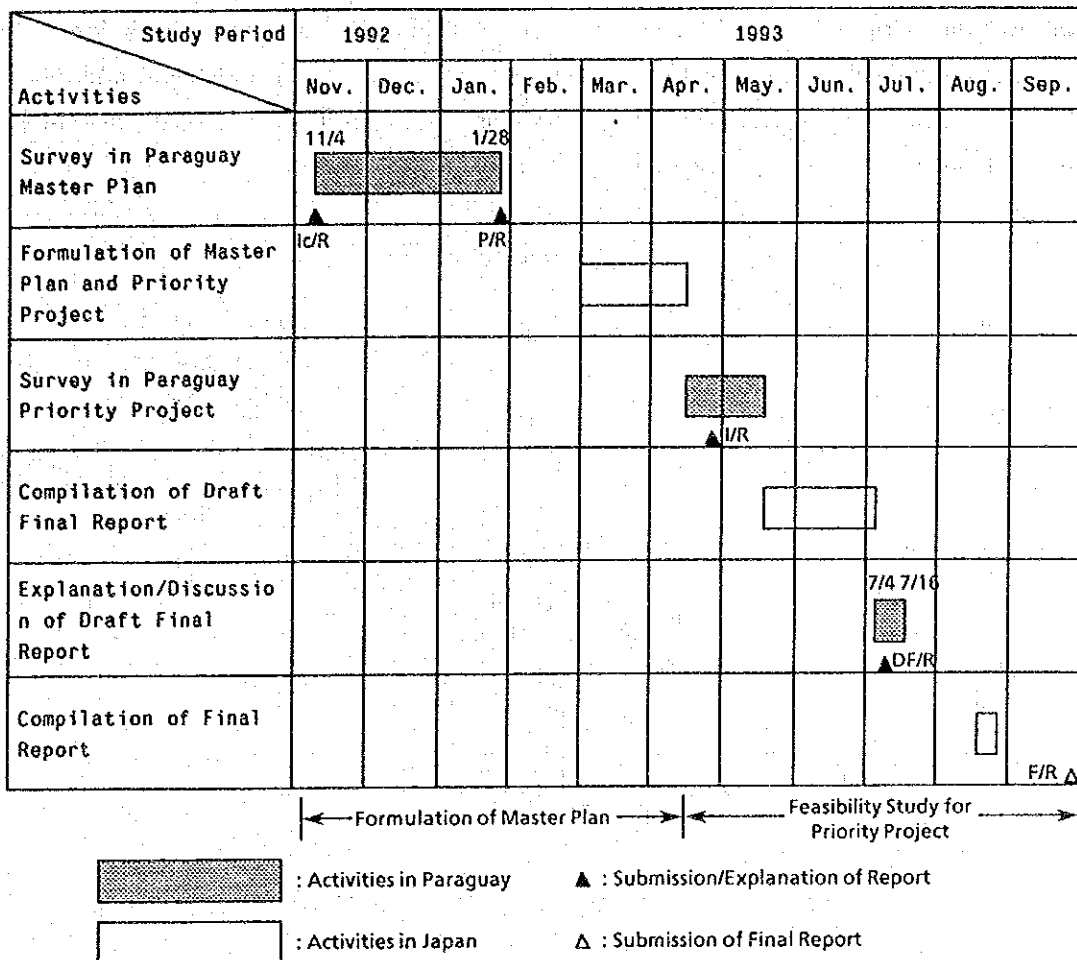
Figure 1.5.1 Study Organization



1.6 Implementation of the Study

This study was carried out for eleven months from November 1992 to August 1993. As shown in Figure 1.6.1, the first phase was dedicated to the formulation of the Master Plan and the second phase to the feasibility study of the priority project.

Figure 1.6.1 Time Schedule of the Study



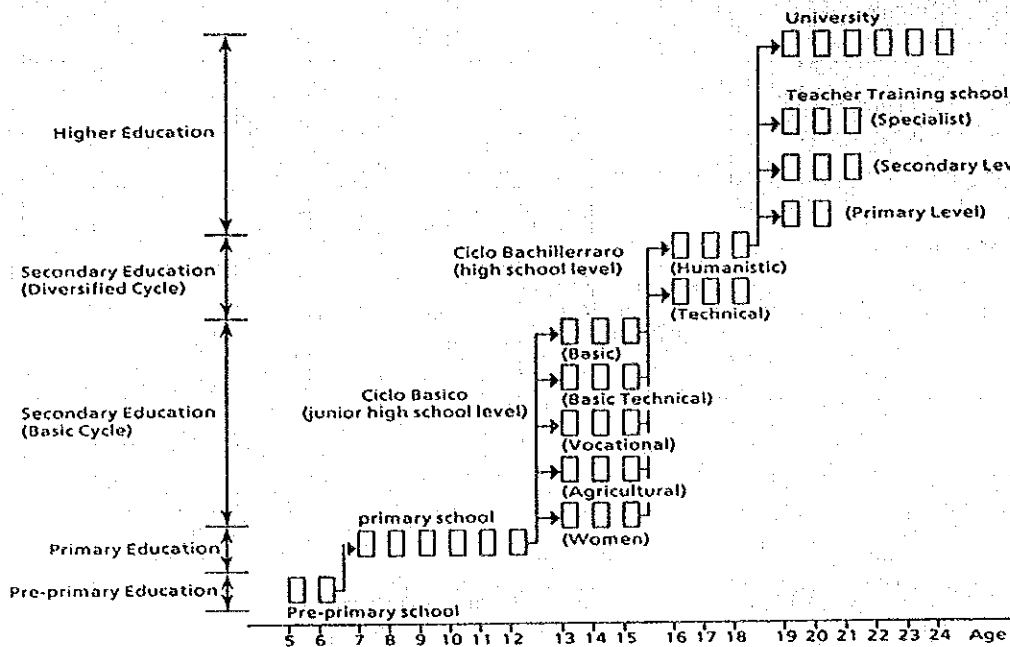
I - 2 CURRENT CIRCUMSTANCES OF STUDY AREA

2.1 Educational Conditions

(1) School Education System

The formal school educational system of Paraguay includes stages from pre-primary education, primary education and secondary education up to higher education. Compulsory education consists of 6 years of primary education. The 9-year education consisting of primary education (6 years) and basic secondary education (3 years) is called "basic education". The inclusion of basic secondary education in compulsory education is planned in 1994.

Figure 2.1.1 School Education System



(2) Educational Administration and Organization

The Ministry of Education and Culture (MEC) is responsible for national education as well as for cultural and religious affairs and is internally composed of twelve departments such as the Primary Education Department, etc., and employs some 30,000 people. The Teleducation Department of the MEC is under the control of the Under-secretary of State for Culture and employed 42 staff in 1992.

(3) Educational Finance

The budget allocated for the MEC had always been about 10-14 % until 1992 of the total amount of the budget appropriated for the government administration. The new constitution stipulates that the budget for public education should be at least 20 % of the central government budget. The budget of the MEC has been secondary to the budget allocated for national defense, but has continually increased in correspondence with the increase in the total national budget. A substantial portion of the budget is, however, spent for current expenses such as payment of salaries to the teachers and staff of the MEC, while investment funds available for construction and maintenance of educational facilities such as school buildings, purchase of equipment, etc., have been limited.

(4) Current Situation of School Education

Despite the relatively high enrollment rate in the primary level (94 % in 1990) and constant increase in enrollment in the secondary level (28 % in 1991), low retention rates are found: 50 % in the primary level and 44.5 % in the secondary level. It indicates that both primary and secondary education face serious problems in terms of academic performance. The inadequate functioning of the educational system in Paraguay is caused by the insufficiency of teaching materials and incomplete educational facilities as well as the shortage and lack of proficiency of teachers.

Table 2.1.1 Enrollment in Primary school by Department, 1991

Department	Total	Urban		Rural	
		Number	(%)	Number	(%)
Asunción	77,456	77,456	100.0	0	0.0
1 Concepción	34,853	11,660	33.5	23,193	66.5
2 San Pedro	54,864	8,447	15.4	46,417	84.6
3 Cordillera	39,663	15,058	38.0	24,605	62.0
4 Guaira	30,979	10,763	34.7	20,216	65.3
5 Caaguazu	76,917	19,542	25.4	57,375	74.6
6 Caazapa	26,817	4,358	16.3	22,459	83.7
7 Itapua	74,039	21,719	29.3	52,320	70.7
8 Misiones	18,550	8,212	44.3	10,338	55.7
9 Paraguari	40,029	12,306	30.7	27,723	69.3
10 Alto Parana	67,801	33,394	49.3	34,407	50.7
11 Central	123,465	70,001	56.7	53,464	43.3
12 Neembucu	12,189	6,315	51.8	5,874	48.2
13 Amambay	14,331	10,029	70.0	4,302	30.0
14 Canindeyu	16,739	3,488	20.8	13,251	79.2
15 Presidente Hayes	9,075	5,065	55.8	4,010	44.2
16 Alto Paraguay	2,244	1,781	79.4	463	20.6
17 Chaco	119	0	0.0	119	100.0
18 Nueva Asunción	37	0	0.0	37	100.0
19 Boqueron	816	354	43.4	462	56.6
Total	720,983	319,948	44.4	401,035	55.6

Source: Anuario 1991, Desarrollo Educativo de Cifras, MEC

(5) Current Situation of Other Education

Teacher training in Paraguay is conducted at the ISE (Higher Institute for Education) in Asuncion, 7 CREs (Regional Education Centers) and 15 IFDs (Teacher Training Schools). The activities of the training institutions are broadly classified into 1) teacher formation, 2) retraining of present teachers and 3) assistance for novice teachers to obtain proper qualification.

The ratio of students enrolled in universities to the population of 20 to 24 years old is estimated to be approximately 8 % in 1990.

The national census in 1982 put the number of adult illiterate at approximately 380,000, about 21.2 % of the population. Rural areas had approximately 283,000 (74 % of the total). As of 1992, illiteracy education is being provided at 632 facilities. It is therefore anticipated that the number of illiterate has decreased, but it is still estimated to be fairly large, especially if the functionally illiterate, who are not identified in illiteracy statistics, are included. Provision of education which is designed to teach the illiterate basic reading and writing skills is urgently required.

The use of audio-visual educational materials provided by the Teleducation Department of the MEC has been problematic due to insufficient funding and rather out-of-date equipment. At present, the activities of the department are practically limited to the making of some 10 programs a year for travelling television education using audio-visual education vehicles. Long-distance adult education using radio was conducted for two years from 1977 to 1978. Although it achieved some results, the program was terminated due to a lack of funds. At present, radio program production is limited to spot programs only.

2.2 Present Situation of Broadcasting and Telecommunication

(1) ANTELCO and Television Stations

The ANTELCO (Administración Nacional de Telecomunicaciones), a public corporation formed under the Ministry of Public Works and Communications (MOPC), is exclusively responsible for the planning, operation and maintenance of every kind of public telecommunication system and operates a monopoly of the public telecommunication services including domestic and international

telephone services as well as telex services. The ANTELCO is also a supervisory and administrative government agency for allocation of radio frequency as well as for supervision of broadcasting services.

It should be noted that among all the South American countries, Paraguay is one of the few countries which has no government owned or operated national television station.

(2) Radio Broadcasting

The total number of radio receivers has increased rapidly annually, from an estimated 300,000 units in 1977 to 500,000 units in 1982 and 880,000 units in 1989. The ratio of increase in the rural areas surpassed the same in the urban areas. About two thirds of the national population considers the radio as its primary source of news and information.

(3) Present Situation of Television Broadcasting Services

There is presently no government owned television broadcasting station in Paraguay, but two commercial television broadcasting services, Sistema Nacional de Television (Channel-9) and Tele-difusion Paraguaya S.A. (Channel-13), are in operation. Channel-9 owns four local transmitting stations and Channel-13 owns 11 local transmitting stations or relay stations. Both two systems cover mostly the eastern part of the country, where 98% of the national population concentrated. The service coverage of both stations combined is 85% of the total population.

With its appealing picture and ability to instantly transmit information, television has developed rapidly since 1980, becoming the dominant medium of the latter half of the 1980's. However, as there are only two domestic television stations and the programs themselves are lacking in appeal when compared with foreign programs, multiple channel service of CATV has been rising sharply in recent years.

