THE KINGDOM OF NEPAL
STUDY ON THE DEVELOPMENT PLAN OF TELEVISION NETWORK

FINAL REPORT

MARCH, 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

Preface

In response to the request of His Majesty's Government of Nepal, the Government of Japan has decided to conduct a study on the long-term development plan of nationwide television broadcasting network in the Kingdom of Nepal and entrusted the study to the Japan International Cooperation Agency.

JICA sent to Nepal a study team headed by Mr. Fumio Nishimura, All Japan Radio & Television Engineering Services Co., Ltd., from 24th June to 7th August, 18th October to 1st December 1987 and 16th to 25th February 1988.

The team had discussions on the plan with officials concerned of HMG of Nepal and Nepal Television Corporation, and conducted a necessary field survey.

After the team returned to Japan, further studies were made and the present report has been prepared.

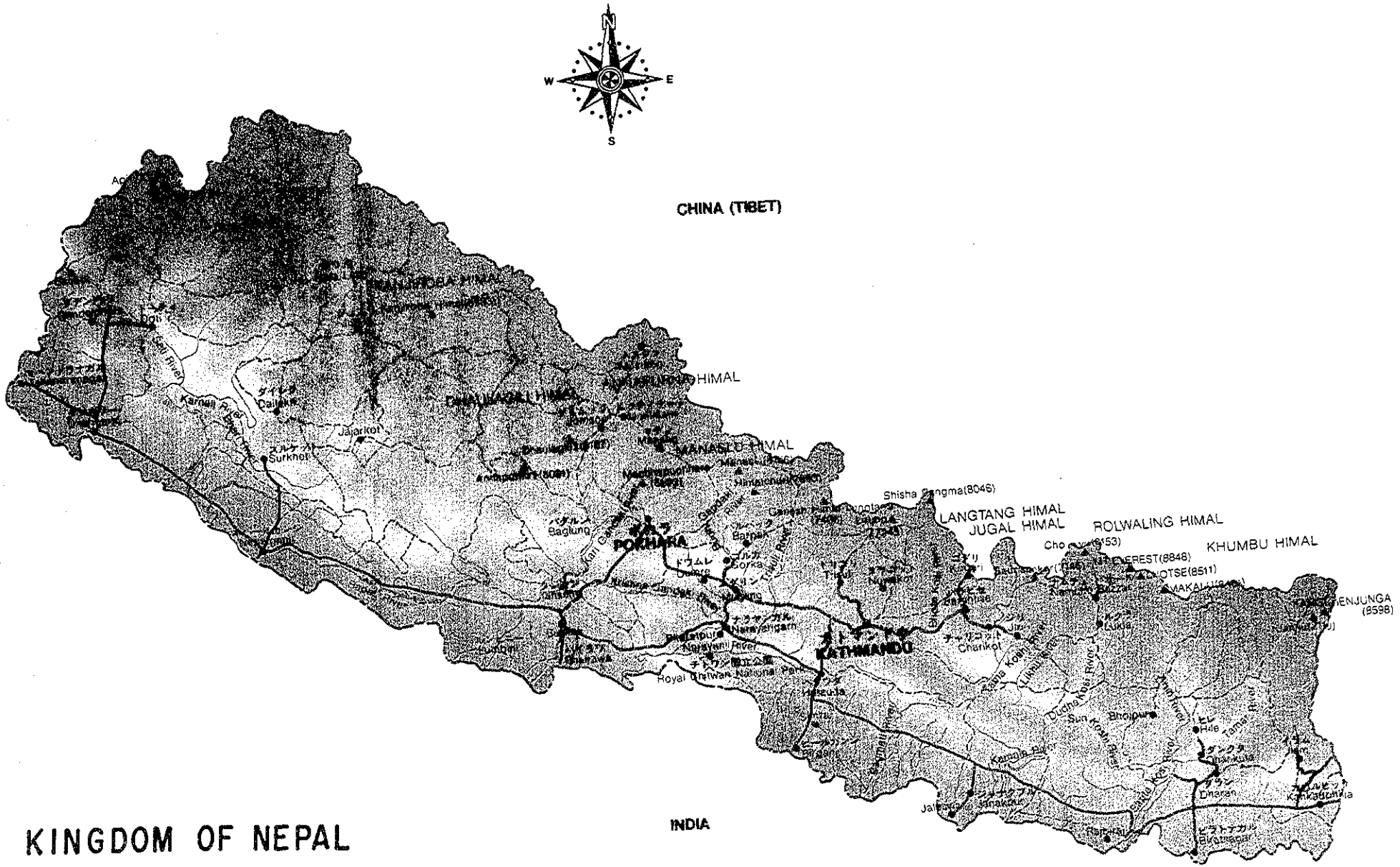
I hope that the report will serve for the development of the plan and contribute to the promotion of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the HMG of Nepal for their close cooperation extended to the team.

March, 1988

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency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KINGDOM OF NEPAL
DHAULAGIRI HIMAL
MANASLU HIMAL
LANGTANG HIMAL
JUGAL HIMAL
ROLWALING HIMAL
KHUMBU HIMAL
Shisha Pangma(8046)
Cho Oyu(8153)
EVEREST(8848)
LHOTSE(8511)
MAKALU(8481)
KANCHENJUNGA (8598)
KATHMANDU
POKHARA
Surkhet
Jajarkot
Dailekh
Baglung
Bharatpur
Narayangarh
Royal Chitwan National Park
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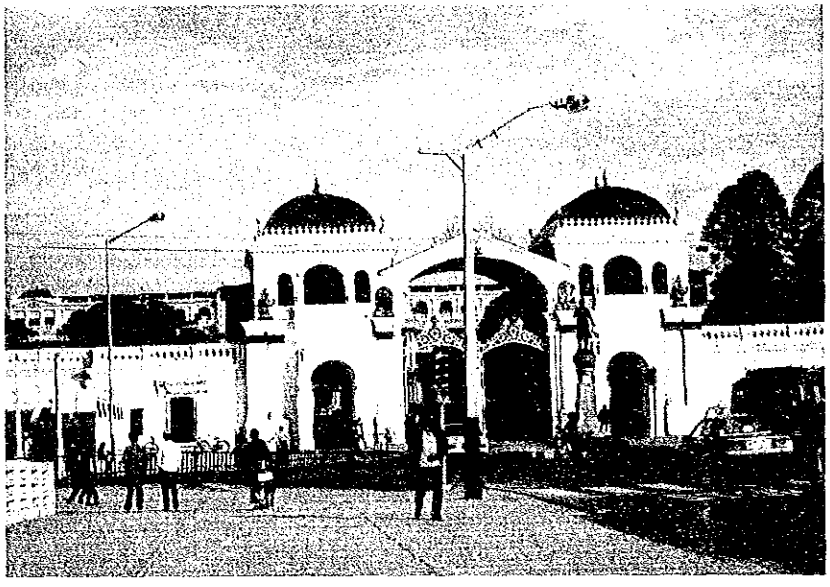
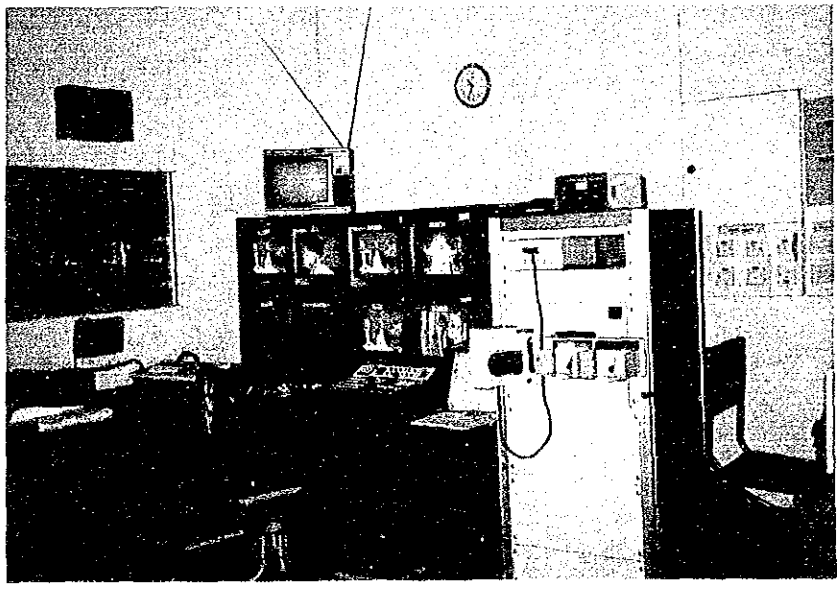
Jaleshwar
Kanchanpur



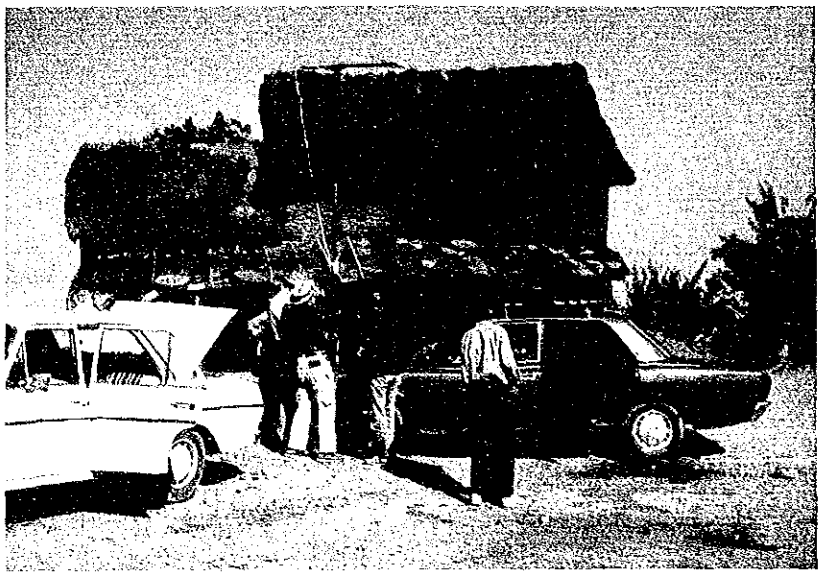
Central government office in Singha Durbar



Subcontrol room

VTR editing room

Viewers gathered to CVC in the suburbs of Kathmandu



Meaurement of TV field strength in rural area

Signing of the minutes of meeting

CONTENTS

SUMMARY

SUMMARY

This report deals with the results of "the Study on the Development Plan of Television Network in the Kingdom of Nepal".

The Kingdom of Nepal faces Tibet on the north across the Himalayas, a constituent of the roof of the world, and shares borders with the Republic of India on the south, east, and west. Most of the country is covered with hills and mountains. Geographical conditions have been a hindrance to the development of traffic and communication networks in the country. A low literacy rate of about 30% has been impeding not only industrial and social development but also the raising of the nation's living standards.

His Majesty's Government has been giving attention to policies for the people's education. The Government gives priority to the development of human resources and to raising the educational standards of the whole nation, in order to modernize the country despite such unfavourable conditions. For these purposes, the Government formulates the "National Communication Plan", in 1971, which aims to educate people through broadcasting media.

HMG of Nepal started school broadcasts on the radio for the realization of the plan. In 1985, the Government established the Nepal Television Corporation (NTV) to introduce television broadcasting which can give a great deal of information much more effectively. Experimental television broadcasting was started on December 29 of that year. The broadcasting facilities, however, are temporary and far from adequate. It is urgently necessary for the country to build a nationwide television network with permanent facilities.

HMG of Nepal considered it necessary to have experts construct the development plan for a nationwide television network. The Government requested cooperation in surveys concerning the plan from the Japanese Government in September 1986. In response to the request, the Japanese Government dispatched a preliminary survey team from the Japan International Cooperation Agency (JICA) in February 1987. A full-scale survey team was then dispatched in June and October 1987. The team investigated the present state of NTV, had discussions with concerned persons in the Government, and collected data. The team also conducted field propagation tests, and measured latent field strength in various places.

The team prepared a draft final report based on its findings, and gave an explanation of the report in the Kingdom of Nepal in February 1988. A final report is to be submitted.

The outline of the findings is as follows.

1. Implementation Schedule of the Project

The project will be implemented in four phases. The first and second phases are to be started within the seventh five-year development plan (1986 to 1990) of the Kingdom of Nepal. The third and fourth phases will be started within the eighth five-year development plan (1991 to 1995).

For the third and fourth phase plans, however, the team would like to propose that they are reviewed after the completion of the second phase plan, in view of rapid progress in electronics and space development technology as well as volatile changes in the world economy in recent years.

2. Programming Plan

As referred to earlier, HMG of Nepal hopes to put nationwide television broadcasting into operation at an early date; the Government feels keenly that telecasting plays a great role in accelerating national development, promoting education, and raising the living standards of the people.

The programming of television broadcast was done based on the basic policy of the Government. It mainly aims at the spread of education and communication of information.

NTV is now conducting three-hour broadcast from 19:00 to 22:00 daily except on Saturday. Broadcasting hours will be gradually increased, with the progress of the project, to eight-hour regular broadcasting in the third stage. The outline of the plan is as follows.

	Broadcasting time	Total broadcasting hours
Present	19 – 22	3
1st phase	7 – 8, 11 – 12, 18 – 22	6
2nd phase	7 – 8, 11 – 13, 18 – 22	7
3rd phase & afterwards	7 – 8, 11 – 13, 18 – 23	8
Main programmes	News, Religion / School hours / News, For children, Entertainment, Culture, For adults	

Production of educational programmes for adults requires close liaison among Government organs including the Ministries of Education, Agriculture, and Health and Welfare. It is also necessary to aim at feedback of opinions from viewers through CVCs (Community Viewing Centre). For school hours, programmes will be produced by a committee consisting of experts in school education. Such broadcasts will include those for school teachers, and contribute to an improvement in their competence.