CATV stations cover almost all areas of the capital of Asuncion and the main regional cities, and the total number of subscribing households is approximately 7% of the total national population, or 50,000 households.

However, the gap in information between the urban and rural areas has thereby been expanding. Also, there are many people who have apprehensions about losing their traditional culture through viewing programs from foreign countries.

In these circumstances, although the expectations to the Paraguays' own educational television broadcasting is great, there are few primary and secondary schools that have television receivers, because no systematic educational television service ever exists at present.

PART II MASTER PLAN

II - 1 EDUCATIONAL BROADCASTING UTILIZATION AND DEVELOPMENT PLANS

1.1 Objectives of Educational Broadcasting and Development Scenario

(1) Planning Issues in Educational Broadcasting Utilization Plan

The present Master Plan deals with the project to establish an educational television broadcasting network with a target year of 2010. The objectives of educational television Broadcasting to be achieved by 2010 can be defined by considering the educational character of television and the role it can play in meeting the current and future educational needs of Paraguay. Based on this recognition, the Master Plan defines the roles to be played by educational television broadcasting as 1) the achievement of effective and efficient education through wide use of educational television programs in educational development plans conducted by the Government of Paraguay, 2) the promotion of mass education using television broadcasting as a mass medium.

Based on this understanding, the Master Plan shall address the need to establish an effective educational utilization plan which shall be the basis of all planning components.

(2) Educational Issues in Paraguay

The drop-out rates at primary education are high, despite the relatively high enrollment rates. The conditions of the secondary level are generally the same in the case of the primary education in terms of quality.

Under such circumstances, the Educational Development Program of the MEC prepared in 1991 pointed out that a qualitative improvement of education is necessary for the future.

The number of illiterates in Paraguay was some 380,000 in 1982. Even now, the number of illiterates is still estimated to be fairly large if the functional illiterates who are not identified in the relevant statistics are included, and expansion and improvement of the anti-illiterate education and adult education are one of the priority themes. Given the prospect of an

increased school population especially in the secondary level, an adequate level of educational expenditure must be secured in order to expand public educational services to meet the increased demand for education, and efficiency should be improved in all levels of education.

(3) Objectives of Educational Television Broadcasting

The educational television broadcasting in question will be planned as a support system for the existing educational activities and/or plans and the main objectives of such educational television broadcasting are therefore to improve school education and to diffuse and expand social education.

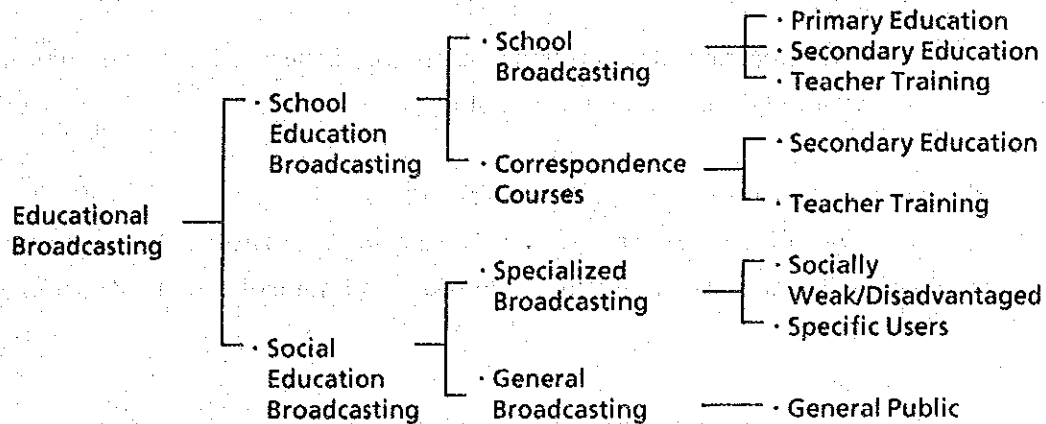
Based on the potential capabilities of educational television and on the educational issues in Paraguay, the Master Plan relating to the multi-faceted use of educational television broadcasting for both school and social education was prepared as follows.

- a) The educational television broadcasting will consist of "school education broadcasting" to support improvement and consolidation of existing school education and "social education broadcasting" to diffuse and expand social education.
- b) In the field of school education broadcasting, "school broadcasting" for qualitative improvement at basic level (primary) education is planned. In addition, "correspondence courses" for secondary education will be considered to respond to the future increase in educational demand for secondary education.
- c) Both "school broadcasting" and "correspondence courses for teacher training" will be used for the training of new teachers to ease the shortage of teachers and also to facilitate the process of retraining of existing un-qualified teachers so as to improve school education.
- d) "Social education broadcasting for the socially weak" will be planned. It includes programs targeted the child, youth and adult who cannot or could not complete the primary education to assist the existing anti-illiterate and adult education.

- e) "Social education broadcasting for specific learning" will be considered to provide specific users with the opportunity to satisfy individual learning requirements such as technical/vocational skills.
- f) "Social education broadcasting for the general public" will be planned to consolidate the Paraguayan's identity, to provide knowledge and/or skill and to promote culture, etc.

The overall educational television broadcasting scheme of the Master Plan is shown in Figure. 1.1.1.

Figure 1.1.1 Overall Educational Broadcasting Scheme



(4) Development Scenario

The ultimate goals of the Master Plan with a target year of 2010 can be achieved by implementing all the programs as mentioned above. Much effort over a long period of time is essential to achieve the ultimate goals of the Master Plan. Momentum can be sustained by clarifying the stage of progress towards the achievement of the ultimate goals.

In making the development scenario, a kind of phased development plan with intermediate targets was prepared in order to fully achieve the objectives of the Master Plan, taking the priority educational issues and their target level into consideration.

1) Short-term Plan (From 6th year)

What should be given priority in such a phased development plan is the improvement of basic education and the fulfillment of the basic educational needs for the general public to ensure fair educational opportunities for all. This understanding lies behind the decision that the priority objectives of the educational television broadcasting plan are

- a) the qualitative improvement and consolidation of primary education,
- b) teacher training and re-training which are imperative to achieving the objective mentioned in a) above, and
- c) diffusion and strengthening of social education for the socially weak and for the general public

2) Medium-term Plan (From 9th year)

High enrollment rates are predicted in the future in secondary education in line with the expansion and improvement of primary education.

Such educational needs for secondary education will increase with diversification of the Paraguay's economy through commencement of the MERCOSUR.

Therefore, educational broadcasting for secondary school education which can respond to the demand for proficient human resources for the future development of the country is planned as a medium-term program.

As for social education broadcasting or socially weak, provision of basic knowledges and skills will be added in this term to support of the improvement of the living standard.

3) Long-term Plan (From 12th year)

It is anticipated in the future that the requirements for wider educational opportunities for learning will gradually intensify

following the fulfillment of basic educational demands. Educational television broadcasting shall meet such requirements from a long-term view.

Therefore, educational broadcasting for correspondence course for secondary level shall start in this term. Social educational broadcasting to fill the specific needs shall also be added.

As for socially weak, the broadcasting shall be graded up to promote their participation to communal activities.

Figure 1.1.2 indicates the development frame of the planned educational television broadcasting. Each program is outlined in Table 1.1.1.

Figure 1.1.2 Development Frame

Objective		Target Viewers	User Unit	Education			Education and Culture
				Primary	Secondary	Higher	
I School Education Broadcasting	(1) School broadcasting	Pupils Students	School	●	⊙○		
		Teachers Students	School			●	
	(2) Correspondence Courses	Students (General public)	Individual Person		○		
		Teachers	Individual Person			●	
II Social Education Broadcasting	(1) Social Broadcasting	Socially Weak	Small Group/ Classroom				●⊙○
		Specific Users	Individual Person				○
	(2) General Broadcasting	General Public	Individual Person/ Household				●

● Short-term Program ⊙ Medium-term Program ○ Long-term Program

Table 1.1.1 Description of Program

Program Name	Objective(s)	Target	User Unit	Operation System	Conditions
School Broadcasting Program for Primary Education	<ol style="list-style-type: none"> To supplement the shortage of teachers, teaching materials, etc. in the current classrooms in order to improve and consolidate the learning process. To standardize teaching methods and to reduce repeaters and consequently drop-outs which is a serious problem in primary education today. To improve learning through the use of audio-visual materials, which can rarely be used for ordinary teaching in classrooms. 	Primary School Pupils	School	Systematic Implementation based on school curricula	Consolidation of physical and human resources; adjustment between school hours and broadcasting hours
Teacher Training Broadcasting Program	Insufficient functioning of the present education system is partly caused by a shortage of teachers, coupled with the fact that many of the existing teachers are not properly qualified; To train high quality teachers and to improve the quality of education	Students/ Teachers	School	<ul style="list-style-type: none"> All aspects of education being taken up in accordance with the teacher training program to train teachers Learning of new teaching methods using television In principle, the use of recorded materials instead of real-time broadcasting 	
Correspondence Courses Program for Teacher Training	Provision of distance education through television for the training and retraining of teachers	Students/ Teachers	Individual Person	Integration to teacher training program	Compatibility between learning through broadcasting and classroom learning necessary to ensure the proper achievement of the former by means of a certificate, and decrease the latter hours, for example
School Broadcasting Program for Secondary Education	<ol style="list-style-type: none"> To supplement the shortage of teachers, and teaching materials, etc. in the current classrooms to improve and consolidate the learning process; To standardize teaching methods and to reduce the high level of drop-outs which is a serious problem in secondary education today; To improve learning through the use of educational materials, which can hardly be used for ordinary classroom teaching, in the future 	Secondary School Pupils	School	<ul style="list-style-type: none"> Selective use of specific programs which fully exploit the characteristics of television broadcasting even if these are not fully compatible with the curricula Diversified use of broadcast programs by means of VCR Creation of integrated secondary education system together with radio programs 	Promotion of video use to facilitate diversified, effective teaching
Correspondence Courses Program for Secondary Education	<ol style="list-style-type: none"> To provide correspondence education for those who want to but cannot attend school; To provide secondary education in remote areas; The program is useful for secondary school pupils to improve their academic level. 	Individual Persons/ Secondary School Pupils	Individual Person	Combination of viewing at home and classroom teaching at school <div style="text-align: center;"> <pre> graph TD CC[Correspondence Course] --> L((Learner)) S[Schooling] --> L L --> SR[Schooling Report] </pre> </div>	<ul style="list-style-type: none"> Preparation of textbooks Development of an achievement or evaluation system Establishment of responsible department in MEC
Social Educational Broadcasting Program for socially weak	<ol style="list-style-type: none"> To satisfy the basic educational requirements of the socially weak, such as infants, children of school age but not attending school, the illiterate, the handicapped and the poor, etc.; To encourage the wide participation of these people in basic social education organized by a local community or group while rectifying the unequal educational opportunities; Similar to general educational and cultural broadcasting once fully developed 	Socially Weak including the illiterate	Group/ Individual Person	<ul style="list-style-type: none"> Phase 1: to satisfy the most basic learning requirements - literacy education and education for infants Phase 2: to provide basic training to foster the abilities and knowledge essential for social life Phase 3: to promote programs designed to provide essential information on social activities or problems 	<ul style="list-style-type: none"> Strong assistance by family members and/or community Possible joint activity with literacy organization Provision of program leaflets and annual schedule, etc. to allow the public to know the contents in advance
Social Educational Broadcasting Program for Specific Learning	To meet the learning requirements of individual persons or groups hoping to acquire the knowledge and/or skills for a better social life and productivity in industries (languages and vocational training, etc.)	Specific Users	Individual Person	Home learning to meet the specific requirements of individual learners	Promotion of popularity through the provision of leaflets explaining programs and annual schedule, etc.