3. Studio Equipment Plan

As stated in the previous section, broadcasting hours will be eight hours a day after the completion of the project. NTV plans to produce 80% of the programmes by themselves. The percentage is much higher than in other countries. It will be the proof of the corporation's zeal for television broadcasting.

The number and the size of studios were calculated, and studio equipment was examined, with reference to the ratio of NTV's own production and to the programming plan mentioned in the previous section.

For the size of studios, the first and second phase plans require a 65 m^2 continuity studio that mainly sends news programmes, a 200 m^2 and a 300 m^2 studio that produce general programmes including those for schools, and a

studio to dub imported programmes. To meet the increased broadcasting hours from the third phase, an outdoor broadcasting van will be introduced.

The facilities NTV is now using are assumed to be inadequate in quality, operability and reliability, but they will be used in this project as much as possible.

4. Television Network Plan (see Attached sheet-1 at page 11)

In the Kingdom of Nepal, where hills and mountains cover 83% of the country, it is very difficult to extend an efficient television broadcasting service. The object of this project is to cover Kathmandu and its vicinities, and the east and the west terai regions, with a population coverage of about 63%. If areas of poor quality reception are included, it will become about 75%.

Based on the objectives, three basic plans were examined for a television network plan. Blending the plans, the team proposed the plan that seemed best.

In selecting station sites, the aim was to ensure a maximum service area at minimum cost. CCIR recommendations are adopted as technical standards. The standard of service intends to ensure that the picture quality is better than 3 (within the 5 grade scale of evaluation) even at the final transposer station.

Programme transmission will be made by an off-air relay of radiated signals which is economically desirable, because the microwave links of the Nepal Telephone Corporation (NTC) cannot be used for that purpose now. For the preparation of the frequency assignment plan, frequencies with the least interference were assigned, in due consideration of the second programme channel expected in the future, and to avoid frequency interference between neighbouring countries.

The population coverage of the project is as follows.

Population coverage	Phase 1	Phase 2	Phase 3	Phase 4
(Each phase)	15%	28%	16%	4%
(Total)	15%	(43%)	(59%)	(63%)

5. Construction Plan

The buildings necessary for this development plan are the Kathmandu Broadcasting Centre which is the core of broadcasting services in Nepal, Phulchowki main transmitter station, Jaleswar transmitter station and 16 repeater stations.

The projected site of the Broadcasting Centre is situated in Singha Durbar. It covers 1.8 ha of level land, almost square in shape. It is suitable for the purpose from the viewpoints of convenience, security, and size. As the Broadcasting Centrer is a complex building that has many functions, one important aspect in the construction plan should be comfortableness and design, not to mention the functional efficiency, of the building. Since the Broadcasting Centre is to be built in an important area of the capital, Kathmandu, as the symbol of broadcasting services in the country, the surrounding environment and the view from the city should be considered. The building should be highly flexible with respect to the floor plan, structural plan, and equipment plan, so that it may cope with changes in needs arising from the progress of broadcasting technology. In setting the scale of the building, a plan with the proper scale, neither too small nor too large, needs to be made. The building must be superior to general buildings with respect to resistance against earthquake, wind, and fire.

The necessary rooms will be classified into groups by function, by purposes, and by scale, around three studios, different in size, and one dubbing studio. The groups will be divided into three blocks that constitute the entire structure, in due consideration of the construction process and balanced external appearance of the building.

The building will be of reinforced concrete and partially two-storied. In this report, three floor plans, different in size, are proposed based on the construction concepts mentioned so far.

The projected construction site for Phulchowki transmitter station is situated on the southeast slope near the mountain top; the projected construction site for Jaleswar transmitting station is situated on level land in the east terai region. A transmitter station generally requires only comparatively simple functions. It consists of facilities where specified persons perform specific management, inspection, and operation functions. In making the construction plan, therefore, special attention will be paid to functional, working, and economic efficiency. Minimum space will suffice for such buildings.

The projected construction sites for the 16 repeater stations are located in mountainous regions. Unmanned operation is expected and the buildings will have minimum space and simple facilities. Prefabricated buildings will be adopted to shorten the transport and construction periods.

6. Management and Operation Plan

The plan fully reflects NTV's opinion regarding the need to expand and reinforce its organization in order to cope with the future expansion of the entire scale of broadcasting. It especially reflects NTV's intentions regarding its headquarters organization and work responsibility.

Plans were proposed for programmes, which reflect opinions from various fields, regarding the following: flow of work in the organization, programme production, production system, management and operation, news gathering and programme transmission, and a library that takes care of programme materials.

For technical operation, a basic viewpoint was presented concerning the production and sending of programmes, transmission, and maintenance. For the staff plan, the necessary number of staff members was presented for each phase. A plan and opinions on staff training were also presented. The necessary number of staff members by phases is as follows.

Phase	Present	Phase 1	Phase 2	Phase 3	Phase 4
Number of staff members	164	319	394	440	457

7. Diffusion Plan for Television Receivers

Future diffusion of television sets in the Kingdom of Nepal was estimated based on the economic growth rate of the country and the actual diffusion of television sets in the neighboring countries.

Television broadcasting in Nepal is now conducted on an experimental basis, and the service area is consequently small. Television sets have spread for the purpose of viewing video tapes or receiving television broadcasts from India. Now, one in 680 persons has a television set.

Nepalese people, however, expect a great deal from television broadcasting. The start of full-scale broadcasting will cause television sets to be rapidly spread, as was the case in neighbouring countries.

A television set assembly plant has been established and is in operation in Nepal, with components supplied by a Japanese manufacturer. Thus, more people will become able to buy a television set which had been very expensive formerly.

The CVC (Community Viewing Centre) system, now reviewed and put into practice by NTV, is playing an important role, and will contribute to the diffusion of television sets.

8. Outline of Project Implementation Plan (see Attached sheet-2 at page 12)

As referred to earlier, the implementation of the project will be divided into four phases. The plan for each phase is outlined as follows.

Phase 1 TV Broadcasting Centre is built in the capital, Kathmandu.

Main transmitter station is built on Mt. Phulchowki.

One transposer station is built in the east terai region as the first step towards service expansion in that region.

Phase 2 Construction of one transmitter station and two transposer stations in the east terai region; one transposer station in the west terai region.

One studio is added to the Broadcasting Centre.

Three correspondent offices in the terai region are each equipped with one set of news gathering equipment.

Phase 3 Construction of eight transposer stations in the west terai region, and one transposer station in the east terai region.

One outdoor broadcasting van is introduced.

Correspondent offices in the terai region are equipped with one set of news gathering equipment each.

Phase 4 Three transposer stations are built in the west terai region.

Correspondent offices are equipped with the necessary sets of news gathering equipment.

9. Estimated Construction Cost

Construction cost is estimated for each phase as follows. The cost reckoning is based on prices as of July 1987. The conversion rate is 1 NR = 6.0 yen.

Population coverage	Phase 1	Phase 2	Phase 3	Phase 4
Construction cost (in million NRs)	302.3	308.5	224.5	69.7
Foreign portion of the above (in billion yen)	1.75	1.67	0.94	0.29

10. Operating Expenses

The following are operating expenses after the completion of each phase.

	Phase 1	Phase 2	Phase 3	Phase 4
Operating expenses (in thousand NRs)	30,801	38,631	44,806	46,054

The operating expenses of each phase are met by a government subsidy from the revenue of television reception charges, and income from commercials. The operating expenses include labour costs, expenses for programme production, maintenance costs, and electricity charges.

11. Project Evaluation

(1) Financial analysis

NTV is a corporation wholly owned by HMG of Nepal. The corporation is operated as an independent managerial body, with a government subsidy and income from commercials as main revenue sources.

Evaluation of the project was made by cost-benefit analysis with the internal rate of returns (IRR) as the indicator. The project was evaluated to see if NTV can be operated on a sound financial basis after its implementation.

Implementation of the entire project with NTV's own funds, including borrowing, results in an IRR of -4.9%. Such a project implementation cannot be regarded as feasible.

HMG of Nepal depends on foreign aid for more than 40% of its finances. The implementation of the project will also have to rely on foreign aid.

If the project is implemented with overseas grant aid for the portion of foreign currency investment, the IRR will be 18.6%. It can be regarded as feasible. This rate of 18.6% is higher than 17.5%, the interest rate on short-term bank loans in Nepal. It will result in operation of NTV on a sound financial basis.

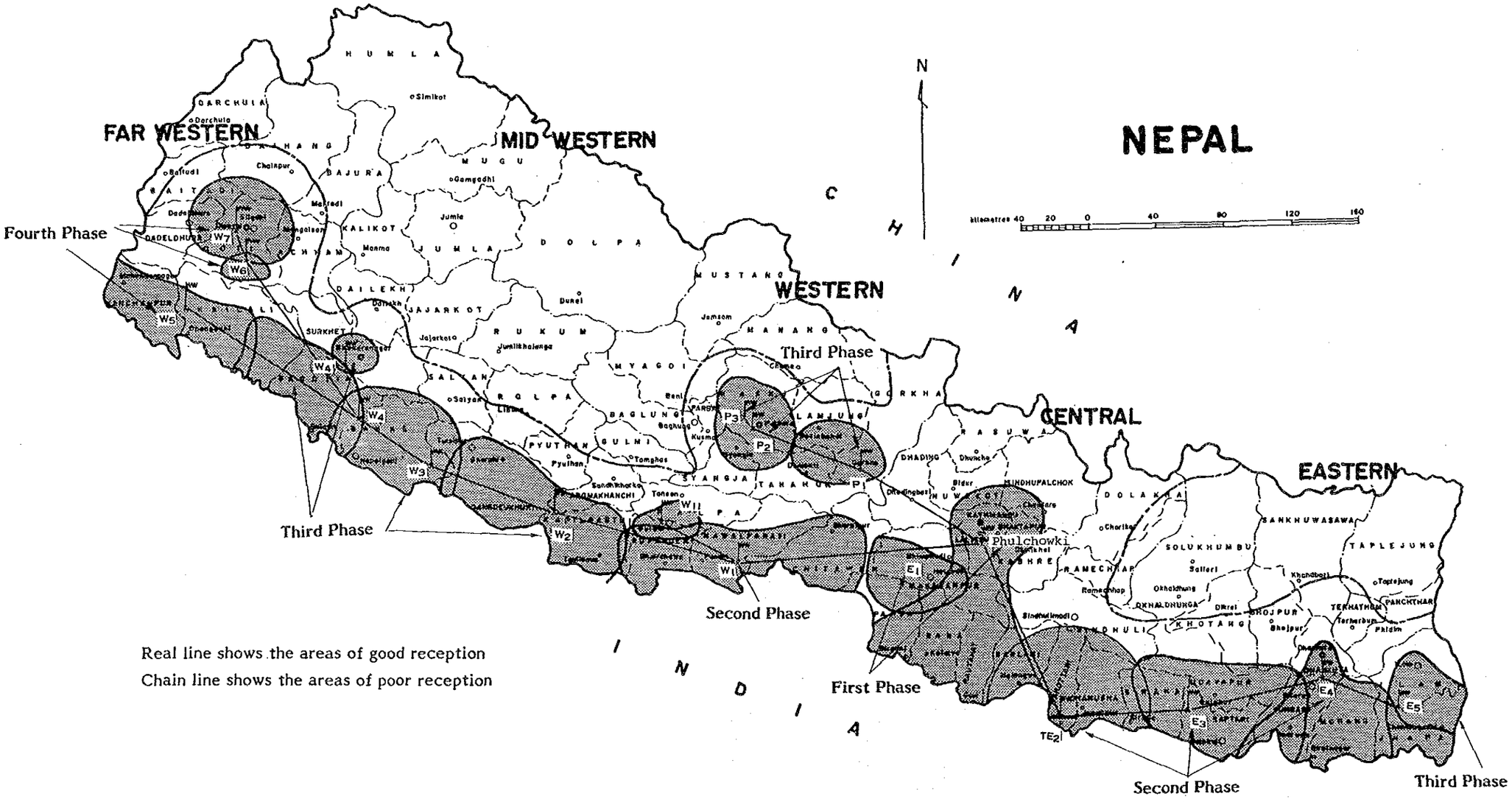
The conclusion is that, in implementing the project, the foundation of the broadcasting network should be prepared with foreign aid for the portion of foreign currency investment. Operation of NTV after the preparation of the broadcasting network can be financed by a government subsidy whose revenue source is television reception charges, and income from commercial charges. Financially sound development of the corporation can be expected.

(2) Social evaluation

The development plan for a television network in Nepal aims at the development of human resources through broadcasting for the promotion of the country's social and economic development. The project aims at the dissemination of education, and the furnishing of information on everyday life and vocational skills, in a way understandable for Nepalese people. The project aims at supplying entertainment to people who have little amusement. The project also aims to foster national identity among the people and to be the driving force of the country's economic development.

Only about 1.5% of the total population now enjoy television broadcasts in Nepal. The expansion of the service area and the increase in the CVCs after the implementation of the project will make it possible for 63% of the total population to receive television broadcasts with good picture quality and, if areas of poor reception are included, it becomes about 75%. Television broadcasting will contribute much as a guide to the modernization of the country.

The expansion of the television network will play the most important role in promoting the national development of the Kingdom of Nepal. Nepalese people expect it to be realized as soon as possible.