Table 1.1.1 Description of Program

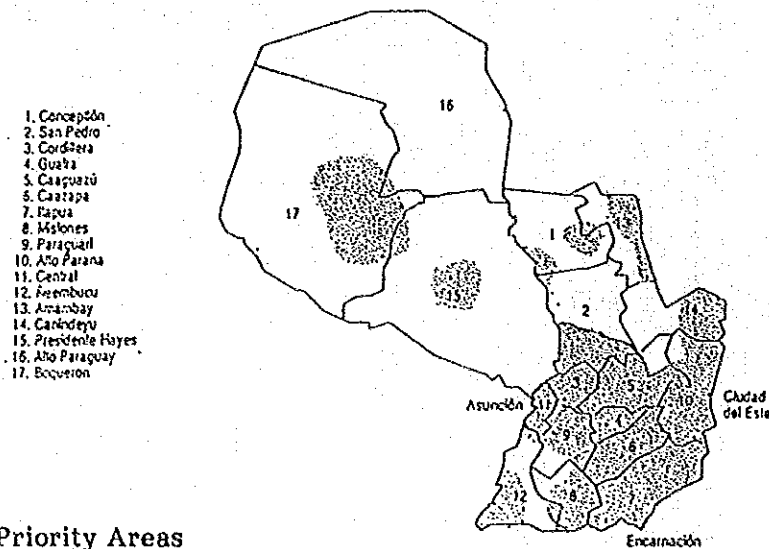
Program Name	Objectives	Target	User Unit	Operation System	Conditions
Educational and Cultural Broadcasting Program for General Public	① To use television broadcasting to make the general public acquire knowledge, skills and a sense of values for a better life and/or for the sound sustainable development of personal potential; ② To provide information on nutrition, health, jobs and social events, etc.; ③ To conserve the cultural heritage of the country through various programs; ④ Programs for women or for the promotion of democratic principles in daily life will be significant	General Public	Individual Person/ Household	Individual, family or group viewing to improve social consciousness as well as practical knowledge	- Promotion of joint viewing by parents and children to develop sound viewing habits - Advance announcement of programs and annual schedule, etc. to make the public aware of the program contents in advance

1.2 Educational Television Network Development Program

(1) Objective Areas

The land of Paraguay is divided into the eastern part and western part by the River Paraguay. The population is predominantly concentrated in the eastern part which enjoys a more advanced stage of development. From the viewpoint of maximizing the size of the benefiting population, the objective broadcasting areas to be covered by the project under the Master Plan are major cities and their surrounding areas in the eastern part of Paraguay. As far as the western part is concerned, as the population of the western part of Paraguay is only 2 % of the national total, it is not reasonable at present to cover the entire part of the western part of Paraguay from an economic point of view. Therefore, it has been decided to include such areas as Filadelfia, Pozo Colorado and M. Estigarribia and their surroundings which are relatively populated and accessible at low cost using the existing microwave communication network of the ANTELCO.

Figure 1.2.1 Objective Areas



(2) Priority Areas

It would be impractical to establish such a broadcasting network as to cover the whole objective areas simultaneously. It was therefore planned to materialize the broadcasting network to cover the objective areas step by step, i. e. to cover the above-mentioned objective areas gradually throughout the extent of the Master Plan. An examination was conducted on the priority areas where the construction is to be made earlier.

The criteria used for the selection of priority areas included some educational and social considerations as well as consideration of the number of beneficiaries. The selection was also based on the judgment that the role of Regional Education Centers (CREs) are crucial for successful broadcasting and that easy access via ANTELCO's digital telecommunication network which is necessary for minimizing the construction costs. As a result, such major local cities as Encarnacion, Ciudad del Este and Villarrica as well as their surrounding areas were selected as the priority areas. The broadcasting network study results showed that the planned broadcasting network is expected to cover Asuncion, the capital and a part or whole of the following 9 departments, which will serve approx. 62% of Paraguay's total population in 1992.

Table 1.2.1 Coverage of Priority Areas

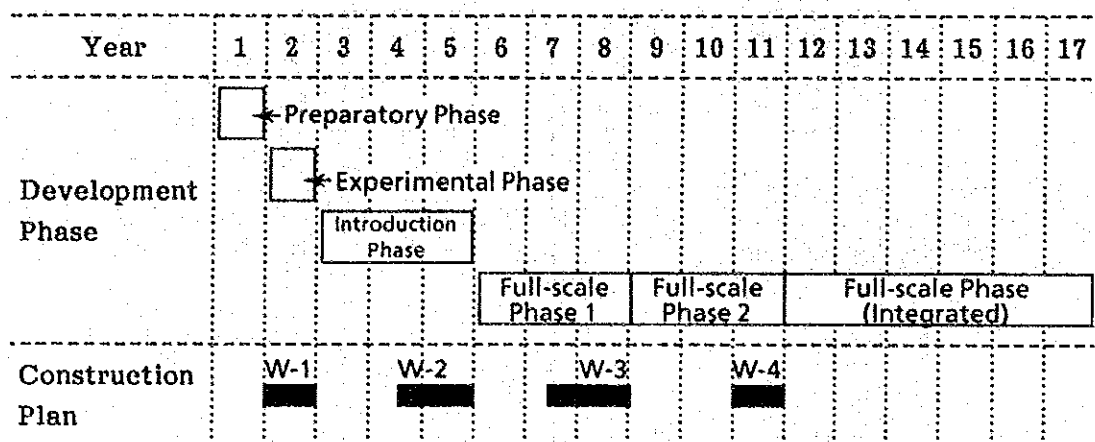
Department	District	Department	District
Asuncion		Paraguari	Escobar
Cordillera	Eusebio Ayala Valenzuela Nueva Colombia Altos San Bernardino Caacupe Embosada Atyara Arroyo y Esteros		Sapucaí Caballero Vbytimi Mbuyapey Pirayu Yaguaron Acahay Carapegua Quindy S. R. G de Sta. Cruz
Guaira	Villarrica Independencia C. M. J. Troche Mbocayaty Cnel. Martinez Itape Borja Iturbe San salvador Numi	Alto Parana	Ciudad del Este Hernandarias Minga guazu S. R. del Monday Los Cedrales Pte. Franco Vguazu
Caaguazu	Caaguazu Repartriacion Dr. J. M. Frutos Carayao Cnel. Ovideo S. J. de los Arroyos Dr. J. E. Estrigarribia Yhu Dr. Cecillo baez	Central	Mariano Roque Alonso Limpio Luque Aregua Fernando de la Mora San Lorenzo Capiata Itagua Ypacarai J. A. Saldivar Ita Guarambare Ypane Nemby Nueva Italia San Antonio Villa Elisa Villeta Lambare
Caazapa	Caazapa Fulgenio Yegro		
Itapua	Cap. Miranda Encarnacion Cambyreta Nueva Alborada Bella Vista Obligado Hohenau Trinidad Pirapo Jesus Fram Gral. Delgado Cnel. Bogado Carmen del Parana San Cosmey y Damian Cap. Meza Gral. Artigas	Pte. Hayes	Benjamin Aceval Villa Hayes

(3) Educational Television Network Development Plan

Figure 1.2.2 shows the total set-up of the project development plan with the target set at 2010, which takes the time required for each phase into consideration. Figure 1.2.3 provides the development scenario of each program.

As this plan is the first introduction of full-scale educational broadcasting system for Paraguay, there will be many requirements, such as coordination between this new system and the conventional education system and training of required staff, etc. It therefore takes a significant preparation period prior to the commencement of the full-scale services.

Figure 1.2.2 Overall Development Program of Educational television Broadcasting Network Project (Master Plan)



W-1: Asuncion Transmitting Station, and re-inforcement of Exsit. Studios

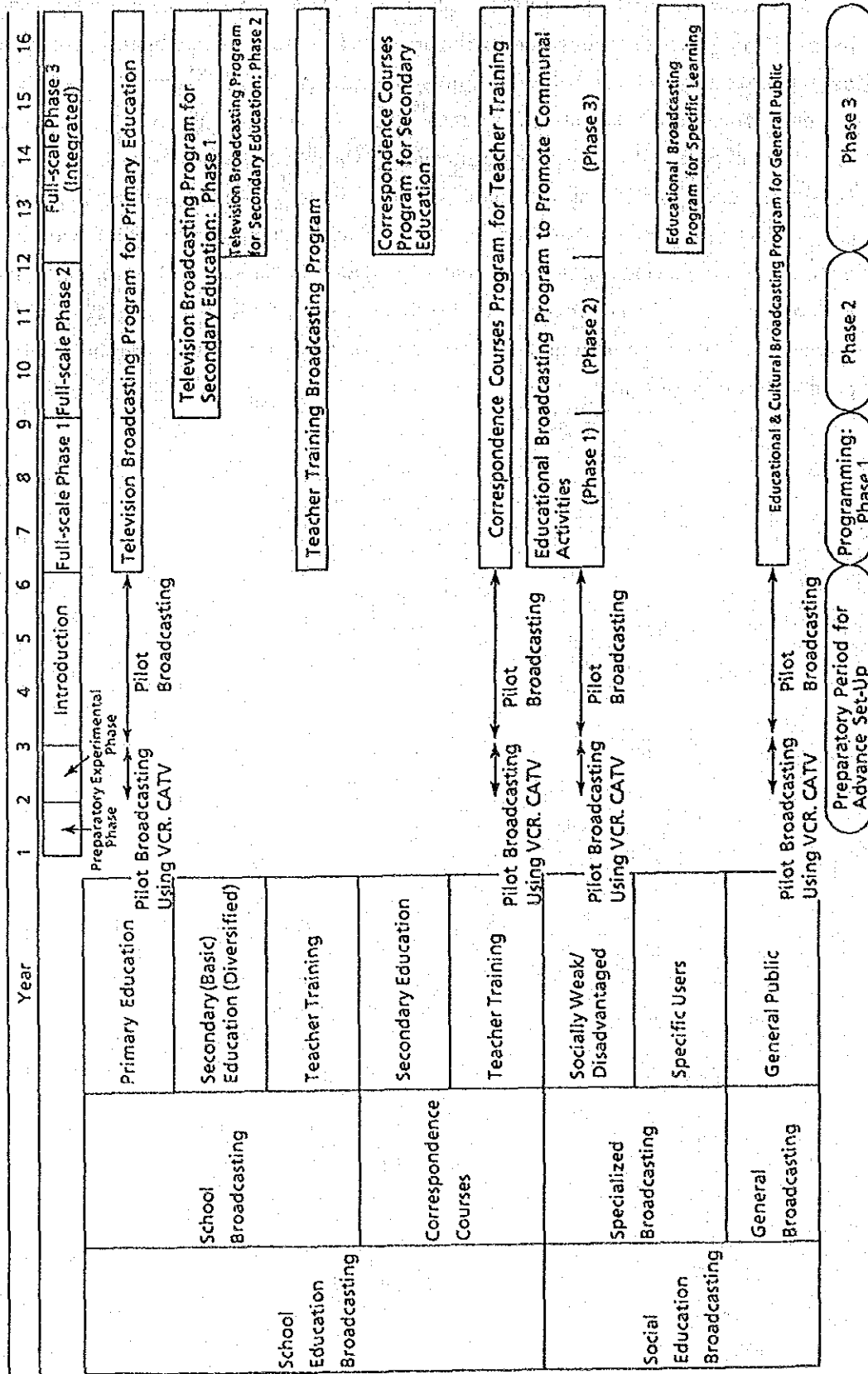
W-2: Educational Television Center (ETV Center) in Aunci6n and Major 3 Local Transmitting Stations

W-3: 9 1st Plan Stations

W-4: 10 2nd Plan Stations

In view of these circumstances, it was planned to have one year for the preparatory phase, another one year for experimental phase where the trial is to be conducted by delivery of VCR tapes and through CATV networks and another 3 years for the introduction phase which is scheduled to carry out test broadcasting with its main service areas in the Metropolitan areas. Therefore, full-scale broadcasting is designed to commence in the 6th year after those preparatory phases. Later in the introduction phase, construction works will commence for major local transmitting stations in Ciudad del Este, Encarnacin and Villarica. Construction of the Educational Television Center (ETV) in Asuncion will also commence during the same period to expand the necessary production capability.