Real line shows the areas of good reception
Chain line shows the areas of poor reception

Expected Service Area (Proposed Plan)

Attached sheet-2

	Phase 1	Phase 2	Phase 3	Phase 4
Broadcasting Hours *1	6 hrs	7 hrs	8 hrs	8 hrs
Studio (Kathmandu)	65m² Utility 200m² Studio 30m² Dubbing Studio	300m² Production Studio	OB Van	—
Transmitter & Transposer Station	1-Transmitter Station 1-Transposer Station	1-Transmitter Station 3-Transposer Stations	9-Transposer Stations	3-Transposer Stations
(Station's Name)	Phulchowki, E_1	TE_2, E_3, E_4, W_1	E_5, W_2, W_3 W_4, W_{11}, W_{41} P_1, P_2, P_3	W_5, W_6, W_7
Served Population *2 (Total)	Pers. 2,839,000	Pers. 5,300,000 (8,139,000)	Pers. 3,028,000 (11,167,000)	Pers. 757,000 (11,924,000)
Population Coverage *2	15 %	28 % (43 %)	16 % (59 %)	4 % (63 %)
Number of Staff	Pers. 319	Pers. 394	Pers. 440	Pers. 457
Construstion Cost (mil.NRs) (Foreign Currency Portion mil. Yen)	302.3 (1,750)	308.5 (1,670)	224.5 (340)	69.7 (290)

*1 Numerical values are as of the end of each phase.

*2 Numerical value in each line shows the increase of each item in each phase, and percentage within the parentheses shows the total served population and percentage of coverage.

PART I

INTRODUCTION

PART I INTRODUCTION

1-1. Background

His Majesty's Government of Nepal has been conducting experimental television broadcasting in the capital, Kathmandu, and its vicinities, realizing that television broadcasting plays a very important role in accelerating national development, promoting education of the people and improving their living standards. The Government wishes to commence regular television broadcasting using permanent facilities, because present facilities are temporary and limited. The Government thought it necessary to make a nationwide television network development plan based on the existing network, and requested the Japanese Government to study the plan in September 1986.

1-2. Objective and Process of the Study

In response to the request from His Majesty's Government of Nepal, the Japanese Government decided to institute a study on the nationwide television network development plan of the Kingdom. The Japan International Cooperation Agency (JICA) dispatched a preliminary survey team to Nepal from February 8 to February 20, 1987, prior to the implementation of a development study on the plan. The team consisted of five members and was headed by Mr. Seiji Tanaka, Senior Adviser to the Broadcasts Administration Bureau, the Ministry of Posts and Telecommunications.

The preliminary survey team and NTV agreed on the scope of activities for the next practical site survey and study, and the team conducted a survey on the present status of communities in Nepal, together with the collection of necessary data.

Based on the findings of the preliminary survey team, the first JICA practical survey team was dispatched to Nepal in June 1987 over 45 days. The team made a survey on the present status of television broadcasting in the Kingdom of Nepal, on the development plan for a television network, and on educational, social, and economic conditions in general which are related to the plan. The team prepared a progress report to inform persons concerned of the results of the survey.

Returning to Japan, the team analyzed its findings and collection of data, and made an interim report on the plan. On October 18, 1987, the second JICA survey team was dispatched to Nepal to submit the interim report and have discussions based on it. The team has also carried out propagation tests of radio waves, measurement of latent field strength, and a supplementary survey for a conceptional design. The team collected further data necessary for evaluating the plan.

Analysis and arrangements were made successively based on the results of the secondary survey and the draft final report was prepared on the long-term development plan, including conceptional design and reflecting the opinion of NTV.

Further discussions and explanatory sessions on the draft final report were held with the executives of NTV and the study team in February 1988. After the amendments were made this report was prepared.

1-3. Members of Study Team

(1) Preliminary Study Team

Name	Duty-in-charge	Affiliated to	Period
Mr. Seiji Tanaka	Leader	Senior Advisor to the Broadcasts Administration Bureau, Ministry of Posts & Telecommunications (MPT)	1987 2/8-2-20
Mr. Hideaki Kobayashi	Broadcasting Network	Section Chief International Cooperation Division Communication Policy Bureau, Ministry of Posts & Telecommunications (MPT)	ditto
Mr. Masayuki Hirata	Broadcasting Facility	Chief Engineer Planning Division Engineering Headquarters, Japan Broadcasting Corporation (NHK)	ditto
Mr. Akihiko Takegami	Programming	Chief Producer Educational Programme Centre, Japan Broadcasting Corporation (NHK)	ditto
Mr. Kazuo Ichihara	Coordinator	Social Development Cooperation Department, Japan International Cooperation Agency (JICA)	ditto

(2) First Survey Team

Name	Duty-in-charge	Affiliated to	Period
(Advisory Committee)			
Mr. Tomofumi Yasunari	Chairman	Deputy Director Engineering Division Broadcasts Administration Bureau, Ministry of Posts & Telecommunications (MPT)	1987 6/24- 7/2
Mr. Yuichi Ichimura	Member	Senior Producer Educational Programme Centre, Japan Broadcasting Corporation (NHK)	ditto
Mr. Kazuo Ichihara	Coordinator	Social Development Cooperation Department, Japan International Cooperation Agency (JICA)	ditto
(Survey Team)			
Mr. Fumio Nishimura	Leader	All Japan Radio & Television Engineering Services Co., Ltd.	1987 6/24- 8/7
Mr. Jiro Ohno	Broadcasting Network	ditto	ditto
Mr. Yutaka Hara	Transmitter Station	ditto	ditto
Mr. Nozomu Funakoshi	Programming	ditto	ditto
Mr. Kiyoshi Ueda	Architectural Plan	ditto	7/8 - 8/6
Mr. Akira Fujimoto	Project Evaluation	ditto	ditto

(3) Second Survey Team

Name	Duty-in-charge	Affiliated to	Period
(Advisory Committee)			
Mr. Kenichi Okuno	Leader of Advisory Committee	Chief Engineer, Systems Engineering Division, Engineering Headquarters, Japan Broadcasting Corporation (NHK)	1987 10/18-10/27
Mr. Ryuma Hirayama	Coordinator	Social Development Cooperation Department, Japan International Cooperation Agency (JICA)	ditto
(Survey Team)			
Mr. Fumio Nishimura	Leader of Study Team	All Japan Radio & Television Engineering Services Co., Ltd.	10/18-12/1
Mr. Yutaka Hara	Transmitter Station	ditto	10/23-12/1
Mr. Tomiyasu Suenaga	Programme Transmission	ditto	10/18-12/1
Mr. Toshio Sato	Studio System	ditto	10/18-11/16
Mr. Kiyoshi Ueda	Architectural Plan	ditto	11/1 - 11/15
Mr. Akira Fujimoto	Project Evaluation	ditto	10/18-11/16

(4) Explanation of Draft Final Report

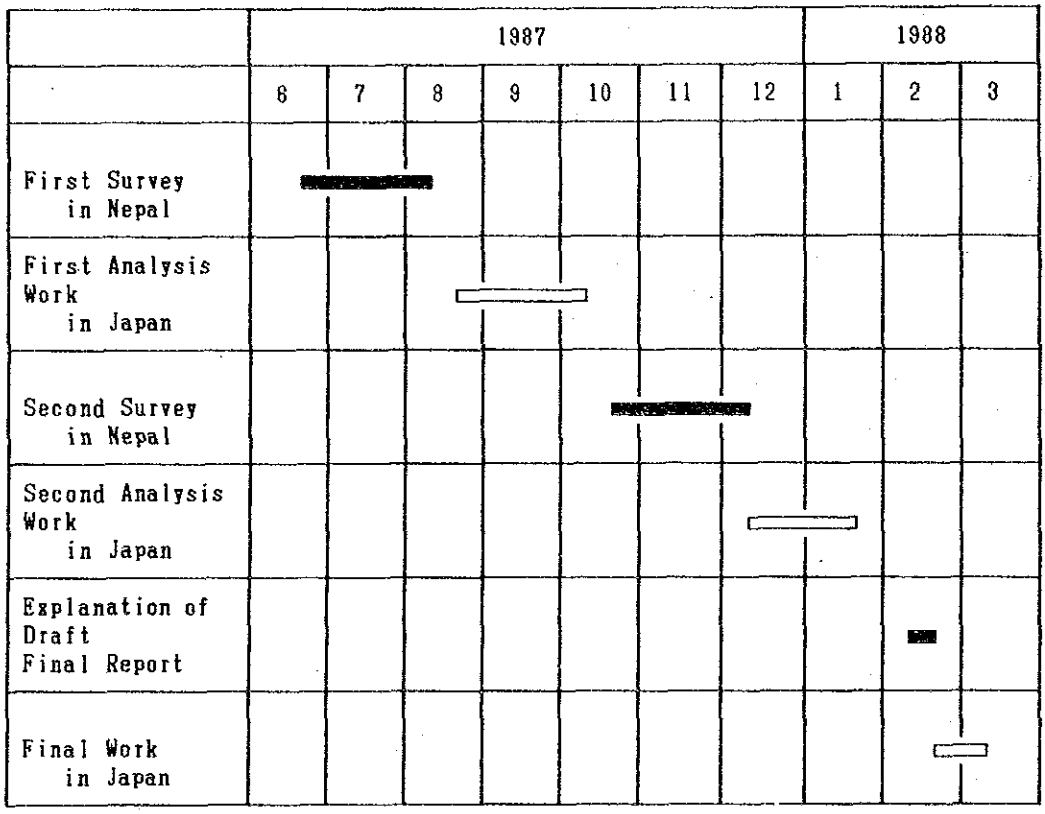
Name	Duty-in-charge	Affiliated to	Period
(Advisory Committee)			
Mr. Tomofumi Yasunari	Chairman	Deputy Director Engineering Division Broadcasts Administration Bureau, Ministry of Posts & Telecommunications (MPT)	1988 2/16- 2/25
Mr. Yuichi Ichimura	Member	Senior Producer Educational Programme Center, Japan Broadcasting Corporation (NHK)	ditto
Mr. Ryuma Hirayama	Coordinator	Social Development Cooperation Department, Japan International Cooperation Agency (JICA)	ditto
(Survey Team)			
Mr. Fumio Nishimura	Leader	All Japan Radio & Television Engineering Services Co., Ltd.	ditto
Mr. Tomiyasu Suenaga	Programme Transmission	ditto	ditto
Mr. Toshio Sato	Studio System	ditto	ditto
Mr. Akira Fujimoto	Project Evaluation	ditto	ditto

1-4. NTV Executives

Name	Affiliated to
Mr. Neer Bikram Shah	Chairman cum. General Manager
Mr. Subarna B. Chhetri	Member, Board of Directors
Mr. Amrit Nath Regmi	Member, Board of Directors
Mr. Bhoop Raj Pandey	Member, Board of Directors
Mr. Ravindra S. Rana	Member, Board of Directors Deputy General Manager
Mr. Tapa Nath Shukla	Director, Programme Division
Mr. Durga Nath Sharma	Director, News Division
Mr. Tirtha Lal Shrestha	Director, Special Task Force
Mr. Rabin Pradhan	Director, Finance Division
Mr. Puran Rana	Technical Advisor
Mr. Bishwa P. Maskey	Deputy Director, Business Section
Mr. Manu Shumsher Rana	Acting Director, Administration & Planning Division
Mr. Gokul S. Khatry	Manager, Programme Division
Mr. Shreebasta Rana	Manager, Programme Division
Mr. Amar S. Rana	Manager, News Division
Mr. Madan K. Sharma	Manager, Finance Division
Mr. Shakti S. Rana	Senior Engineer, Engineering Division
Mr. Ashish Rauniyar	Senior Engineer, Engineering Division
Mr. Mahendra B. Shrestha	Senior Engineer, Engineering Division
Mr. Durga B. Thapa	Senior Officer, Administration & Planning Division
Mr. Rajan Shrestha	Fiscal Officer, Finance Division
Mr. Sudarshan Malla	Senior Engineer, Engineering Division

1-5. Study Schedule

The entire schedule of the study on the Television Network Development Plan is as follows. For schedules of the first and the second field survey, see Annex 1.



PART II

PRESENT STATUS OF TELEVISION BROADCASTING

AND NECESSITY OF FUTURE PLAN

PART II PRESENT STATUS OF TELEVISION BROADCASTING AND NECESSITY OF THE FUTURE PLAN

CHAPTER 1. PRESENT STATE OF BROADCASTING IN THE KINGDOM OF NEPAL

1-1. Broadcasting Policy of the Government of the Kingdom of Nepal

The Kingdom of Nepal faces Tibet on the north across the Himalayas, which is a constituent of the roof of the world, and shares borders with the Republic of India on the south, east, and west. The country has an area of about 141,600 km^2, with hills and mountains, 600 meters to 8,800 meters high, accounting for 83% of the total area, and a population of about 17.6 million.

The land is nearly rectangular in shape with a length of about 850 kilometers east and west, and with a breadth north and south of about 220 kilometers in the west and a breadth of a little narrower 150 kilometers in the middle of the land, thus averaging about 180 kilometers in breadth. The land is roughly divided into three areas -- the northern mountainous area with an altitude of more than 4,900 meters, the central area around the Kathmandu valley with an altitude of 600 meters to 4,900 meters, and the south, which is called the terai region, with an altitude of less than 600 meters. These areas extend roughly east and west. The south reaches as far as India, across a plain extending east and west, with an altitude of about 100 meters.

Hindrances to social and industrial development and to an improvement in the living standards of the Kingdom of Nepal are the mountainous areas which cover almost the entire land and the delayed establishment of an internal traffic network and communications media, as well as a very low literacy rate of about 30%.

The Nepalese Government regards cultivation of talent and an improved standard of education of the people as of the greatest importance, in order to overcome the unfavorable conditions mentioned above and to modernize the country. It has been especially paying attention to policies for people's education. The education policy has been producing good results, though little by little, and the percentage of school attendance has become much higher than ten years ago, as shown in the following table.

Table 2-1-1 Number of school facilities and school children and students

	1975			1986		
	Number of Schools	Number of Students	Entering Ratio	Number of Schools	Number of Students	Entering Ratio
Primary School(5-10)	8,314	459,000	43%	12,188	1,857,000	80%
Lower Secondary School(10-12)	1,893	174,000	16	3,734	272,000	28
Secondary School (12-15)	479	67,000	6	1,425	266,000	22

As the increase in school facilities and training of teachers requires an enormous amount of investment and a long period of time, the Government has been broadcasting by radio a training course for teachers and education programmes for primary school children, such as on Nepali, arithmetic and good citizenship. Audio only, however, is a less effective media for furnishing detailed information or for anti-illiteracy education. When media that can furnish much more information are used, they will have a great effect on education and will provide bases for knowledge and skills, such as literacy, science, and arithmetic. Taking account of this, the Government made a plan to introduce a broadcast education system through television broadcasting as early as possible.

Before the commencement of educational radio broadcasting for schools, His Majesty's Government of Nepal studied and confirmed the effectiveness of broadcasting media for education and communication. It formulated, in 1971, a "National Communication Plan" which would be supported by the media for the spread of education among people, at His Majesty's initiative. Thus the first step was made toward a policy of promoting the expansion of the radio and television networks.

The objective of the plan is to promote policies, as listed below, utilizing television broadcasting.

(1) To enlist the active participation of the general public in developmental activities;

(2) To strengthen the national unity of the Kingdom;

(3) To improve the standard of education of the general public;

(4) To expand international understanding;

(5) To raise the living standards of the people in the country;

To realize the above policies, the Government started preparation of a service network of medium-wave radio broadcasting. It is more stable in quality than short-wave broadcasting which had been mainly used so far. In 1985, the Government established the Nepal Television Corporation (NTV) and started television broadcasting on an experimental basis on December 29 that year.

NTV formed an operations policy in accordance with the communication development policy of the Government, and went into action at once. Details of the operations policy are as follows:

(1) To attain self sufficiency in its operation;

(2) To work in attaining the communication objectives of His Majesty's Government under its policy guide-lines;

(3) To promote the establishment of a national television network;

(4) To improve the efficiency of the organization so as to increase the quality of its broadcasts;

(5) To educate the general public in the different fields of health, hygiene, and nation building;

(6) To educate children of different levels, i.e. kindergarten, primary, lower secondary and higher secondary schools, through this media via trained teachers;

(7) To help raise the literacy ratio.

In the Kingdom of Nepal, the low literacy rate makes communication and anti-illiteracy education through print media less effective. The Government wishes as early as possible to activate communication and furnish for people, education programmes and entertainment programmes, which will act as the vital source of energy for the future.

1-2. Present Status of Television Broadcasting

(1) Diffusion of television receivers

By 1985, when NTV was established, television receivers and video recorders had been rapidly spreading in the capital, Kathmandu, and in the southeast region of the Kingdom.

The rapid spread resulted from the increased number of television sets which were intended for receiving telecasts from India or for watching video tapes. By the time NTV started experimental broadcasting, there were already about 8,000 television sets in the country.

Test broadcasting by NTV was started with the broadcast of His Majesty the King's visit to Australia in September 1985, by means of broadcasting equipment rented from the Worldview International Foundation (WIF). On December 29, 1985, NTV started regular experimental telecasting, in honour of His Majesty the King's 41st birthday.

After that, television receivers began increasing further in number and amounted to between 15,000 and 16,000 sets. There are estimated to be more than 25,000 now. Colour television receivers are all imported into Nepal. A 20-in. screen television set costs about 24,000 NRs. Though very expensive, in view of the living standards of Nepalese people, television receivers are much in demand in the Kingdom. Last year, 1000 inexpensive television receivers imported from Korea were sold out in three days.

A television assembly plant recently started operations in Kathmandu, with components supplied by a Japanese maker. The plant produces monthly 500 sets with a low price of 17,000 to 18,000 NRs. Further spread of television receivers is expected.

(2) Television programmes

When experimental broadcasting started in December 1985, NTV broadcast television programmes for two hours a day. A year later, the Corporation increased broadcasting by an additional three hours, from 19:00 to 22:00 on Sunday to Friday and by an additional two hours, from 13:00 to 15:00 on Saturday. The total broadcasting hours per week are 23 hours.

Programmes include news, religious programmes, educational programmes for children and for the public, documentaries, dramas and music, appropriate to the social and cultural conditions of the Kingdom of Nepal. News is presented twice a day. In addition to internal news, NTV is presenting a good deal of foreign news which is received from the Daily Satellite Feed (DSF) of Asiavision and edited by NTV. For children, NTV prepares programmes of Nepali, English, arithmetic, science, and health, as home-study programmes for school children, every day except Saturday. Educational programmes for the public mainly involve agricultural improvement, health, and hygiene.

Imported programmes include documentary series and entertainment programmes from West Germany and England. They are put on the air dubbed into Nepali when possible.

Now, programmes made by NTV itself and imported ones account for about 75% and 25% respectively. It is exceptional in a developing country to be able to transmit domestically made programmes on the air with such a high ratio, in less than two years after the commencement of television broadcasting, despite the fact of temporary facilities which are functionally insufficient.

This fact seems to show how much His Majesty's Government of Nepal expects of a television broadcasting medium and what great efforts the Government makes for the realization of communication through television.

Details of the programme ratio are as follows:

Programme ratio	
Educational	35%
News	22%
Informative	18%
Entertainment	25%

Broadcasts are given mostly in Nepali, except for the English news and imported programmes, in accordance with the Government's policy of a standardized language.

Improvement is necessary in programming which is still in a rudimentary stage in terms of quality.

Table 2-1-2 Daily transmission schedule of NTV (July, 1987)

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
13:00							Fawlty Towers (BBC)
13:30							Question & Answer
13:45							Movie
14:00							
14:30							Expedition to Animal Kingdom (Transtel)
15:00							
19:00	Opening Announcement						
19:03	Sadhana Sangam (Religious)						
19:15			Children's Educational Programmes				
	Nepal Language Grade 1	Mathematics Grade 4	English Grade 4	Science Grade 4	Mathematics Grade 1	Health/ Hand Work	Tele-Film
19:40			Children's Entertainment Programmes				
	Sports	Question & Answer	World Events	Documentary on Prominent People & Cities of Nepal	Quiz	Cartoons (Transtel)	
20:00	Two Songs, Two Singers						
20:10	Advertising						
20:15	News in Nepal						
20:40	The World Today (Foreign News)	Yes, Minister (BBC)	Tele-Film	Tele-Film	A Report - Flood in Sunkoshi -	Football made in Germany (Transtel)	Sangit Sangam (Musical)
21:00					Special "For the Fiscal Year 2044/45"		
21:10	Do you know about it?	Programme on Arts & Literature "TRIVENI"	Secret to Healthy Life	In & Out of Town			Panel Discussion
			Report on Workshop or Seminar	Contempo-rary Events (DPA)			Event of the Week
21:40							
22:00	News in English						

(3) Broadcasting facilities

NTV started experimental broadcasting with its own funds and equipment rented from the WIF. Now broadcasting is conducted on an experimental basis, but some of the equipment is not satisfactory from the viewpoint of performance, quality, and reliability. In commencing regular nationwide broadcasting in the future, it is necessary to review performance, quality, and reliability of all the equipment together with the broadcasting system.

1) Outline of the facilities

NTV uses the top floor of "Singha Durbar", the four-storied Government building, specially remodelled for it. The floor has broadcasting-related facilities such as a temporary studio and subcontrol room, and the programme is sent through a temporary microwave link to Phulchowki TV transmitter station. At present, NTC's (Nepal Telephone Corporation's) microwave building and tower are lent partially to NTV and a 1 kW TV transmitter and mounted transmitter antenna , 2 Dipole-2 stack-4 face, has been installed on the tower.

The service area of Phulchowki TV transmitter station is now covering the whole area of Kathmandu valley and part of the southern terai area.

NTV has facilities at present as listed below.

Production and News Studio	1	approx. 56 m^2
Subcontrol Room	1	approx. 21 m^2
Video Tape Editing Room	1	approx. 38 m^2
Transmitter Room	1	approx. 10 m^2
News Car	1	
Office	a certain area	

2) The present status of television programme production and broadcasting facilities

Now, NTV produces television programmes fully utilizing the temporary studio and the attached subcontrol room on the top floor of "Singha Durbar". The subcontrol room is also used for programme transmission, so it is impossible to produce programmes during broadcasting. Lack of studio space results in an increase in outdoor-produced programmes. Outdoor production includes three dramas and two documentaries a week. Videocassette editing has occupied an important position in programming. Four editing pieces of equipment are kept in service without standing idle. Both Umatic (using 3/4" tape) and VHS (using 1/2" tape for home use) VTRs are used for recording and, when VHS-VTR is used, deterioration of picture quality is observed considerably.

As NTV producers are insufficient in number for programmes to be produced, ten contract producers from the outside assist in the work.

Neither personnel nor quality and quantity of equipment are sufficient for programme production for three hours a day, but the production and technical staff members deal with the work in a constructive and positive manner. This is worthy of high evaluation.