Figure 1.2.3 Educational Broadcasting Development Scenario



1.3 Basic Utilization Modes of Educational Television Broadcasting

(1) Basic Utilization Modes of Educational Television Broadcasting

As simple consolidation of hardware system has limitations in regard to the developmental aspect of educational television broadcasting, development of software system is crucial to achieve the maximum benefits of such broadcasting. In order to maximize the effectiveness of the educational television broadcasting, it is required to work out the best use of educational television, taking the circumstances or conditions of schools etc. into consideration. For example, if the number of television receivers is insufficient in schools, more flexible utilization of the available receivers should be considered. Following are the basic utilization modes recommendable.

School Education Broadcasting : Live use, Serial viewing, Self-sufficiency-oriented mode*1

Teacher Training Broadcasting : Recorded use, Selective viewing,
Mixed use of Self-sufficiency-oriented
and Application-oriented mode

Social Education Broadcasting : - Classroom viewing*3
- Small group viewing*3
- Home viewing

*1 Mode of utilization which allows students to understand the learning contents easily only by viewing. Teachers can use broadcast programs without much preparation work.

*2 Viewing VCR programs when necessary

*3 Those who cannot go to school and/or who do not have TV set are also targeted viewers.

(2) Utilization and Operation System of School Educational Television Broadcasting

The objectives of the school educational television broadcasting, which is understood as creating a support system for educational activities in Paraguay, can only be achieved with general coordination and/or close linkage among all

related organizations. From such view point, a utilization system of educational television broadcasting with the coordinated efforts of the three keys players such as the broadcasting station which airs the programs, such viewers (users) as teachers and students and such official organizations as the MEC including CREs, are studied. Major roles of each players are defined as follows.

- **Broadcasting Station**
 - Planning, production and broadcasting of appropriate television programs
 - Public relation activities to enlighten the general public
 - Research and development on educational television
- **Users**
 - Utilization of educational television in a proper manner
 - School management incorporating educational television broadcasting
 - Teacher training
- **Administration**
 - Planning and promotion of utilization of educational television
 - Provision of information concerning educational television
 - Research and development on educational television
 - Training of administrators/supervisors

II-2 ORGANIZATION AND MANAGEMENT PLANS

2.1 Basic Policy on Organization and Management Plan

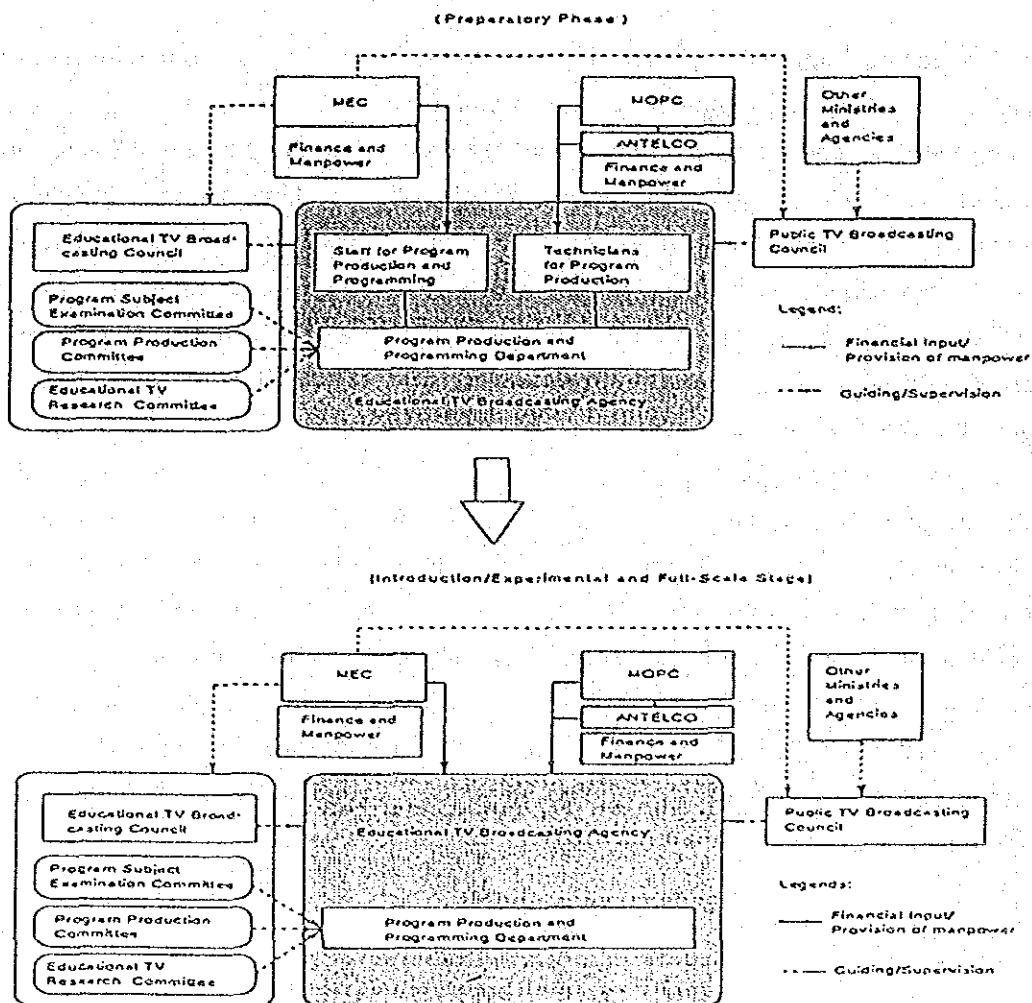
Except two private commercial television stations, no government owned or operating television station exist in Paraguay. On the other hand, in most of all surrounding countries in South America, the government owns or operates television station and these television stations play important roles in national education development by providing educational programs. In Paraguay, various efforts and trials have been conducted to improve the quality of education using television as an audio-visual media as the most economical and effective means of information conveyance to viewers throughout the country. The educational television programs have been broadcast, however, in very limited space as it was only available to use broadcasting time frame of the commercial television stations due to no existence of national television station.

In order to implement program to improve the quality of education using television effectively, the operation and management of television stations are to be planned to conduct harmoniously and flexibly as much as possible based on the major basic elements of operation of television station such as program production, broadcasting facilities, human resource development and dynamic financial operation. Further more an incorporation of educational television broadcasting service into the public education system as an integral part of the system should be developed without fail. It was judged that it is not appropriate to form an organization to undertake such task by means of the expansion of existing government organization alone taking into account of the budgetary system, employment system and other factors. In this project, a new public corporation is planned to be formed to act as a joint operation body constituting a number of different government organizations of which core organization is to be the MEC as it is the main government agency responsible for administration of education. The formation of this organization is planned to be done jointly with the ANTELCO and the MOPC who are responsible for operation of infrastructure related to the telecommunications, broadcasting and frequency management.

2.2 Organization Plan

It is planned to form an organization having joint operational function of existing ministries and public corporation so as to realize a minimization of additional government budget to operate planned entity by transferring appropriate personnel from related existing manpower sources. In this point of view, the Teleducation Department of the MEC is considered as a source of personnel on existing payroll to meet the needs related to program production and planning, and the ANTELCO as a source of operation, maintenance and technical requirement related to the broadcasting operation as well as program production. A core of the members of the planned entity is to be of personnel available from Teleducation Department of the MEC, and personnel required for operation and maintenance of precision electronic equipment come from the ANTELCO's existing manpower source (See Figure 2.2.1).

Figure 2.2.1 Conceptual Framework of Organizational Structure

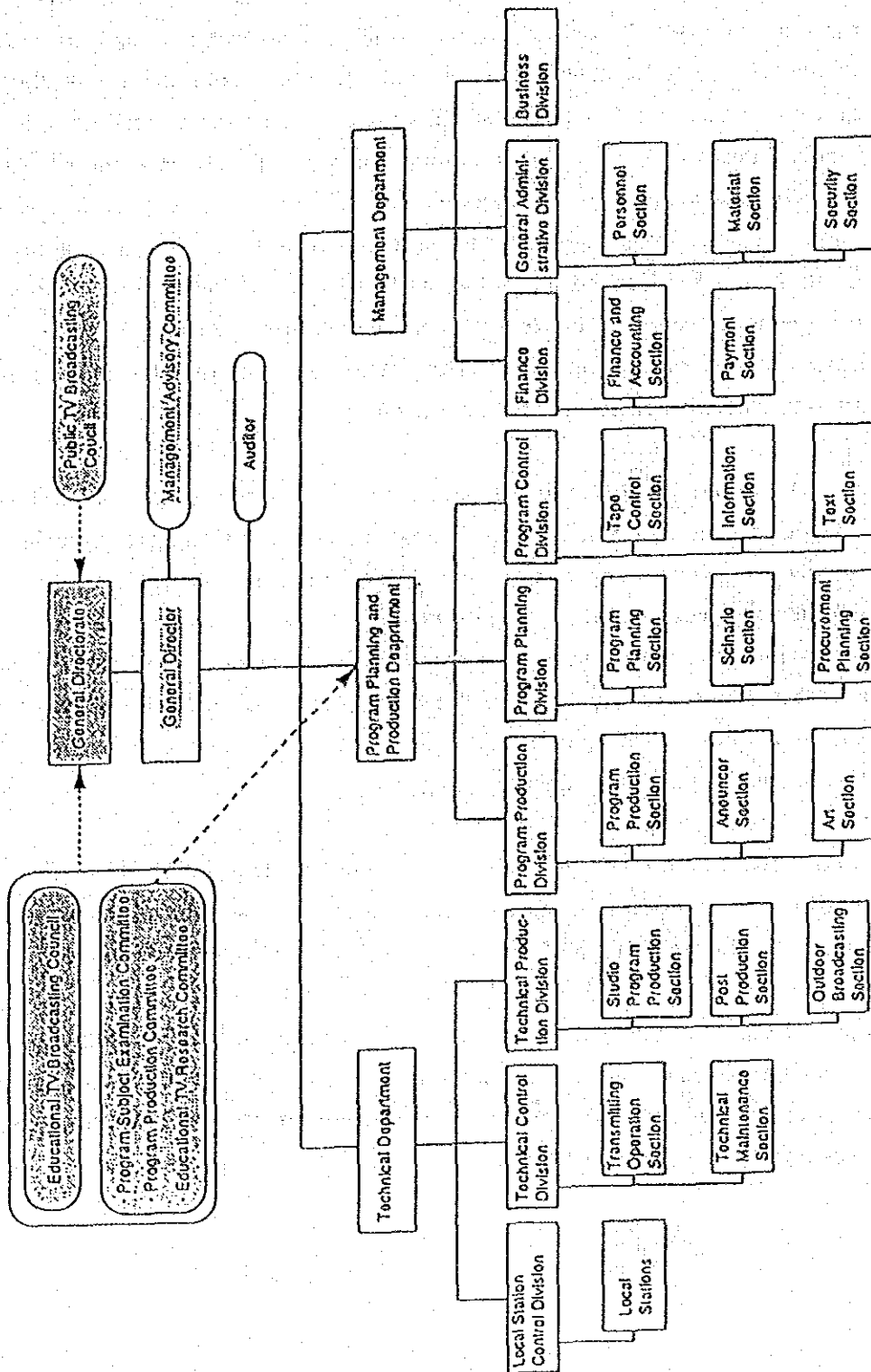


2.3 Management Plan

The financial source of the new organization is planned to be based on national account (transfer budget from relevant ministries) basically as the Project directly relates and plays an important role in the public education system. However, it is also planned that the organization will be able to take an income generating from public and commercial advertisements to ensure a flexible operation and management of the organization from financial view point. It is, therefore, recommendable that the organization is to be planned of a public corporation so as to be ready to obtain such income flexibly and be independent from the central government administration system under certain control and supervision of the MEC and other related government administrations related to the education.

It would be difficult to incorporate educational television broadcasting service into conventional public education system by the organization alone. It requires a close cooperation and joint operation with the MEC which is exclusively responsible for administration and supervision of the public education system to incorporate educational television broadcasting service into a formal education system. Taking the importance of coupling between the entity and administrative institutions related to public education, a formation of Educational television Broadcasting Council, Program Subject Examination Committee, Program Production Committee and Educational Research Committee composed of representatives of the MEC, education related institutions, teachers, etc. is quite important and planned to control and supervise the activities of the new organization from various point of views. With regard to the informal education such as broadcasting of general educational and cultural programs, government public advertisement, etc., it is planned to form a Public television Broadcasting Council which is composed of representatives from related ministries for administration and supervision of the organization (See Figure 2.3.1).

Figure 2.3.1 Overall Organization Chart



The system to utilize educational television broadcasting service, an incorporation of educational television broadcasting service into conventional public education system and a formation of the entity responsible for operation and management of undertaking are to be developed gradually phase-by-phase under certain development program, taking into account of non-existence of such system and organization at this moment. A phased management development plan is prepared as shown below briefly.

1) Preparatory Phase

Establishment of system to control and supervise the production of educational program from public education view point. Program production and accumulation for implementation of subsequent phase.

2) Experimental/Introduction Phase

Evaluation of produced program through evaluation process designed for examination of program contents and training of teachers on how to introduce educational television program into a conventional school education.

3) Full-scale Phase 1 and 2

Expansion of subjects and objectives of programs upon familiarization of skills related to programming, program production, operation and maintenance of equipment for program production as well as broadcasting service. The broadcasting coverage is also expanded to cover the viewers throughout the country.

4) Integrated Phase

The contents of program become rich and a variety of program is increased substantially.

II-3 PROGRAM PLANNING

3.1 Basic Policy for Program Planning

The programs to be broadcast shall be based on the educational broadcasting utilization and development plans stated in Chapter 1 of this PART II.

The contents of each program are shown in the Table 3.1.1.

Table 3.1.1 Contents of the Broadcasting Programs

Programs	Starting Full-scale Phase	Contents
For Primary School Education	Phase 1	<p>Communications including spanish for lower grade level, and mathematics and natural sciences for higher grade.</p> <p>The programs are to be used as introduction of the class teaching at the beginning 20 minutes of the class period (40min.).</p>
For Secondary School Education	Phase 2 Phase 3	<p>Natural sciences, health, sanitation art and sociology as the basic curriculums.</p> <p>Same subjects with diversified contents.</p>
For Teacher Training	Phase 1	Programs for training of students for teachers. Instruction of teachers in such fields as pedagogy.
For correspondence Secondary Course	Phase 3	Spanish, mathematics, natural sciences, etc. Since it takes time to establish a system such as awarding diploma to the students, this program will be started in the Phase 3.

Programs	Starting Full-scale Phase	Contents
For Teachers in Active Service	Phase 1	Programs to help non qualified teachers acquire necessary qualifications, programs aiming at improving the quality of teachers in active service, and programs how to introduce educational broadcasts in to the class.
For Socially Weak Persons	Phase 1	Literacy education programs: Programs introducing Spanish, social life education, simple vocational education. Infants' education: Programs to help the transition from Guarani to simple Spanish.
For Viewers with Specific Needs	Phase 3	Courses in technical skills such as computers, architecture, automobiles.
<p data-bbox="316 1151 667 1263">Educational and Cultural Programs for the General Public</p> <p data-bbox="316 1285 667 1352">① "Live" programs and News</p> <p data-bbox="316 1500 667 1568">② Programs Procured form Outside Sources</p> <p data-bbox="316 1675 667 1742">③ Saturday and Sunday Programs</p>	Phase 1	<p data-bbox="865 1285 1327 1473">Public notices, live "wide" programs, governmental public-relations announcements, news programs, educational information programs.</p> <p data-bbox="865 1496 1327 1653">Programs of high-quality are to be purchased form outside sources. Educational programs from Ibero America will also be used.</p> <p data-bbox="865 1675 1327 1818">Live sports broadcasts, satellite broadcasts from foreign countries, programs sponsored by or purchased form outside sources.</p>

3.2 Basic Concept of Programming

(1) Programming

A plan for programming is to be compiled based upon the Outline of programming that was decided upon by the Public Television Broadcasting Council, the Educational Television Broadcasting Council, and other related committees. Considerations should be given (a) for whom to broadcast, (b) what to broadcast, (c) for what purpose to broadcast, and (d) at what time period to broadcast. Considering these factors, a plan for programming will be compiled for the year, the month, the week, and the day in that order.

(2) Three elements indispensable for programming

In addition to the four factors mentioned earlier, the following three items are important to ensure good programming:

(a) Human resources

There should be directors, production technicians, people specializing in artistic effects, and many others. If necessary staff are not available, making programs will be difficult.

(b) Resources needed for making programs

This includes studios, post-production rooms, and other facilities. These should always be ready for use.

(c) Funds

It is necessary to make an estimate of how much it will cost to produce a program and try to keep the cost within the estimate. If producing programs cost too much, the new entity would lose its financial grounds and would find it difficult to continue to produce programs on a regular basis.

In any way, the new entity will have to start operation with limited resources in the three categories mentioned above.

So, it will be necessary to make a plan, making careful study of how many staff and how much fund will be available. The new organization should aim at a goal practically attainable at each phase.

(3) Annual Program Compilation Plan

The annual broadcast-program expansion plans, based on the educational-program utilization plan, is shown in Figure 3.2.1. The overall plan is divided into Preparatory Phase, Experimental Phase, Introductory Phase, Full-scale Phase and Integrated Phase.

Also, the number of production staff required as well as the number of programs to be produced is shown on an annual basis in Table. 3.2.1.

Figure 3.2.1 Annual Broadcast-program Expansion Plans

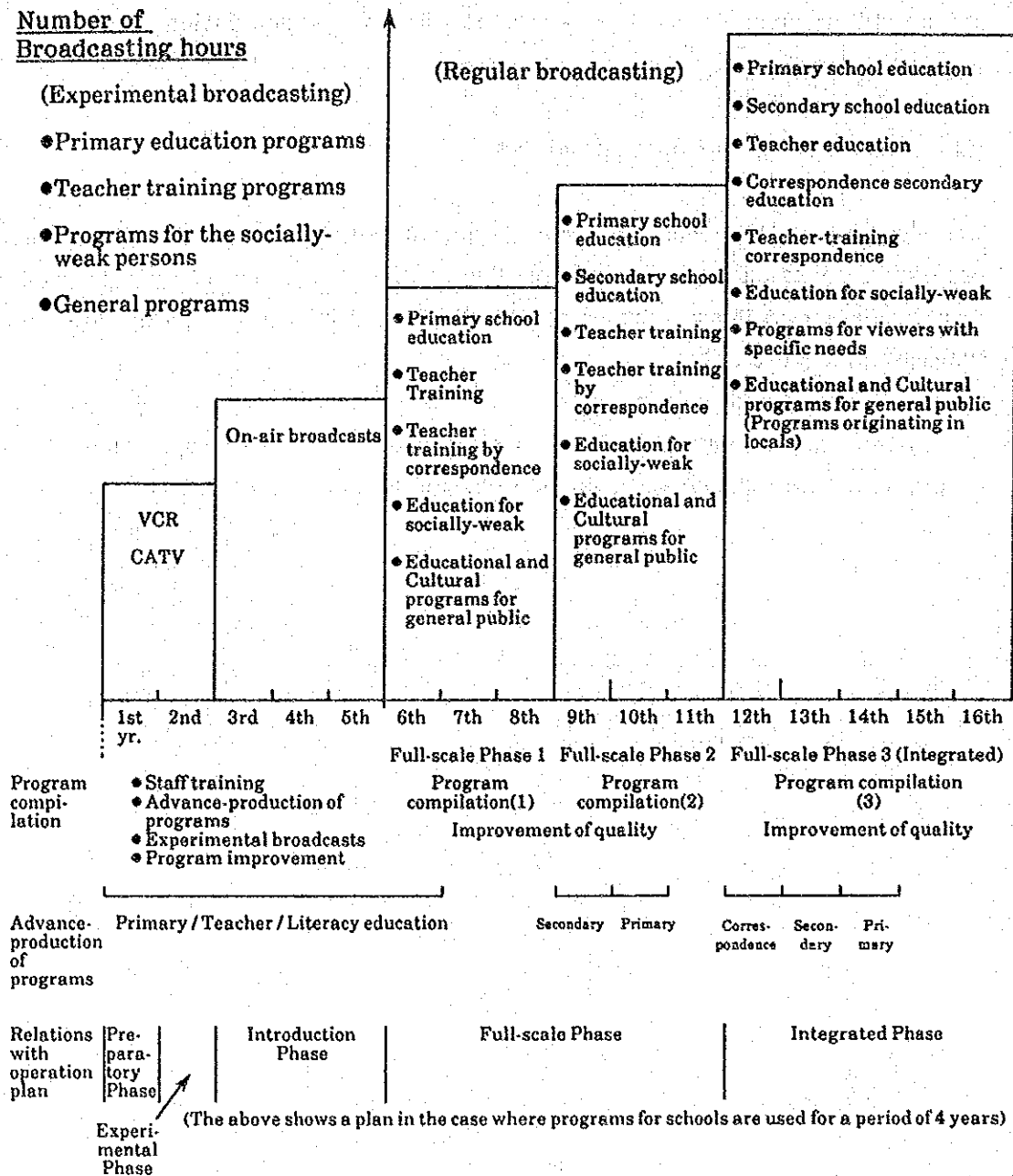


Table 3.2.1 Yearly Increase of Production staff and the number of programs

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th
Primary School Programs														
Pre-primary	50	160	480	640	800	300	40	40	20	20	20	20	20	20
Teacher training						100	40	40	20	20	20	20	20	20
Literacy education						100	20	20	20	20	20	20	20	20
Educational "wide"						365	365	365	365	365	365	365	365	365
Public Information				156	365	730	730	730	730	730	730	730	730	730
General Programs (OB Van)						50	50	50	50	50	50	50	50	50
(9th - 11th year)														
Secondary School							200	200	80	80	80	40	40	40
Music Program							80	80	100	100	100	100	100	100
Drama							120	120	40	40	40	40	40	40
(12th - 14th year)														
Secondary Correspondence										200	200	200	200	200
Vocational course										100	100	100	100	100
Wemens' hour										100	100	100	100	100
PDs (for Studio Production)	8	11	15	16	20	24	24	24	21	25	25	24	24	24
PDs (for Public Notice, "Wide")	0	0	0	10	12	17	17	17	19	19	19	20	20	20
PDs for P. Production	0	0	0	0	0	9	9	9	15	11	11	16	16	16
Total PDs	8	11	15	26	32	50	50	50	55	55	55	60	60	60
Studio Prod. Crew(Person)	10	20	30	40	50	45	45	45	50	50	50	50	50	50
Post Prod. OB, VAN	0	0	0	0	0	15	22	27	27	27	27	27	27	27
Total Prod. Technicians	10	20	30	40	50	60	67	72	72	72	72	72	72	72

3.3 Programming Plan before the Start of Full-Scale Broadcasting

(1) Preparatory Phase (First year)

Under the current educational system, primary schools give pupils four hours of class work a day for 200 days a year. Educational broadcasting should be incorporated smoothly into this system, to make this possible, various television programs should be prepared on an experimental basis in line with the curriculum and be examined closely to see if they can be fit into the entire educational system.

- 1) Educational curriculum for primary schools and various television programs shall be examined for the suitability.
- 2) Production of experimental program for pupils in the first to third grade of primary schools in subjects such as the language.
- 3) Training of staff that will produce educational programs.
- 4) Conducting studies on ways to use educational programs at school and developing new methods to use such programs in the classroom.

(2) Experimental Phase (second year)

In the second year, programs in arithmetics and natural sciences will be produced for pupils in the fourth to sixth years in primary schools. These subjects become more difficult as pupils advance in school years. Experimental programs should be produced and examined if they can help pupils understand such subjects. Those programs, together with the ones produced and found acceptable in the Preparatory stage, will be broadcast over CATV as introductory programs for use in class.

At this stage, there will be more schools using educational television in the second year. Such schools will be more prepared for the full-fledged use of educational broadcasting in classroom. Teaching guides, that is, programs to show teachers how to use television in classroom, should be made and examined.

A system should be established so that the results of evaluating programs can be reflected upon production of programs.

1) Production of experimental programs

- Sciences, arithmetics and other subjects for pupils from the fourth to sixth school years
- Programs as teaching guides for teachers

2) Broadcasting programs over CATV, timing them to curriculum.

3) Training teachers on how to use educational television in teaching.