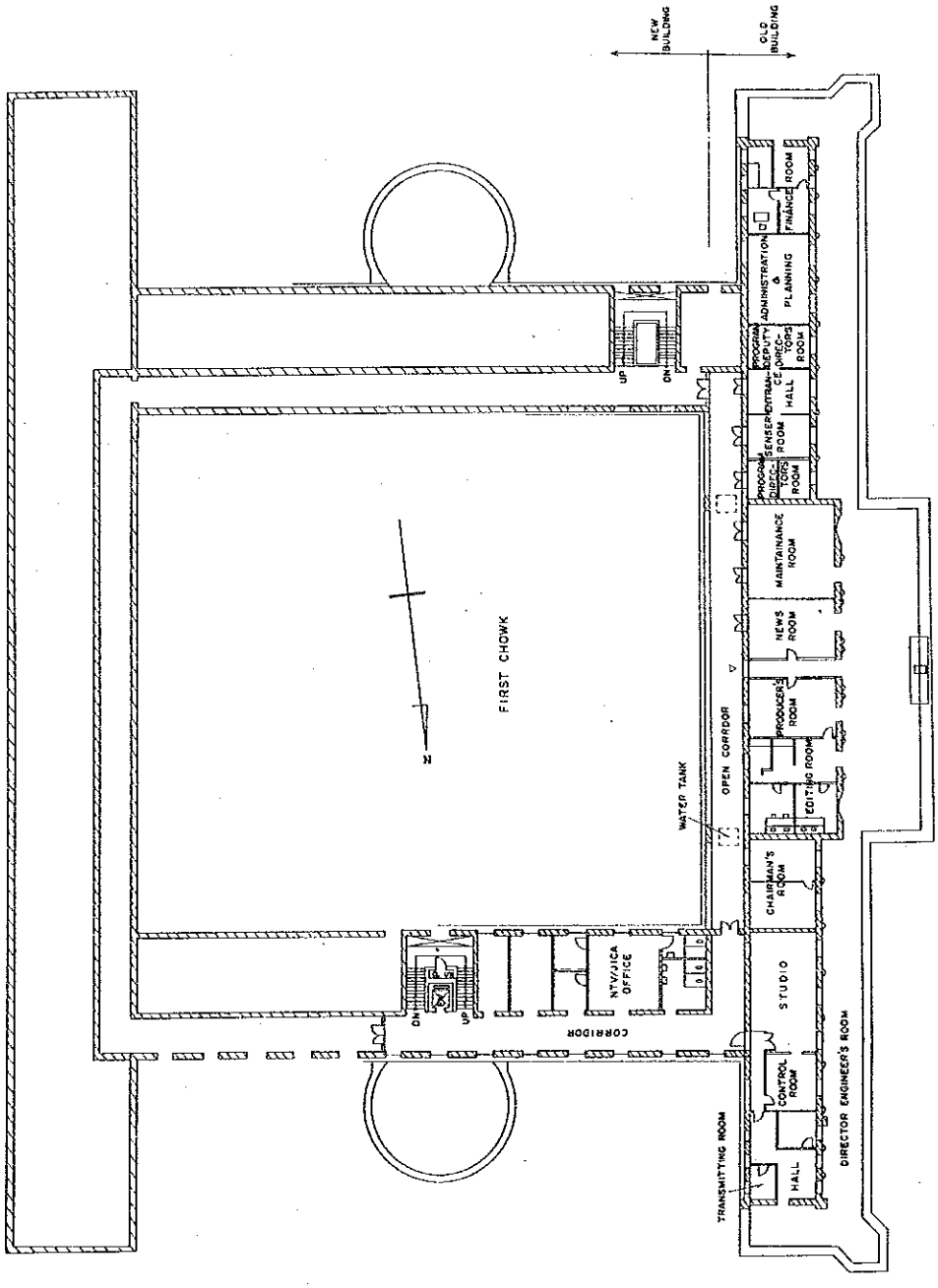


Fig. 2-1-1 Plan of the Existing Broadcasting Station

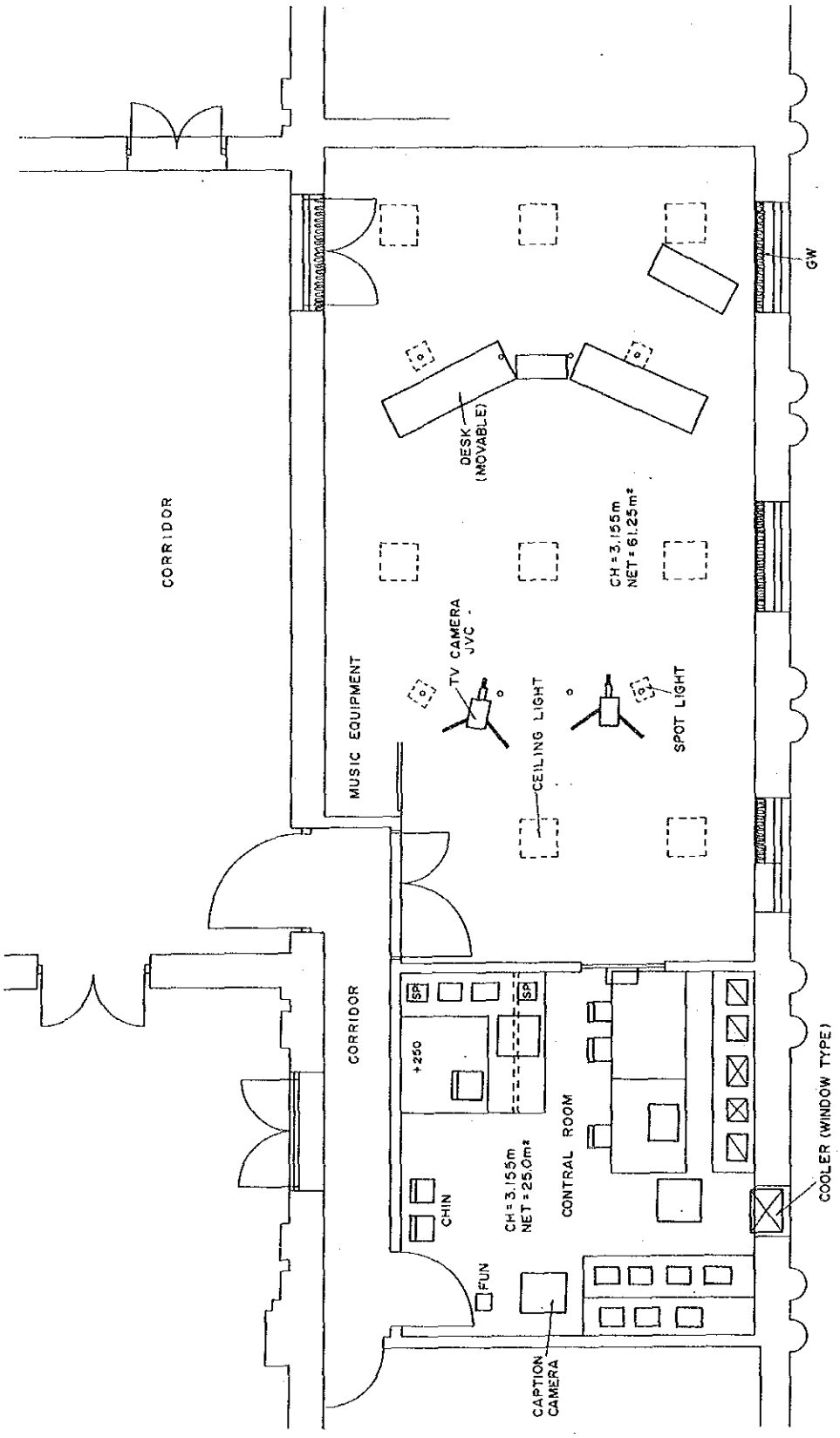


Fig. 2-1-2 Plan of the Existing Studio

1-3. Organization and Management of NTV

(1) Present organization of NTV

NTV was established as an organization at first under the direct control of the Ministry of Communications, HMG of Nepal, and in Feburary, 1985, in compliance with a Ministerial Ordinance, it became an independent organization. NTV is now managed under the supervision of a Board of Directors, which is the supreme legislative organ, consisting of the following five managerial members.

- o Mr. Neer Bikram Shah — Chairman of Board of Directors
  General Manager (NTV)
- o Mr. Amrit Nath Regmi — Member of Board of Directors
  Deputy General Manager (NIDC)
- o Mr. Bhoopa Raj Pandey — Member of Board of Directors
  Deputy General Manager (NTC)
- o Mr. Subarna Bahadur Chhetri — Member of Board of Directors
  National Sports Council
- o Mr. Ravindra S.J.B. Rana — Member of Board of Directors
  Deputy General Manager (NTV)

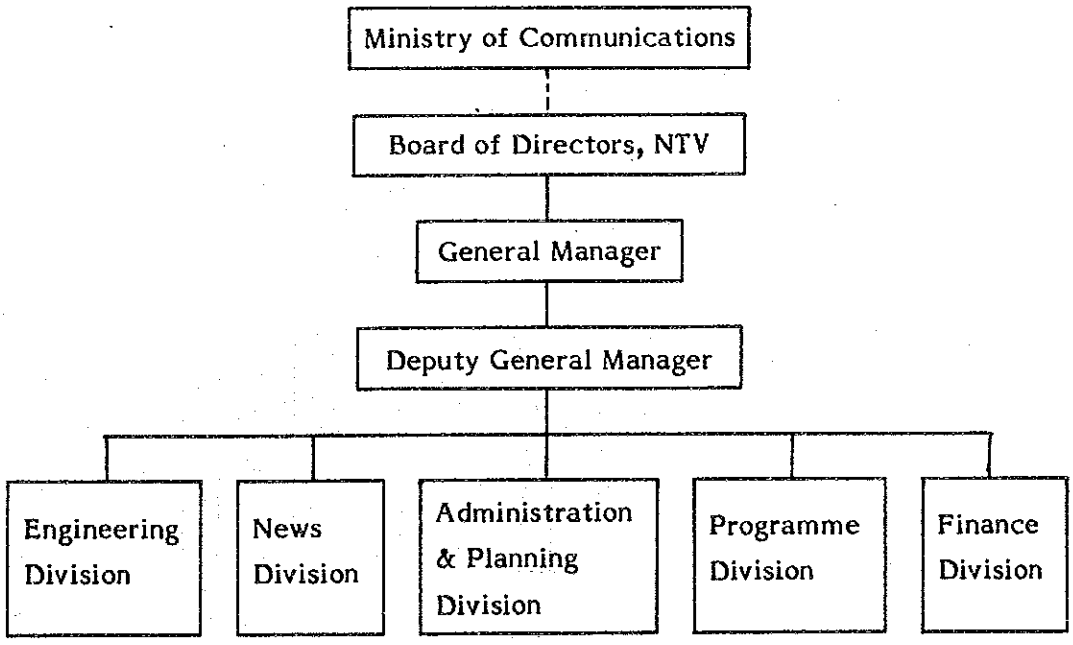


Fig. 2-1-3 Organization of NTV

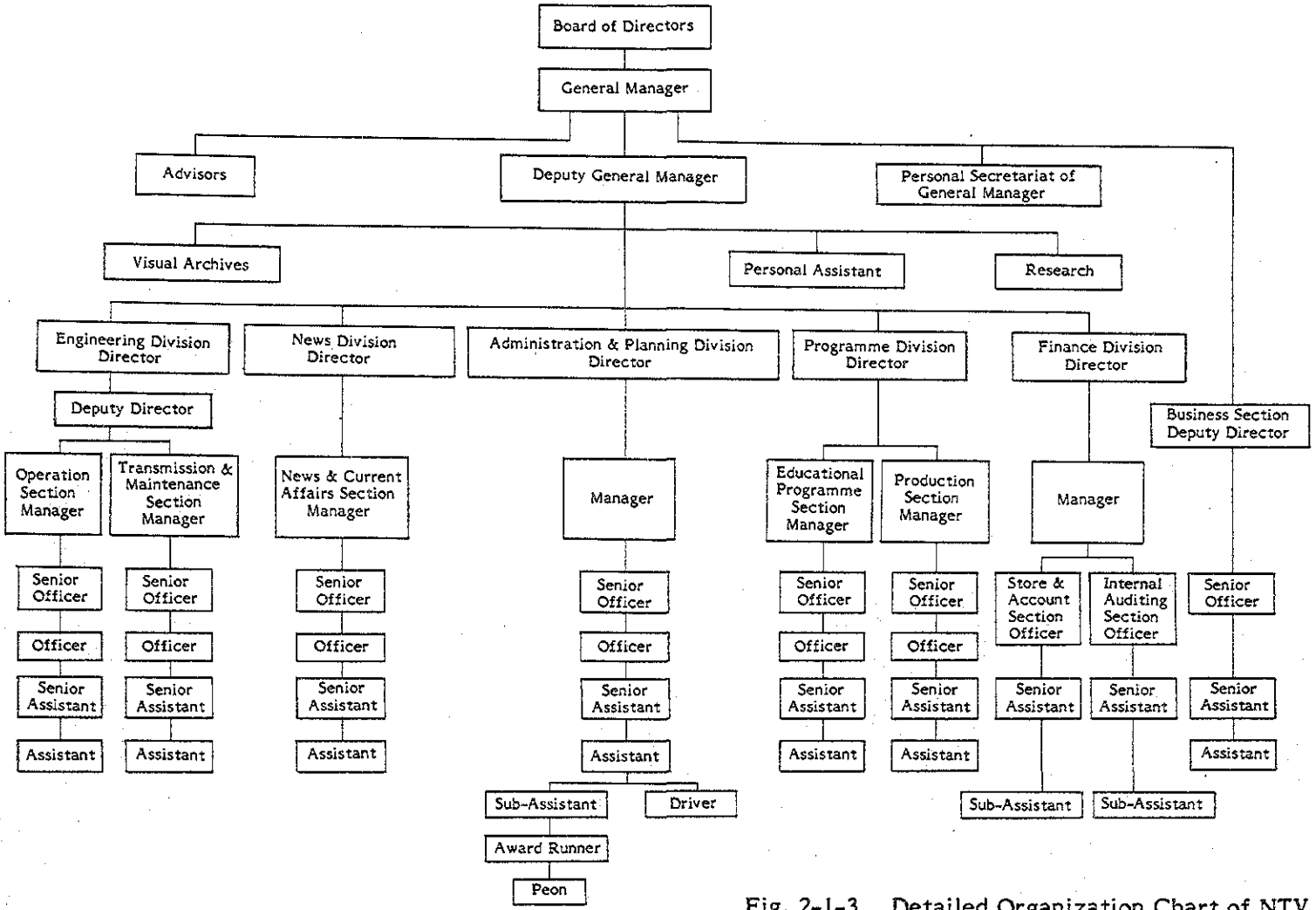


Fig. 2-1-3 Detailed Organization Chart of NTV

Divisions of the organization shown in Fig. 2-1-4 each have the following responsibilities:

(1) Programme Division
- Programming for daily broadcasting
- Programme planning and production
- Planning for placing an order with outside institutions or groups for producing programmes, and making the contract

(2) News Division
- Collection, selection, and editing of domestic news materials
- Collection, selection, and editing of foreign news materials
- Production of Nepalese news programmes
- Production of English news programmes

(3) Engineering Division
- Engineering work for studio programme production and outdoor-programme production
- Delivery of programmes
- Transmission work
- Maintenance of equipment and facilities

(4) Administration and Planning Division
- General affairs
- Personnel affairs
- Secretarial work
- Training of personnel
- Planning for the future

(5) Finance Division
- Financial planning
- Management of income and expenditure

(6) Business Section

. Commercial-related business

(7) Research

. Public opinion polls

(8) Visual Archives

. Management of broadcasting and production materials

(2) Personnel organization

NTV was started with very few staff members. The staff has been gradually expanded until now.

When established	5 persons
December, 1985	37 persons
July, 1986	111 persons
February, 1987	141 persons
August, 1987	150 persons
January, 1988	164 persons

The following are the numbers of staff in each division mentioned in the previous section.

Table 2-1-3 Number of staff in each division

Section	Duty in charge	Number	Total
Chairman & General Manager		1	
Deputy General Manager		1	3
Secretary		1	
(a) Programme Division	• Director	1	
	• Producer	20	
	• Camera man	6	
	• Sound man	4	43
	• Announcer	5	
	• Artist	3	
	• Others	4	
(b) News Division	• Director	1	
	• Reporter	2	
	• Camera man	5	
	• Sound man	1	19
	• News Editor	3	
	• News Reader	5	
	• Others	2	
(c) Engineering Division	• Director	1	
	• Deputy Director	1	
	• Vision Mixer	5	
	• Sound Mixer	4	
	• Floor Manager	3	38
	• Operator	3	
	• Camera man	2	
	• Maintenance	7	
	• Editor	8	
	• Engineer	4	
(d) Administration and Planning Division	• Admin. & Plan.	16	
	• Driver	4	42
	• Runner	4	
	• Peon	18	
(e) Finance Division			7
(f) Business Section			4
(g) Research			1
(h) Visual Archives			3
(i) Correspondence Office			4
Total		164	

(3) Programming and broadcasting system

To effectively use the existing equipment and facilities, which are very limited, the staff members are working in a rotation of two shifts a day in order to videotape, edit, and transmit programmes for three hours a day.

Team A ..... 09:00 to 16:30
Team B ..... 15:00 to 22:30

Programmes are produced with a team which consists of staff members as listed below.

Floor director	1 person
Cameraman	2 persons
Video switcher	1 person
Audio mixer	1 person
Technical director (also as light director)	1 person
Video Operator	1 person
Total	8 persons

In addition to the production team mentioned above, NTV has a news gathering crew equipped with video cameras and 1/2-in. VHS-VTRs, on a 24 hour basis.

(4) Financial status of NTV

NTV's income and expenditure are outlined as follows:

(in thousand NRs.)