4) Testing evaluation systems to be used by model schools.

(3) Introduction Phase (third, fourth and fifth years)

Experimental broadcasting of educational programs will be made possible in the third year, as the construction of a television transmitter station in Asuncion will be completed in Asuncion. This will enlarge quantity of broadcasting programs and improve their quality. This will be the stage when preparations should be made for the start of full-scale broadcasting. Studies should be made to find out needs for educational broadcasting both in urban and rural areas. There should also be studies to know more about what kind of information programs are needed to enrich people's everyday life. There should also be education and training of production staff, so that they will be able to deal with live broadcasting of programs on line.

1) Obtaining evaluation on educational broadcasting not only from urban areas but especially rural areas, where people have fewer opportunities for education.

2) Designating model schools that will promote education by broadcasting.

3) Producing public relations programs for the Government.

- 4) Producing educational and cultural programs for the general public.
- 5) Raising capabilities of production staff.
- 6) Producing programs, in the fourth and fifth years, in preparation of the start of full-scale broadcasting, which is to start in the sixth year.

3.4 Programming Plan for the Full-scale Phase and the Integrated Phase

- (1) Programming plan for the Full-scale Phase 1 (Program Compilation 1) (Sixth, seventh and eighth years) (see Table 3.4.1)

The pre-recorded programs for primary school education are as follows. About one thousand completed programs will be needed for use in primary schools at this stage of program compilation. This figure is obtained from the following calculation:

$$5 \text{ programs/day} \times 5 \text{ days/weeks} \times 40 \text{ weeks} = 1,000 \text{ programs}$$

A total of 600 programs will be needed for three more categories of programs, that is, programs for pre-schoolers, teachers and literacy education.

This figure is obtained from:

$$5 \text{ programs/week} \times 40 \text{ weeks} = 200 \text{ programs for each of the three categories, } 200 \times 3 \text{ categories} = 600$$

In all, 1,600 programs are needed. (1,000 plus 600 above)

Of these, 640 will be completed by the end of the fourth year, 800, by the end of the fifth year, so that 1,440 in total. After the Full-scale Phase has started, programs will be produced as will be needed.

Table 3.4.1 shows program compilation plans in different phases of the Full-scale Phase and Integrated Phases. As is shown in the above-mentioned Table, programs for primary schools will be broadcast in the morning and again in the afternoon, both at the time when classroom teachings are held at school. Programs for teachers will be broadcast after those for pupils. Programs for

pre-schoolers will be broadcast during school breaks, and the same programs will be broadcast again early in the evening, when many pre-schoolers are likely to be watching television.

Programs for literacy education will be produced for literacy classes that are given in the evening schools. From this phase, public notice hours are compiled in the morning and in the evening, and also a live "Wide" program is regularly broadcast for the night family program which is broadcast on live, taking social events widely as the program contents, with panel discussions showing instructive video materials on the screen making a commentary on this.

On Saturday and Sunday, when schools are off, there will be sports programs and entertainment programs in the afternoon and at night. Incomes from advertisements can be expected from these programs.

At the Full-scale Phase 1, programs for primary schools will be used as an introduction teaching material before the class time. They will be broadcast in the first twenty minutes of the forty-minute class at primary schools. There will be no broadcast for the remaining twenty minutes. Test patterns will be used during the break.

(2) Programming Plan for the Full-Scale Phase 2 (Program compilation Plan 2) (Ninth, tenth and eleventh years) (See Table 3.4.1)

This phase is an intermediary period between Program Compilation Plan 1 and Plan 3, with broadcasting for secondary education begun from phase, this is the stage when more attention will be focused to improve quality of programs. For example, there will be more programs improved from the so-called enrichment teaching method, rather than the direct teaching method such as lecture style. Enrichment teaching is presented to pupils through various different angles to consolidate their understanding. Animation or models, and other teaching aids can be used. This is also the stage to produce more programs and increase the stock of educational programs, so that in the next stage, the Program Compilation Plan 3, an program schedule with no breaks are made possible. Schools can videotape programs and use them as audio-visual library.

(3) Program Compilation Plan 3 for the Integrated Phase (12th, 13th and 14th years) (See Table 3.4.1)

This is the final phase. Programs at this phase should be sufficient both in quality and quantity. The Programming Plan in this phase is based upon those in the Compilation Plan 1 and 2 in the previous Phases, and programs of some new categories will be added. These include secondary-level corresponding secondary courses, technical courses and programs for housewives.

The secondary-level corresponding courses are aimed at people in remote areas who cannot get school education because there are no schools in their vicinity. They will focus on basic subjects to be taught at secondary schools. This is geared to raise the educational level of those in the lower middle class.

Table 3.4.1 Program Compilation Plans

Full-scale Phase 1 (6th, 7th and 8th Years)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
7:00	Public Notice						
7:15	Primary-School Program 1st grade, 2nd grades, 3rd grades					Primary School	
7:55	1st grade, 2nd grades, 3rd grades						Literacy Education
8:35	Pre-Primary Program						
8:55	Primary-School Program						
9:35	Primary-School Program						
10:15	Primary-School Program						
10:55	Teacher's Program						
11:15							General Programs
13:00	Public Notice						
13:15	Primary-School Program 1st grade, 2nd grades, 3rd grades						
13:55	1st grade, 2nd grades, 3rd grades						
14:35	Pre-Primary Program						
14:55	Primary-School Program						
15:35	Primary-School Program						
16:15	Primary-School Program						
16:55	Teacher's Program						
17:15							
18:40	Pre-schoolers' Program						
19:00	Public Notice						
19:30	Literacy Education						
20:00	"Wide" program						
22:00							

Full-scale Phase 2 (9th, 10th and 11th years)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
7:00	Public Notice						
7:15	Primary-School Program 1st grade, 2nd grades, 3rd grades					Primary School	
7:55	1st grade, 2nd grades, 3rd grades						Literacy Education
8:35	Pre-schoolers' Program						
8:55	Primary-School Program						
9:35	Primary-School Program						
10:15	Primary-School Program						
10:55	Teacher's Program						
11:15	Secondary-School Program						
11:45	Secondary-School Program						
12:15							General Programs
13:00	Public Notice						
13:15	Primary-School Program 1st grade, 2nd grades, 3rd grades						
13:55	1st grade, 2nd grades, 3rd grades						
14:35	Pre-schoolers' Program						
14:55	Primary-School Program						
15:35	Primary-School Program						
16:15	Primary-School Program						
16:55	Teacher's Program						
17:15	Secondary-School Program						
17:55	Secondary-School Program						
18:15							
19:00	Public Notice						
19:30	Literacy Education						General Programs
20:00	Drama						
20:30	"Wide" program						
22:30	Music program						
23:45							

Full-scale Phase 3 (Integrated) (12th year on ward)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
7:00	Public Notice						
7:15	Primary-School Program 1st grade, 2nd grades, 3rd grades					Primary School	
7:55	1st grade, 2nd grades, 3rd grades						Literacy Education
8:15	1st grade, 2nd grades, 3rd grades						
8:35	Pre-schoolers' Program						
9:15	4th grades						
9:35	5th grades						
9:55	5th grades						
10:15	6th grades						
10:35	6th grades						
10:55	Teacher's Program						
11:15	Secondary-School Program						
11:35	Secondary-School Program						
11:55	Technical-Adult Program						
12:25	Hours/Weeks' Hour						
12:15							General Programs
13:00	Public Notice						
13:15	Primary-School Program 1st grade, 2nd grades, 3rd grades						
13:35	1st grade, 2nd grades, 3rd grades						
13:55	1st grade, 2nd grades, 3rd grades						
14:15	1st grade, 2nd grades, 3rd grades						
14:35	Pre-schoolers' Program						
14:55	Pre-schoolers' Program						
15:15	4th grades						
15:35	5th grades						
15:55	5th grades						
16:15	6th grades						
16:35	6th grades						
16:55	Teacher's Program						
17:15	Secondary-School Program						
17:35	Secondary-School Program						
17:55	Hours/Weeks' Hour						
18:15							
18:30	Public Notice						
19:00	Comprehension Secondary Centre						General Programs
19:30	Comprehension Secondary Centre						
20:00	Literacy Education						General Programs
20:30	Technical-Adult Program						
21:00	Drama						
21:30	"Wide" program						
23:00	Music program						
23:15							

II - 4 BROADCASTING NETWORK PLAN

4.1 Basic Policy for Broadcasting Network Plan

The broadcasting network plan was compiled with emphasis on the following points:

- (1) The Broadcasting Network Plan shall be compiled based upon the basic policy of the Educational Broadcasting Utilization and Development plans.
- (2) Utilization of ANTELCO microwave network shall be considered.
- (3) Joint use of ANTELCO microwave antenna towers shall be considered.
- (4) Selection of high-altitude transmitting points and ensuring wider service areas.
- (5) Respect the agreement reacted among four countries, Brazil, Argentina, Uruguay and Paraguay, on the use VHF Frequency Assignment.
- (6) Efforts will be made to adjust antenna directivity to avoid interference to the neighboring countries.

4.2 Principles of Frequency Assignment

4.2.1 Allocation of VHF and UHF channel

Paraguay's Technical Standards call for the use of same channels as those of the United States. This will act as same.

4.2.2 VHF Channel

(1) Channel assignment in the same area

Since there are many existing television stations using VHF channels, a new clear channel should be selected for the educational television service, more specifically, the so-called "clear channels" (See Note 1 below) will be selected from the list of family channels shown below.

Group	Family Channels
Group 1	Channels 2, 4, 5, 7, 9, 11, and 13
Group 2	Channels 2, 4, 6, 8, 10, and 12
Group 3	Channels 3, 5, 7, 9, 11, and 13

(Note 1: Clear channels are those channels that can be used without any interference from same or adjacent channels.)

(2) Distance between two stations

When scales of transmission meet the following conditions, distance in the table below should be maintained between two television stations:

Channel 2 ~ 6 : 100kw (ERP)

Channel 7 ~ 13 : 310kW (ERP)

	distance
Co-channel stations	305 km
Adjacent channel stations	96 km

(3) Off-set carrier frequencies (for Channels 2 ~ 69)

There are three kinds of off-set carriers and their off-set frequencies are shown in the following table:

0 off-set carrier	0 KHz
+ off-set carrier	+ 10,417 KHz
- off-set carrier	- 10,417 KHz

According to Paraguay's Technical Standards, the improvement of D/U ratio for co-channels on the Off-set carrier system should be 17 dB (= 45 - 28). (D/U is the ratio of Desired strength/Un-desired signal strength)

(4) Combinations of TV channels and FM frequencies to be avoided in the same areas.

TV ch.	FM freq.	Reasons
CH. 2 CH. 3	101.0 MHz 107.0 MHz	Interference on TV -Rx local oscillator
CH. 7~13	$f_{FM} \times 2$	Interference caused by 2nd harmonics of FM-TX
CH. 7~13	$f_{FM} L \times 2$	Interference caused by 2nd harmonics of FM-RX local oscillator

4.2.3 UHF Channels

(1) Use of UHF channels

Channels 14~20 : The usage of these channels must be determined by the four countries. However, Paraguay has an intention to use these channels for ETV purposes.

Channels 21~39 : For pay-TV

Channels 40~69 : For broadcasting

(2) Effective use of UHF Ch 14~20

- (a) This low band of UHF channels has the advantage of having 3dB less propagation loss in comparison with the upper channels of 40 ~ 69. This enables wider coverage service area or otherwise requires less transmitter output power.
- (b) For the reasons stated above, the Channels 14~20 and Channels 40~69 shall be used as shown below.

Ch 14~20	1st Plan Stations ※1
Ch 40~69	2nd Plan Stations ※2

※1 1st Plan station :

Stations which cover the prefectural capitals and areas with the population of 40-thousand or above.

※2 2nd Plan station :

Stations that cannot be covered by first plan stations and that cover cities, towns and villages with the population of 10-thousand or above. They basically relay broadcast from 1st plan stations.

- (c) Equitable allocations of Channels 14 - 20 among neighboring countries Paraguay lies next to Brazil and Argentine. Allocation and use of UHF Channels 14 - 20 among the three neighboring should be fair and equitable, as they have more advantages in building a broadcasting network.

- 1) In principle, when more than one UHF channel is allocated in one area, five-channel spacing should be secured. But since there are only seven channels in UHF Channel 14 to 20, and they should be assigned on an equitable basis. Establishment of three channel groups with two-channel spacing should be considered for these frequencies as an exception. (See Table below)

	14	15	16	17	18	19	20
A Group	CH14,			17,			20
B Group		CH15,			18,		
C Group			CH16,			19,	

More than one channel within one group that can be used in the same area should be assigned in such a way that two countries bordering each other can use them on an equitable basis.

- 2) Considering that these channels can provide wider coverage of services, these beneficial channels shall be assigned to stations that have the following characteristics:

- Public broadcasting stations that provide educational programs, or stations established to function as the university of the air. (In Paraguay, the 1st plan station under this educational television network plan comes under this definition)
- Stations with important socio-economical standings but that cannot get "clear-channels" in the VHF frequencies.

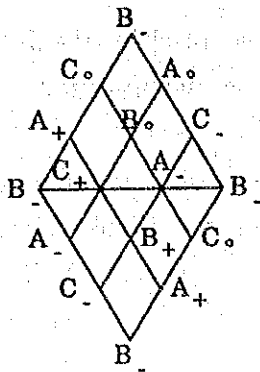
- 3) Conditions to set up Group A, B and C stations for Channel 14 - 20

Required separation distance between UHF stations are :

Distance between co-channels stations is 280 kilometers (No off-set carriers)

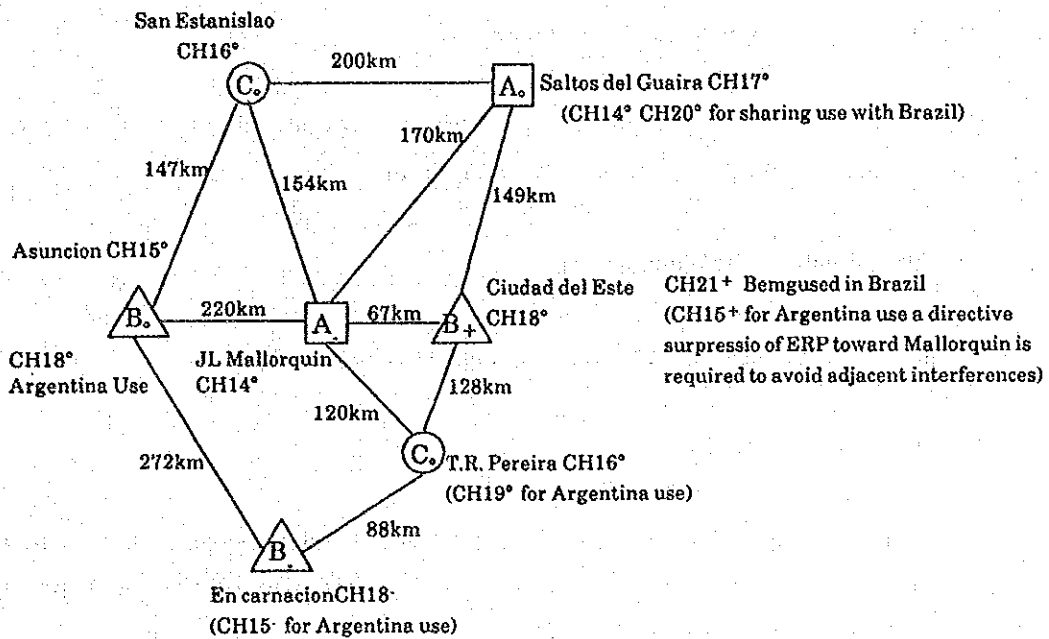
Distance between adjacent channel station is 88 km (about 90 km)

Considering the above, the figure of a triangular lattice, shown below, with triangles being separated 90 kilometers away from each other as its constituent elements, will be the base to obtain the maximum number of stations to be established by Group A, B, and C Stations, which are adjacent each other.



In this case, the distance between two co-channel stations is $90\text{km} \times \sqrt{3} = 156\text{km}$. This is less than the required distance. All the stations, therefore, should employ the precision off-set carrier system.

If this figure of a triangular lattice is matched to the map of Paraguay, equitable assignment of channels on bordering areas will be possible.



4.3 Method of Channel Allocation

- (1) Those channels that are specified in the resolutions adopted by the four-country VHF Frequency Assignment Conference shall be given priority.
- (2) When channels specified in (1) above are not available due to incoming interweaves from other stations, other VHF channels are to be chosen. but, enough D/U ratio for co-channels or adjacent channels shall be obtained.
- (3) If no VHF clear-channels are available, UHF channels shall be used as below.
For the 1st plan stations: CH14~20
For the 2nd plan stations: CH40~69
- (4) UHF channels shall be chosen from existing vacant channels among the same family channels with already used channel.

4.4 TV Broadcasting Network Plan

4.4.1 Areas to be covered by the 1st and the 2nd channel plans

- (1) 1st channel plan stations

These are stations that cover at least 40-thousand viewers in prefectural capitals. they will receive signals from ANTELCO microwave circuits. thirteen stations listed below are eligible as first channel plan stations.

(1) Asuncion	(8) Filadelfia
(2) Ciudad de Este	(9) Pilar
(3) Encarnacion	(10) Concerpcion
(4) Villarrica	(11) San Ignacio
(5) P.J.Caballero	(12) Tomas R.Pereira
(6) Saltos del Guaira	(13) Dr. J.L.Mallorquin
(7) San Estanislao	

(2) 2nd channel plan stations

These are stations that cover areas which are not covered by first channel plan stations and that cover villages, towns and cities with the population of at least 10-thousand in total. They will basically re-broadcast programs received from the 1st plan channel stations near by. Following are the names of the stations that come under this category.

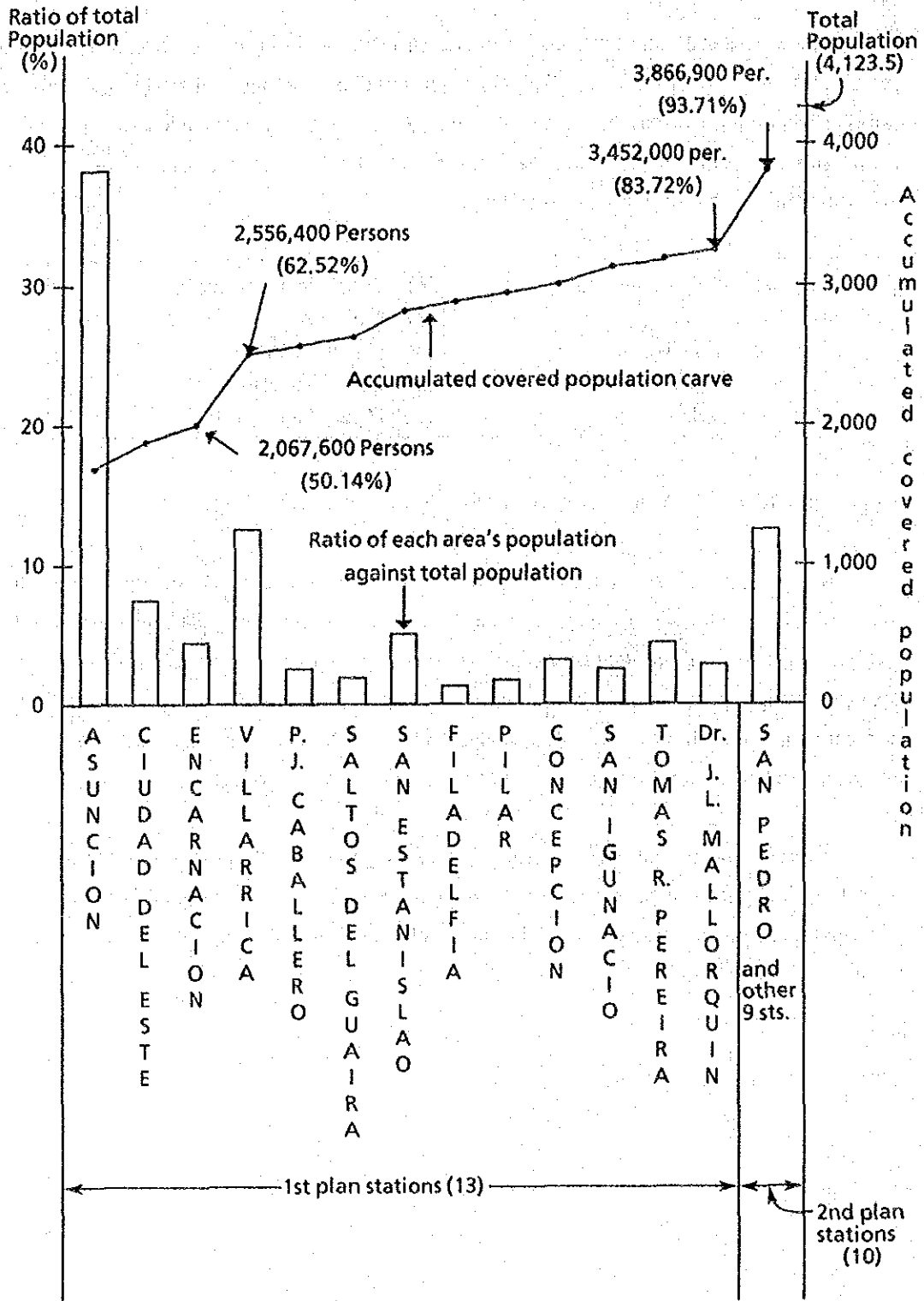
(1) San Pedro de Parana	(6) San I.de Curuguay
(2) Nacunday	(7) Yby Yau
(3) San Alberto	(8) Capitan Bado
(4) Jose Fasardy	(9) Pozo Colorado
(5) San Pedro	(10) Mcal. Estigarribia

4.4.2 Results of Channel Allocation and Service Area.

We conducted surveys in the capital Asuncion and 12 other cities and analyzed the results. From the results, we estimate that 84 percent of the entire population in Paraguay will have been covered by educational broadcasting by the time the construction of 1st channel plan stations are completed, and that 94 percent will have been covered by the time the construction of second channel plan stations are completed.