	1985/86	1986/87	1987/88 (Estimation)
(Income)			
Carried forward	—	5,900	7,600
Commercial Revenue	1,400	3,500	4,600
Govt. Investments in Shares	3,000	9,200	9,400
Govt. Grant	—	3,800	5,100
Short-term Bank Loan	9,400	—	—
(Total)	13,800	22,400	26,700

	1985/86	1986/87	1987/88 (Estimation)
(Expenditure)			
Programme Production	500	1,000	7,800
Maintenance and Repair	500	100	1,500
Personnel Wages	900	2,100	3,000
Miscellaneous Expenses	2,000	3,200	3,600
Investment (Incl. Depreciation)	4,000	8,400	6,700
(Total)	7,900	14,800	22,600

Source: NTV Finance Division

NTV has a bank loan of 9,400,000 NRs at an interest of 17.5% per year in the fiscal year 1985/86. From the year 1986/87 on, however, the subsidy and investment of the Government are gradually increasing and the deficit in the income and expense balance is gradually going down. The Government financing and the increase in the revenue from commercials are expected to result in financially sound management.

Financially sound management is expected also from the

1 Establishment of a charging system for TV reception, and
2 Increase in the Governmental payment for the actual expenses of programme production.

NTV itself has intimated its intention to aim at financially sound management.

The advertisement charge is 750 NRs per unit (i.e. 30 seconds) at present. If 540 units of commercial messages are put on the air in a week, in the future, as expected by NTV, income from selling time will be:

405,000 NRs per week.

If commercial messages of this amount are sent on the air every day throughout the year, the income will be:

405,000 x 52 weeks = 21,060,000 NRs/year.

The income will be able to cover at least working expenses including wages. One result is that televising of the World Soccer Championship was realized through satellite relay videotaping, sponsored by a local industry.

As to the production of programmes related to the Government, establishment of a system to allow NTV to receive actual expenses from the Ministries concerned is being considered. They will include agricultural, educational, health and hygiene programmes, and so on.

In view of such efforts made by the Government and NTV, future financially sound management of NTV can be expected.

CHAPTER 2 NECESSITY OF THE PLAN AND ITS EFFECTS

2-1. Role of Broadcasting in the National Development Plan

In many developing countries, broadcasting has been regarded as one of the effective mass communication media which plays an important role in the people's education especially in the reduction of illiteracy, the establishment of the foundation of the nation's development, the extension of governmental information services to the public, technical education in many fields, and the offering of entertainment. These will all be vital factors for the future.

The 36th UN General Assembly unanimously adopted a resolution to call the year 1983 "World Communication Year". The resolution was very significant. In recent years, the gap in the communication infrastructure has been widened between industrialized countries and developing countries, causing a worldwide imbalance in information. Delayed setting up of a basic communication infrastructure has caused the preparation of the basis for social and economic development in many developing countries to be delayed. It was confirmed by the 36th UN General Assembly that the promotion of a communication infrastructure in developing countries is a very vital and indispensable factor for their social and economic development.

Communication plays a very important role as the basis of "transmission of knowledge to people", "promotion of mutual understanding between nations", "fostering of national identity", "promotion of interracial understanding", and "advancement of better international understanding". In this sense, the preparation of a communication infrastructure is undoubtedly indispensable to national development.

In 1979, UNESCO started the "International Programme for Development of Communication (IPDC)", in compliance with the conclusions of the Mac Bright Committee and intergovernmental conferences, for closing the communication gap between industrialized and developing countries. This programme is intended to promote closer international cooperation in cultivating talent and in setting up the infrastructure for communication in developing countries.

In the ITU plenipotentiary committee held in Nairobi in 1982, a number of

developing countries requested that technical cooperation should be augmented in the field of communication.

As mentioned above, developing countries have come to recognize the great role played by a communication infrastructure in national development.

Television broadcasting, among all the media, is the most economical and propagative in its ability to transmit a large amount of information. It is an ideal instrument to promote communication in developing countries where the literacy rate is generally low.

Statistics show that when the total amount of information through all the media is considered as 100% information transmitted through newspapers accounts for only 1.9%, and through radio 16.3%, but information through television accounts for as high as 76.3%. Television which can transmit such a large amount of information will

(1) be significantly and appropriately effective as a means of furnishing people with information and education in circumstances where the literacy rate is low,

(2) make it possible for the whole nation to share information, because it can instantly and simultaneously send one and the same piece of information to people in a manner which is understandable to illiterate people,

(3) be highly useful, because it can not only entertain people but also enlighten and educate people, and

(4) play an important role in promoting mutual understanding between people as well as between nations through cultural exchange such as by the exchange of news and broadcasting programmes and by joint production of programmes.

Television broadcasting can exercise, as stated above, prominent effects on people in improving the education standard -- by cultivating talent -- which will form the basis of national development, and in acting as an information resource for the general public in developing countries. These notable results of television broadcasting draw the attention of developing countries as a means of accelerating their national development.

The role of television is common to developing countries. Telecasting has a great significance and is necessary in the Kingdom of Nepal as in other developing countries. It is expected to play an important role in promoting national development.

When experimental telecasting was started in Nepal, 37 CVCs (CVC: Community Viewing Centre) were established in villages in the Kathmandu Valley. The CVCs, each of which has a television set, gathered about 500 people every day from all quarters of the villages. A lot of villagers came to watch television unmindful of a journey, of 5 kilometers each way, along a mountain pass. In Nepal, a television set is still very expensive relative to the average income of households. But television has rapidly spread. In many places the scene of villagers and their kinsfolk gathered to watch a television that they bought by clubbing together is presented. In as short a period as two years of experimental telecasting, it became very effective in disseminating Government information to people and in improving people's consciousness and living environment.

The desire to acquire information and amusement is common to people in both developing countries and industrialized countries. His Majesty's Government of Nepal intends to utilize television, which can transmit a great deal of information and accelerate national development, as a support in constructing social infrastructure, as the information resource for expert skills in agriculture and for technological education in every field of industry, and as an entertainment that will vitalize people for the future.

2-2. Necessity of the Plan and its Effects

Television broadcasting displays great power in industrialized countries, vigorous in economic activity, as one important form of business activity, covering the areas of advertisement of commodities, life long education, and mass entertainment. In those countries, television broadcasting develops commercial activity mainly as a business that pursues profit. In Nepal, however, the situation is entirely different. Though commercial messages are put on the air, income from them is very small. The objective of the development plan for a television network in Nepal is the cultivation of talent by means of broadcasting for accelerating social and economic development. It includes the diffusion of education among people, the

supply of information on everyday life and vocational skills in a manner understandable to the general public, and the furnishing of entertainment to people who otherwise have little amusement, thereby fostering national integration and identity and providing the driving force for the development of the national economy.

The following are some of the items HMG of Nepal wants to deal with at once through television broadcasting. They will make clear why HMG of Nepal promotes the development plan for a television network. The plan can be regarded as the most effective solution of the problems that the Kingdom is now faced with.

(1) Prompt transmission of information to people

1) The geographical features hinder prompt communication in the Kingdom of Nepal.

2) It takes weeks or even months for printed matter, such as newspapers and magazines, issued in the Kathmandu Valley to reach all quarters of the country.

(2) Reinforced means of effective communication to the entire nation

1) Print media can exercise little effect in communicating information to Nepali people who do not enjoy a high literacy rate. Processing of information in a form understandable to illiterate people is necessary.

2) Nothing is more effective than visual information in communicating information to illiterate people.

3) It is a matter of urgency to develop a rapid and effective means of distributing information.

(3) Substantial and efficient school education

Though educational programmes for schools on television cannot replace traditional school education, they have an impact on both students and teachers in supporting classroom lessons.

The educational system of the Kingdom of Nepal is as follows:

Primary school	Term of study: 5 years
Lower secondary school	Term of study: 2 years
Higher secondary school	Term of study: 2 years

As stated in the previous chapter, HMG of Nepal has been laying emphasis on the improvement of the educational standard of people, aiming at cultivating talents that will be a support and driving force in the modernization of the country. As a result, the percentage of school attendance almost doubled in the last decade.

	1975 Entering Ratio	1985 Entering Ratio
Primary School	43 %	80 %
Lower Secondary School	16 %	28 %
Higher Sencondary School	6 %	22 %

The Government provides 100%, 75% and 50% expenses for education in primary schools, lower secondary schools, and higher secondary schools respectively, in order to expedite the policy of improving the people's educational standard. It takes an enormous amount of investment and a long period of time to construct school facilities and train teachers. The Government has been vigorously dealing with these problems, but they cannot be solved in a short time. There still exist overcrowded classes and the double-shift school system.

With the increase in the number of students, the shortage of teachers has become considerable. The reality is that an increase in the number of classroom lessons given by unlicensed teachers has lowered the quality of education. As it is difficult to construct and expand school facilities and to ensure a sufficient number of licensed teachers in a short time, the supplementation of the education system by means of television in necessary as an effective system replacing or supporting the school education system. Educational television broadcasting therefore needs to have the following functions.

1) The system needs to make up for the shortage of licensed teachers. According to the 1984/85 statistics, the ratio of teachers who have completed a course of study for the teaching profession is as follows:

Primary school	32.0%
Lower secondary school	43.8%
Higher secondary school	55.0%

2) The Kingdom has a qualification screening system. Under the system, graduates of higher secondary schools are given a "School Learning Certificate (SLC)", which is a license to teach in primary schools. Lack of good teachers has caused a vicious circle of a lower scholarly competence of graduates which has reduced the ratio of successful applicants to a level of 30%, resulting in a further shortage of good teachers.

3) To block this vicious circle so as to promote an improvement in the people's educational standard, it is effective to use a television broadcasting service for school education, thus making up for the shortage of good teachers. Lessons by several competent teachers on television will not only help a large number of students in their learning but will also have great effects in improving the competence of classroom teachers.

4) Television-aided education can give higher-quality lessons nation-wide than the traditional education system, considering both economic factors and the area covered.

5) The use of television broadcasting makes possible the economical and effective retraining of teachers. It will provide a good solution to the shortage of competent teachers.

(4) Improvement of agricultural techniques

The social and economical infrastructure in Nepal is mostly dependent on agriculture due to the topographical restrictions, and its growth has been rather stagnant for many years, resulting in the situation becoming gradually somewhat worse. One of the methods to improve such conditions is to fill the communication gap between agricultural experts and ordinary farmers so as to diffuse the latest agricultural skills to each farmer.

Utilization of TV broadcasting is the most effective way to reduce illiteracy, to solve the difficulties in meeting face to face, and to integrate the differences in attitudes within the society, which are the causes of the communication gap existing at present.

(5) Popularization of the idea of family planning

1) The population growth rate is very high in the Kingdom of Nepal as in

other developing countries. Successful measures for population control are vital for the development of the Kingdom of Nepal. The Population Stastistics Bureau of the Government estimates the increase in population as follows.

Year	Successful family planning	Unsuccessful family planning
2001	19,735,000	25,315,000
2021	22,905,000	44,400,000

The estimation shows that the population of the Kingdom of Nepal will almost double in the 2020s, 35 years from now, if family planning is unsuccessful. This fact is a critical social problem for the country.

2) According to other data, only 7% of married women practice birth control. The age at which Nepalese people on average get married is about 19, which is very low, and the average life span is 50 years. It is not too much to say that the future of the Kingdom depends on a solution to the population proglem. Rapid popularization of the idea of family planning will lead to a successful modernization of the country. Television broadcasting can cause the idea to penetrate people's minds more effectively than any other medium in a community where the literacy rate is not high. This is why so much is expected of television broadcasting as a means for successful family planning.

(6) Popularization of the idea of health and hygiene

According to data from the Statistics Bureau of the Government, more than 90% of children carry parasites of some kind, not to mention the high infant mortality rate. A considerable number of people suffer from dysentery, cholera, or typhoid fever every year. The outbreaks of these diseases result not only from insufficient hygienic facilities but also from repeated infection between people due to the lack in the idea of hygiene.

Popularization of the idea of hygiene could not be attained without conducting a large-scale campaign through television.

(7) Reinforced campaign for conservation of forests

The Kingdom of Nepal is blessed with abundant natural resources, and among others is rich in water. Water is very important as a source of energy in Nepal and is still being exploited.

The total energy consumption in Nepal is as follows, according to the 1980/81 statistics.

Total energy consumed in 1980/81

Consumer	Firewood (incl. biomass)	Petroleum	Coal	Electricity	Total
Household	2,760.1	30.3	-	6.6	2,797.0
Transport	-	64.5	3.0	-	67.5
Commerce & Industry	45.9	8.2	45.0	6.5	105.6
Agriculture	-	4.7	-	-	4.7
Others	-	-	0.4	0.4	0.8
Total	2,806.0*1	107.7	84.4	13.5*2	2,975.6

(Notes) Unit: 1,000 TOE

*1 Firewood: 2,723,000 TOE

Biomass: the rest

*2 Quantity sold

The statistics show the total energy consumption was about 2980 thousand TOE (in terms of petroleum). Firewood amounted to about 2810 thousand TOE (including biomass), accounting for about 94% of the total consumption. Forests that covered 6.4 million hectares in 1963/64 were reduced by 33% to 4.3 million hectares in 1980/81 because of reckless deforestation. They will not be able to meet an increasing energy demand. It is said that deforestation recently advances at a yearly rate of 4.3%, 84 thousand hectares in terms of area.