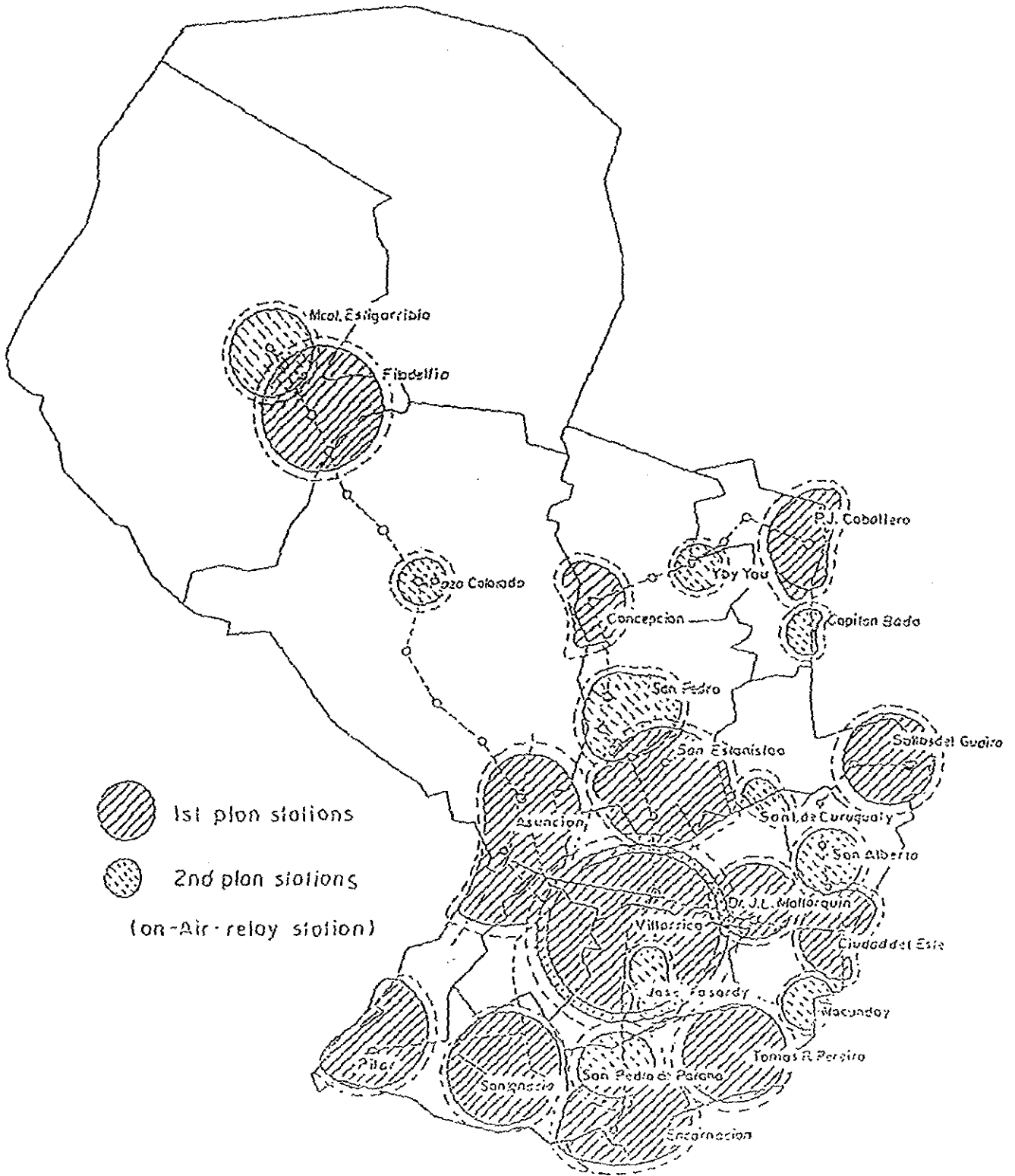
Figure 4.4.2.1 shows ratio of coverage against the population. A broadcasting network plan was compiled with considerations to the fact that the population is more concentrated in the eastern part of Paraguay. The result is shown in Figure 4.4.2.2.

Figure 4.4.2.1 Accumulated Covered Population Curve



[Total pop. : 4,123,500 per.]

Figure 4.4.2.2 Covering Map of ETV



II-5 FACILITIES PLANS

5.1 Site for the Educational TV Center (Asuncion)

The ETV Center in Asuncion city is to be truly the headquarters of the national education broadcasting network, and is vital as the center of program production and transmission.

The proposed four sites are as follows:

- Site 1 - Adjacent to the new IPT in Luque
- Site 2 - On the grounds of the ISE campus in the city center
- Site 3 - On the campus of the Felicidad Gonzalez primary school close to the central bus terminal of Asuncion
- Site 4 - A campus of CRE San Lorenzo

When comparing the four candidate sites, Site-3 and Site-4 are smaller and the conditions for locating the ETV center were found to be poorer than Site-1 and Site-2.

Thus, Sites 3 and 4 were eliminated from consideration, and attention was focused on Sites 1 and Sites 2.

The ISE site has the following advantages:

1. ISE is already the nationwide center of educational activities and would thus be very effective for the promotion of and access to educational television broadcasting.
 2. The ISE site has many advantages in infrastructure such as its central location and easy access to convenient transportation that will prove valuable in the initial phases of the operation.
 3. The ISE site has the technical advantage that it is located in one of the highest areas in altitude of the city. Thus, the educational broadcasting transmitter can cover the same broadcast service area as the commercial television stations already present closely.
- By locating the transmitter station close to the existing two commercial television stations, the existing viewers who are watching

the both stations can receive the signal from the ETV transmitter without changing the direction of their antennas.

Based on these reasons, it was ultimately decided to locate the ETV Center on the ISE site.

Because the ISE site turned out to be directly below a flight path of the planes arriving at and departing from Asuncion International Airport, it was faced with a 33m building height limit imposed by the DINAC. However, the government of Paraguay ruled that the route would be altered, moreover giving permission for the tower to be built at 160m above ground level, exceeding the normal ICAO height regulation of 105m by 55m.

Naturally, in following the rules set by the ICAO, flashing light beacons will be affixed to the tower to avoid obstructing aircrafts, while at the same time, close contact will be continually maintained with the DINAC throughout the construction of the tower in order to meet all regulations.

5.2 Building Construction Plan

(1) Planning Concept

The ETV Center in Asuncion will be a symbolic building of educational television broadcasting in this country. Therefore, it should be emphasized that consideration should be given to not only functionality, but ease of usage, design, and conformity with the surrounding environment, so that it will be a facility with which many people will become familiar.

In order to always respond to future trends in both hardware and software, the building must have as much flexibility as possible. Also, the center shall be constructed in a manner appropriate to actual conditions of Paraguay.

The ETV Center needs to have the main functional blocks as shown in the following table.

Functional Blocks of Broadcast Center

Functional block	Detail of Division	Main Room
Administration	Management, General Affairs, Accountant, Business	Office Room, Conference Room, Cafeteria
Production	Program Production, Composition of Program	Studio, Stage-setting Store-room, Post Production Room, Editing Room, Tape Storage Room
Technical	Studio/Transmission Engineering, Building Facilities	Control Room, Maintenance Room, Transmitter Room, Air-conditioning Equipment Room, Elec. Room etc.

The building shall have two television studios of 270m² each and one audio-studio of 50m². In addition to the studios, a master control room, two editing rooms, two post-production rooms, administrative offices, a transmitting equipment room and various rooms related to program production will be necessary. A transmitter room and an electric generator for use in case of emergency shall be located in a building separate from the studio building.

The total floor area shall be approximately 4,500m².

(2) Construction Plans for Local Transmitter

1) 1st Plan Stations (13 stations)

There are a total of 13 1st Plan transmitter stations. In order to minimize the investment costs and operational expenses, current ANTELCO's transmission facilities together with the operating staff shall be utilized. Nine of these stations can share existing ANTELCO facilities (antenna tower, transmission equipment rooms, and stations building space).

2) 2nd Plan Stations (10 Stations) and Local Studio Facility Plans

After entering into the full-scale broadcasting phase, for expanding the coverage area, an additional 10 2nd Plan stations are to be constructed in order to cover blank areas in the 1st plan stations' coverage.

In addition, television studios will be constructed in the main regional cities of Ciudad del Este and Encarnacion after entering the full-scale phase.

As both the transmitting stations are to be located outside of the city center, studio buildings will be constructed within the city limits.

5.3 Studio Facilities Plan

(1) Basic Policies for Planning of Studio Facilities

Basic policies regarding the studio facilities plan are as follows:

- Taking the current broadcasting systems and level of technology in Paraguay into account, the system will be similar to systems presently in use at current commercial TV stations.
- The studio system should be designed to allow for easy maintenance and repair.
- Studio equipment such as cameras and VTRs shall be of the same manufacturer and, as far as possible, of the same model to ensure ease of handling.

(2) Studio Facilities Plan

(a) TV Studio and Sub-control Room

The facilities planning of the two television studios shall put emphasis on the following items:

- The two studios shall each be equipped with the same facilities and three cameras each.
- The facilities shall be equipped with the capability to produce complete programs within the studio itself.
- Each studio shall be arranged so that two simple sets can be placed simultaneously on the studio floor.
- The sub-control room shall be on the same floor as the studio floor.
- Lighting shall be a batten system.

(b) Sound Studio

One set of sound studio is provided to produce sound program materials.

(c) Post Production Room

For the production of complete programs from already stocked materials and/or outdoor recording tapes, it is necessary to insert titles before and after the program as well as insert and dub sound in the post production room.

(d) TV Master Control Room

The master control room shall be planned to provide high-quality operation, stability and ease of maintenance with a minimum of operating personnel.

- Equipped with a VTR for exclusive playback usage.
- A TV-standards converter shall be equipped to facilitate exchange of programs with foreign television stations using incompatible systems.
- A complete continuity studio shall be arranged, equipped with two TV cameras for the transmission of news, public notices and emergency announcements

(e) Outdoor Broadcasting Van (OB Van)

One OB Van shall be provided in order to relay broadcasts of actual teaching in classrooms and such sporting events as football games.

(f) Video location

EFP equipment (a VTR and camera combined into one piece of equipment) shall be used for on-location recording of outdoor scenery, sports events and other programs recorded outside of the station.

(g) VCR Dubbing Equipment and Facilities for Audition Purposes

In order to promote the usage of ETV broadcast programs in rural areas, especially in remote schools, a number of VCRs and television receivers monitors shall be arranged as the A/V educational facilities, and for such purposes, a multi-VCR cassette dubbing equipment shall also be provided.

(3) Studio Facilities in Local Station

Before entering the Integrated Phase, major regional stations of Ciudad del Este and Eucarnacion shall be equipped with its local studio. Each local studio will be equipped with a small size TV studio, EFP, editing and master switching devices.

5.4 Transmitting Facilities Plan

5.4.1 Basic Policy of Transmitting Facilities Plan

Based on the data and information collected during the course of the site survey, the basic policies of transmitting facilities plan are laid as follows:

(1) Utilization of Existing ANTELCO Facilities

In order to reduce construction costs, the possibility of utilization of existing facilities of the ANTELCO should be taken into account as far as possible after verification that there is no problem on the strength of the commonly used tower, intermodulation between microwave and the TV transmitting facilities, etc.

(2) Type of Equipment

Use of solid-state devices is recommended so as to secure high reliability and effective operation of the equipment.

(3) Operating System

Since the reliability of all solid-state television transmitters of recent models is very stable eliminating the need of daily adjustment and maintenance, the failure rate is very low. Moreover, since the television broadcasting is mainly for education purposes, the transmission is not strictly required to operate with no failure interruption. Thus, a dual transmitter system is not needed.

(4) Maintenance

For easy and effective maintenance, a manufacture's transmitters, composed of compatible devices of modular type, shall be used.

(5) Antenna Tower

The antenna tower should be of a guy-wired mast, because a relatively wide site area can be easily obtained in Paraguay and the construction cost is lower than that of a self-supporting tower.

5.4.2 1st Plan Stations (13 Stations)

The regional television stations shall be constructed in the following 13 areas with the Transmitting conditions as shown in Figure 5.4.2.

Figure 5.4.2 Transmitting conditions of 1st Plan stations

Name of station	Transmitting conditions	Name of station	Transmitting conditions
① Asuncion	Ch-6 10kW 160m Ant.	③ Pilar	Ch-12 4kW Exist. Tower
② Ciudad del Este	Ch-18 ⁺ 10kW Exist. Tower	⑨ Filadelfia	Ch-7 5kW Exist. Tower
③ Encarnacion	Ch-18 ⁻ 10kW Exist. Tower	⑩ San Ignacio	Ch-5 5kW Exist. Tower
④ Villarrica	Ch-2 10kW Exist. Tower	⑪ Concepcion	Ch-9 5kW Exist. Tower
⑤ P.J. Caballero	Ch-11 1kW Exist. Tower	⑫ T.R. Pereira	Ch-16 5kW Exist. Tower
⑥ S. del Guaira	Ch-17 5kW Exist. Tower	⑬ J.L. Mallorquin	Ch-14 5kW Exist. Tower
⑦ San Estauislao	Ch-16 5kW Exist. Tower		

5.4.3 2nd Plan Stations (10 Stations)

The 2nd plan stations are as follows: (Figure 5.4.3)

Figure 5.4.3 2nd Plan stations with the Antenna Towers

Name of station	Tower height	Name of station	Tower height
① San Pedro de Parana	New. 80m	⑤ San I.de Curuguay	New. 70m
② Ñacunday	New. 60m	⑦ Yby Yau	Existing. 103m
③ San Alberto	Existing. 110m	⑧ Cap. Bado	Existing. 53m
④ Jose Fasardy	New. 60m	⑨ Pozo Colorado	Existing. 105m
⑤ San Pedro	Existing. 102m	⑩ Mcal. Estigarribia	Existing. 41m

All of the above stations are to be of 250W~1KW transmitter operating on either UHF or VHF, and the new transmitter house shall also be constructed with the antenna tower described above.