Mountains stripped of their green trees are found here and there. Deforestation greatly affects people's lives. An enormous quantity of rain during the monsoon season forms a flash flood and scrapes out the mountain surface. It sometimes damages villages. Destruction of forests by men inevitably destroys ecosystems. A large amount of water is discharged from the Himalayas and flows into the Indian Ocean through Nepal. The Ganges alone carries topsoil amounting to the surprising quantity of 1.5 billion tons a year. Repeated accumulation of earth and sand results in a raised riverbed and causes a flood downstream. Deforestation in the upper stream causes a flood in the lower stream, and hundreds of thousands or millions of people living in the lower course of the river suffer from it. This has become a great global problem.

Unless the Kingdom of Nepal, which is situated in the upper stream, takes measures for forest conservation at once, the situation will become critical.

Under these circumstances, HMG of Nepal has to popularize the ideas of forest conservation, afforestation, and the protection of environment among the Nepalese people as early as possible, and instruct them in methods of putting the ideas into practice. But it is difficult under the existing circumstances. The Government considers that the only way to appeal to the people for cooperation in this respect is through television. To popularize knowledge of environmental protection, nothing would be more effective than to continuously conduct a nationwide campaign through television broadcasting in a manner that is understandable to illiterate people.

(8) Promotion of understanding between races and between communities with different religions

In national development, the most important basis is that the people share a consciousness of modernization of their country. Most countries in the world are multiracial nations, with only a few exceptions. A stable, modernized country cannot be constructed until understanding and cooperation are established between races that have different manners and customs or different religions. To foster understanding between races or between communities with different religions is the key to national development and public peace.

1) Broadcasting can communicate identical information simultaneously and instantly to different races or communities with different religions. It also makes it possible to visually recognize and understand other societies with ease.

2) Visual media are very effective in preparing an environment where people can share the idea of peaceful coexistence with different races or groups with different cultures or religions, and foster national identity.

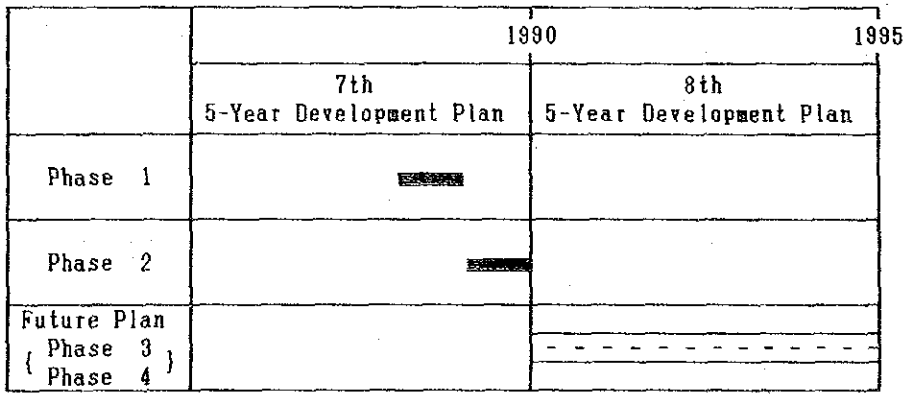
The development plan for a television network will play a most important role in promoting the national development of the Kingdom of Nepal, for television broadcasting is a means of inculcating the people with a common consciousness of national development and encouraging their participation in it.

CHAPTER 3. OUTLINE OF THE PROJECT

3-1. Implementation Schedule

The study team have conducted the study on the results of the site survey and with reference to the Implementation plan, consisting of 4 phases, which was formulated by HMG of Nepal. As a result, as shown in Table 3-3-1, a new development plan has been tentatively made to coincide the first and second phase plans within the period of the 7th 5-year development plan, and the third and fourth phase plans, within the 8th 5-year development plan.

Table 2-3-1. Implementation schedule of the development plan of Television Network



3-2. Outline of the Project

However, considering the recent remarkable progress in electronics and space development and the dizzy changes in the world-wide economy, it might be necessary to review the third and fourth phase plans just after the completion of the 2nd phase plan.

Under the plan, which is based on the terrestrial transmission network, population coverage is expected to become only 63% even after the completion of the project.

If it is required to expand the coverage further with a terrestrial network, it is considered necessary to invest an enormous budget in it.

At the time of the completion of the second phase, it is estimated that innovation in the fields of telecommunication and broadcast technologies will have progressed with large strides, and there is a possibility of TV programme transmission via satellite. So it is proposed that the Development Plan for a Television Network should be reviewed and modified.

In the report, a project implementation plan is made tentatively on the basis of a terrestrial network and an estimation of construction and operation costs and an evaluation of the project are provided.

Outline of the project in each phase is shown as follows:

Table 2-3-2 Outline of the Project

	Phase 1	Phase 2	Phase 3	Phase 4
Broadcasting Hours *1	6 hrs	7 hrs	8 hrs	8 hrs
Studio	85m²) Utility 200m²) Studio 30m² Dubbing Studio	300m² Production Studio	OB Van	—
Transmitter & Transposer Station	1-Transmitter Station 1-Transposer Station Phulchowki E_1	1-Transmitter Station 3-Transposer Stations TE_2 E_3 , E_4 , W_1	9-Transposer Station E_5 , W_2 , W_3 W_4 , W_{11} , W_{41} P_1 , P_2 , P_3	3-Transposer Station W_5 , W_6 , W_7
Served Population *2	Pers. 2,839,000	Pers. 5,300,000 (8,139,000)	Pers. 3,028,000 (11,167,000)	Pers. 757,000 (11,924,000)
Population Coverage *2	15 %	28 % (43 %)	16 % (59 %)	4 % (63 %)
Number of Staff	Pers. 319	Pers. 394	Pers. 440	Pers. 457
Construction Cost (mil. NRs) (Foreign Currency Portion; mil. Yen)	302.3 (1,750)	308.5 (1,670)	224.5 (340)	69.7 (280)

*1 Numerical values are as of the end of each phase.

*2 Numerical value in each line shows increase of each item in each phase, and percentage within the parentheses shows the total served population and percentage of coverage.

Details of the plan in each phase are explained in Part III "Development Plan of the Television Network".

PART III

DEVELOPMENT PLAN OF TELEVISION NETWORK

PART III DEVELOPMENT PLAN OF TELEVISION NETWORK

CHAPTER 1. PROGRAMMING PLAN

His Majesty's Government of Nepal has a strong desire to urgently have a project for developing a television broadcasting network and to implement full-scale nationwide television broadcasting, in full recognition of the importance of television broadcasts for the promotion of national integration, development, the prevalence of the nation's education, and the improvement in the living standards of the nation.

For the development of the TV network, the project plans the programming as follows.

1-1. Programming Policy

TV broadcast programmes will be drawn up aimed at the general programme service, and emphasis is placed on education and public information as in the following.

(1) News reports and information for daily living will be enriched.

(2) Informative and cultural programmes useful for improving the nation's living and cultural standards will be provided.

(3) Programmes contributing to the promotion of anti-illiteracy education, adult education, and school education will be systematically and continuously prepared.

(4) Wholesome entertainment programmes such as dramas, music, songs, and traditional dances will be provided.

(5) Participation shows, including quiz shows and discussion programmes, will be provided.

(6) Relay broadcasts of sports will be included in the programming.

(7) Quality programmes produced in Japan and other friendly countries as well as in the neighbouring countries will be purchased and broadcast after being dubbed as far as possible into Nepali. The share of programmes procured from foreign countries in the whole broadcasting programmes will be about 20% during the period of the Development Plan.

1-2. Programming Plan

(1) 1st Phase (See Table 3-1-1)

1) Broadcasting hours

6 hours/day on Sunday to Friday, and 9 hours on Saturday, a total of 45 hours a week.

Table 3-1-1 TV programme schedule (1st Phase)

	SUN	MON	TUE	WED	THU	FRI	SAT
7:00	News, Current topics, Religion, Yoga etc.						
8:00	(No broadcasting)						
11:00	School hour for Lower-Secondary and Secondary schools						Housewives
12:00	(No broadcasting) 13:00						Teachers
							Sports/Movies
15:00	(No broadcasting)						
18:00	News, Programmes for children, Adult education programmes, Dramas, Popular song and Music programmes, Quizzes, Foreign programmes, etc.						
22:00							

2) Daily schedule

a) 7:00 to 8:00

News, Information for living (weather broadcast etc.), Current topics, Religious programme (Note 1), Yoga, and so on will be broadcast.

b) 11:00 to 12:00

(i) Sunday through Friday

School broadcasting programmes for Lower-secondary and Secondary schools (Note 2) will be prepared.

(ii) Saturday

Programmes for housewives and mothers at home will be arranged. They will concern Child care, Home economy, Hobbies (handicraft, sewing, etc.), Cooking, Nourishment, and other household information for housewives.

c) 12:00 to 13:00, Saturday

Programmes for schoolteachers, covering instructions for giving lessons, the psychology of children, news of the educational world, guides to school broadcasting, and other educational information, will be broadcast.

d) 13:00 to 15:00, Saturday

Sports popular among the nation such as soccer, table tennis, and badminton will be programmed. In off-seasons or on rainy days, drama or long documentary films will be broadcast.

e) 18:00 to 22:00 (Note 3)

This period of time will be divided into 2 segments.

(i) 18:00 to 20:00 (Note 3)

Educational programmes in the main will be arranged for this segment of time:

. News

. Programmes for children: Quizzes, Interviews, Children's songs

. Anti-illiteracy education programmes (Note 4)
. Informative programmes: Forest protection,
Family planning, etc.

(ii) 20:00 to 22:00

Entertainment programmes in the main will be prepared for this segment of time:

. Dramas and Comedies
. Popular song and music programmes, Traditional dances
. Quiz shows
. Variety shows, Dramas and Documentary films of foreign origin
. News

(Note 1)

Religious programmes will be composed of the religious calendar, religious episodes and music, etc.

(Note 2)

School broadcasting programmes for Lower-secondary and Secondary schools.

Each of the school programmes will be 20 minutes: 11:00 to 11:20 for Lower-secondary schools, and 11:20 to 12:00 for Secondary schools.

As an example, the subjects to be included in the programmes for both Lower-secondary and Secondary schools will be areas such as Science, Social studies, and English that can be better taught with the aid of teaching materials, such as audio-visual materials, but are not actually supported sufficiently with such aids in schools.

Vocational subjects, in particular, will be programmed for Secondary schools. The school broadcasting programmes will be scheduled as shown for example in Table 3-1-2.

Table 3-1-2 An example of school broadcasting programmes

	SUN	MON	TUE	WED	THU	FRI
11:00 (Lower-secondary schools)	Science G-6	Science G-7	English G-6	English G-7	Social studies G-6	Social studies G-7
:20 (Secondary schools)	Science G-8	Science G-9	Science G-10	History	Geography	Civics
:40	Vocational Home science	Vocational Office management and Accounts	Vocational Agriculture	Vocational Industrial Education	English G-8	English G-9
12:00						

(Note 3) 18:00 to 20:00 period

It will take some time before each farmhouse has its own TV set due to the expense of its high price. In view of this, the anti-illiteracy and adult education of the residents in the rural areas by TV broadcasting will be promoted as mainly dependent, for the time being, on the Community TV Viewing Centre (C.V.C) operated by the Ward Panchayat.

The best period of time for the people living in the rural areas to view television at the CVC is considered to be from 18:00 to 20:00. Programmes for children and adult (anti-illiteracy) education programmes will, therefore, be arranged for this period of time.

(Note 4) Anti-illiteracy education programmes

These programmes will be broadcast for those who are hardly able to read and write letters, that is, who are "unlettered" as a result of having never attended schools or having given up school for some reason or other, with the view of evoking their interest in learning letters, so as to motivate them to such learning, and to actually provide for them lessons in reading and writing.

The programmes will be not stiff, stuffy educational programmes, but easy, attractive ones, and so offer chances to learn letters in a pleasant atmosphere. The curriculum will comprise programmes of planned step-by-step courses continuously lasting for one to two years.

The contents of the programmes will integrate with general improvements in the life in villages, including hygiene, family planning, cottage industries, and improvements in farming, and so on. They will be aimed at stimulating desires for better rural development.

(2) 2nd Phase (See Table 3-1-3)

1) Broadcasting hours

7 hours/day on Sunday through Friday and 9 hours on Saturday, a total of 51 hours a week.
(One hour from 12:00 to 13:00 added to the 1st Phase)

Table 3-1-3 TV programme schedule (2nd Phase)

	SUN	MON	TUE	WED	THU	FRI	SAT
7:00	News, Current topics, Religion, Yoga, etc.						
8:00	(No broadcasting)						
11:00	School hour for Kindergartens, Primary, Lower-secondary and Secondary Schools						Housewives
							Schoolteachers
13:00	(No broadcasting)						Sports/Movies
15:00	(No broadcasting)						
18:00	News, Programmes for children, Adult education programmes Dramas, Popular song and music, and Foreign programmes News						
22:00							

2) Daily schedule

a) 11:00 to 13:00, Sunday through Friday

One hour of school broadcast programmes is added to the 1st Phase, to a total of two hours, in order to extend broadcasting to Kindergartens and Primary schools in addition to Lower-secondary and Secondary schools.

b) The one-hour programme from 11:00 to 12:00 in the 1st Phase will be shifted from 12:00 to 13:00 and programmes for Kindergartens and Primary schools will be arranged from 11:00 to 12:00.

Table 3-1-4 shows an example of this programming.

c) In this phase, the quality and contents of the programmes for adult education and entertainment will be improved.

Table 3-1-4 An Example of School Broadcasting Programmes

	SUN	MON	TUE	WED	THU	FRI
11:00 (Kindergartens/ Primary schools)	Songs and rhythms	Handicraft	Folk tales	Mahendra Mala G-1	Mahendra Mala G-2	Mahendra Mala G-3
:20 (Elementary schools)	Mathematics G-1	Mathematics G-2	Mathematics G-3	Mathematics G-4	Mathematics G-5	We Nepalese
:40	Science G-4	Science G-5	Social studies G-4	Social studies G-5	English G-4	English G-5
12:00 (Lower-secondary schools)	Same as in Phase 1					
:20						
:40 (Secondary schools)						
13:00						

For example, the 20-minute period from 11:00 to 11:20 on Sunday, Monday and Tuesday will be for Kindergartens, and the same period on Wednesday, Thursday and Friday and the 40-minute period from 11:20 to 12:00 on Sunday through Friday will be for Primary schools.

For instance, programmes for Kindergartens will mainly cover music, handicrafts and tales. For Primary schools, programmes of mathematics and Mahendra Mala (Note 5) will be broadcast for classes Grade 1 through Grade 3, and programmes of Science and Social studies which are introduced to and above Grade 4, in addition to Mathematics and Social studies, will be broadcast for Grade 4 and Grade 5 classes. The programme entitled "We Nepali", intended for public hygiene, public morality, and other social education, will be broadcast as a non-lesson programme for all grades of Primary schools.

(Note 5) Mahendra Mala:

Mahendra Mala is the name of a textbook to teach Nepali and Social studies. By this one textbook, pupils learn both Nepali and Social studies. Children learn languages, custom, religion, civics, geography, history, and so on, collectively and in an integrated manner.

(3) 3rd Phase (See Table 3-1-5)

1) Broadcasting hours

8 hours/day on Sunday through Friday and 10 hours on Saturday, a total of 58 hours a week.
(One hour from 22:00 to 23:00 is added to the 2nd Phase)

Table 3-1-5 TV programme schedule (3rd Phase)

	SUN	MON	TUE	WED	THU	FRI	SAT
07:00	News, Current topics, Religion, Yoga etc.						
08:00	(No broadcasting)						
11:00	School hour for Kindergartens, Primary schools, Lower-secondary and Secondary schools						Housewives
							Teachers
13:00	(No broadcasting)						Sports/Movies
15:00	(No broadcasting)						
18:00	News, Programmes for children, Programmes for adult education, Dramas, Popular song and music, Quizzes and Foreign programmes						
20:00	Cultural programmes News						
23:00							

2) Daily schedule

a) 18:00 to 23:00

While the same schedule as that of the 1st Phase and the 2nd Phase will apply to the hours from 18:00 to 22:00, the 3rd Phase will have an additional one hour of broadcasting, from 22:00 to 23:00. Programmes suited for this late-hour broadcasting will include, for example, interviews with men or women in the news, historical and artistic travelogues in Nepal, and other cultural programmes.

b) The rest of the broadcasting hours will be the same as in the 2nd Phase.

1-3. Programming Plan Promoting Systems

(1) Adult education programmes

Systems to make full use of the CVC will be developed so that as many people as possible can learn through TV. A feedback system for reflecting viewers' reactions to productions will be particularly necessary for producing anti-illiteracy education programmes.

In the feedback system, coordinators of the CVC will observe how interested villagers are interested in viewing TV and will feed back their comments and opinions to NTV. For the preparation of curriculums and programmes, a joint work system will be maintained in close communication with the Adult Education Department and the Ministry of Education and Culture. Adult education programmes should have a general and continuing nature to help improve rural life. Ministries concerned with agricultural improvement, forestry resources protection, health and sanitation, child care, etc., such as the Ministry of Agriculture and the Ministry of Health and Welfare, should form their respective planning committees to maintain close communication with each other in order to support the production of programmes that meet the need of the TV viewers.

(2) School broadcast programmes

1) Planning and programming systems

The preparation of broadcast programmes for schools is subject to curriculum regulations set by the Ministry of Education and Culture. Whenever NTV produces a TV programme, NTV must carry out the production work jointly with school education specialists from the Ministry of Education and Culture with respect to its planning, contents, and composition.

Radio programmes for schools have been produced by the Audiovisual Education Department of the Ministry of Education and Culture, and five (5) programmes are broadcast for Primary schools every week.

The five (5) programmes are of 15 minutes each from 14:00 to 14:15, Sunday through Thursday:

Sun.	Nepalese and Social studies	For Grade 1
Mon.	" " " "	For Grade 2
Tue.	" " " "	For Grade 3
Wed.	English	For Grade 4
Thu.	Science, Social studies, Moral education, School songs, etc., for all Grades	

Thus, radio school-broadcasting programmes are produced by the Ministry of Education and Culture. The production of TV school-broadcasting programmes requires much larger facilities and equipment, and should

preferably be carried out using the facilities of NTV and with the advice of specialists from the Ministry of Education and Culture.

A TV programming committee, consisting of school education specialists from the Ministry of Education and Culture, schoolteachers, professors of the Institute of Education in Tribhuban University, etc., should be organized to give advice on the programme plan and programme contents for each study course for Kindergartens, Primary schools, Lower-secondary schools, and Secondary schools.

Abstracts of TV programmes scheduled to be broadcast should be previously prepared as the textbook and distributed to the schools to explain the planned purpose and outline of each programme.

NTV's TV programmes for schoolteachers should include guides for schoolteachers which provide them with the programme for school broadcasts and other information.

2) Systems on the side of TV viewing

To receive broadcasted TV programmes, it is recommended that TV sets should be provided by the Ministry of Education and Culture for Kindergartens, Primary, Lower-secondary, and Secondary schools, in steps corresponding to the three Phases described above. In the 1st Phase, where the school-broadcasting programmes are intended for Lower-secondary and Secondary schools, approximately 200 schools, out of the nearly 800 schools in the 12 districts within the coverage of the TV broadcast, will be initially selected as case-study schools for research into the utilization of TV school-broadcasting programmes.

The case-study schools will make good use of the TV programmes and feed back their comments and opinions, evaluation, students' reactions, etc., to the Ministry of Education and Culture and NTV. Thereafter, 200 to 300 TV sets will be provided every year for other Lower-secondary and Secondary schools until all the Lower-secondary and Secondary schools within the coverage area are provided with TV sets.

In the 2nd Phase, where the TV school-broadcasts will also cover Kindergartens and Primary schools, 300 of them will be selected as case-study schools, out of those in the districts in the initial year, as in the case of Lower-secondary and Secondary schools. Thereafter, 300 to 500 other Kindergartens and Primary schools will be selected every year until all of the Kindergartens and Primary schools in the districts are provided with TV sets.

Each of the case-study schools will form an organization to study and evaluate the plans and contents of the TV programmes on in-school and inter-school bases, and feed back its comments and opinions to NTV and the Ministry of Education and Culture, with a view to contributing to the production of more easily used programmes.

Schoolteachers, as utilizers of the TV school broadcasting programmes, will be requested to study what positions the programmes should be given in their lessons and how they should conduct their classes while making use of the programmes. Programmes in which teachers exchange their views to develop their studies may be useful.

A board of representatives of NTV, as the producer, representatives of the Ministry of Education and Culture, as the supervisor, and representatives of the schools, as the users, to discuss problems will be indispensable.

The population coverage of this long-term development plan is approximately 63 per cent. For schools outside the coverage, VCRs (video cassette recorders) and programmes in cassettes will preferably be provided in future.

(3) Programmes for schoolteachers

Under the present circumstances in which many of the schoolteachers, particularly in the Primary schools, are not sufficiently qualified, training of schoolteachers is consequently an important problem.

In view of this fact, TV programmes for teachers will be prepared to improve their competency. This will be conducted as part of the teachers' training plans, including RETTP (Note 6), of the Ministry of Education and Culture. It

may be an idea to give those who passed examinations certificates as qualifications.

(Note 6) RETTP

The Radio Education Teachers' Training Project (RETTP), a part of the Ministry of Education and Culture, currently provides radio programmes for untrained primary school teachers on the following schedule.

On the air from 17:30 till 18:00, Sunday through Thursday, the 60-minute programme comprises 40 minutes for 2 subjects (chosen from the 8 subjects of Nepali, Mathematics, Social studies, Education, Physical education, Art and Handicrafts, Health, and Rural development), 20 minutes for each, and the remaining 20 minutes for the "Magazine Show" which deals with "Educational News", "In response to questions", and other varieties. Enrolled teachers study by themselves with the radio programmes and their textbooks, and are given the RETTP certification when they have passed the final examinations.

This project started in 1982; since then, approximately 6,000 teachers have been enrolled and approximately 3,000 of them have been certificated. In addition to the above programme, RETTP maintains another programme for schoolteachers, entitled "Radio Tuition", which has been broadcast from 20:15 to 20:45 on Sundays through Fridays. At present, the "Radio Tuition" concerns English.

CHAPTER 2. STUDIO FACILITIES

As referred to in the previous chapter, NTV plans to extend broadcasting hours from the present three to six and finally to eight hours. The existing equipment and facilities are not sufficient for the production of NTV's own programmes, which will account for 80% of all programmes including school broadcasting. Therefore, it is necessary to construct a new broadcasting centre to provide professional equipment.

Main facilities of the centre are classified as follows.

(1) Studio facilities for programme production

(2) Facilities for outdoor programme production (ENG, EFP, OB Vans etc.)

(3) Facilities for sending programmes produced with the above-mentioned facilities (i.e. master control)

In the following, a brief explanation is given on the function of studios, master control, and their equipment.

2-1. Studios and Master Control

The necessary number of studios for programme production depends on the number of programmes and hours to be produced.

Programme production using one studio goes through the following process.

- o Setting of scenery and props.
- o Setting of lighting apparatus and microphones
- o Dry rehearsal
- o Camera rehearsal without make-up and costumes
- o Camera rehearsal with make-up and costumes
- o Recording or live broadcasting
- o Monitoring of recorded tape and removal of scenery and props.
- o Removal of scenery

In producing a programme, one studio is occupied for a period of several or several tens of the times of practical broadcast for recording. This is called the studio utility factor (S.U.F.). It varies depending on the kind of programmes as shown below.

Table 3-2-1 Studio utility factor

Programme	S.U.F.
News	2 - 3
Interview, information	5
Religion, language	6
Science, cooking	10 - 15
Puppet play	10
Show, dance	15
Music, musical	15 - 25
Drama	15 - 30

Each factor listed above is an average value, though subject to the contents of a programme, production techniques, technical level, and the use of scenery and props.

Generally, the size of a studio is determined according to the scale of programmes, and the following studio areas are necessary, as shown in Table 3-2-2.

Table 3-2-2 Necessary area of studio for each programme

Programme	Area (m^2)	Remarks
News, interview, commentary	50 - 100	Several performers
Language, mathematics	100 - 200	Approx. 20 students
Puppet play, science, cooking	100 - 300	2 or 3 studio sets
Music, dance	200 - 300	Approx. 30 performers
Musical show	300 - 600	Depends on the number of performers and their moving range.
Drama	200 - 400	4 to 6 studio sets
Dubbing	30 - 50	

The most important concept to be recognized for the scale of studios is that the larger studio can also be used for small-scale programme production. However, as it requires more operation costs for air-conditioning and lighting, studios with the proper size for each programme should be used.

As referred to in the previous chapter, broadcasting hours are extended step-by-step based on the development plan. Eighty percent of the broadcast hours is planned to be broadcast with programmes made by NTV.

Phase 1	6 hours
Phase 2	7 hours
Phase 3	8 hours
Phase 4	8 hours

At the end of the 1st Phase, programmes are produced by NTV for 4 hours 48 minutes, which is 80% of the 6 hours. If programmes are produced outdoors for one hour, NTV has to produce in total 3 hours and 48 minutes of programme, including live news broadcasting, in studios.

Occupancy of a studio per day is as follows. Calculation was made based on Table 3-1-1 "Programming Plan" in the previous CHAPTER 1.

Table 3-2-3 Studio occupancy per day after Phase 1

Broadcast time	Programme	Broadcasting hours	S.U.F.	Studio occupation hours
7:00 - 8:00	News	15 min.	2	hour hour 0.25 x 2 = 0.5
	Current topics, religion, yoga	45	5 on average	0.75 x 5 = 3.75
11:00 - 12:00	School hour: science, vocational	30	10	0.5 x 10 = 5.0
	School hour: history, language	30	6	0.5 x 6 = 3.0
18:00 - 22:00	News	45	2	0.75 x 2 = 1.5
	Adult education, entertainment	63	7 on average	1.05 x 7 = 7.35
	Imported programme	72	Dubbing studio	---
	Outdoor production	60	---	---
Transmission of programme other than news				5.0 hours
Total		6.0 hours		26.1 hours

The total studio occupation of 26 hours requires at least two studios. If two studios are constructed, they each will be used for about 13 hours a day. If programme production is started at 9:00, they will be used until nearly midnight.

The size and purpose of the two studios are as follows:

(1) Continuity studio

This is used to broadcast live news and recorded programmes. During the vacant hour of broadcasting, it is used to record interviews or commentary programmes. In the studio a desk, studio sets, and lighting equipment are provided and fixed to present the news at scheduled times. The sets for news programmes are arranged in one portion of the studio, and the other portion will be used to record interviews, etc.

Considering the above, the studio requires an area of about 65 m^2 at least.

(2) Production studio

This is used to produce school broadcast programmes which call for students' participation, (e.g. scientific, vocational education, and cooking). Production of these programmes requires the use of several art sets or teaching instruments. Necessary area is about 200 m^2. In the studio, small-scale traditional entertainment programmes can be also produced.

In addition to these two studios, one more studio is necessary for dubbing imported programmes in the 1st Phase. Only a few persons are expected to be engaged in the dubbing of documentary programmes, but about ten performers are expected to gather when dubbing dramas, therefore the studio requires an area of about 30 m^2.

At the end of the 2nd Phase, broadcasting hours are extended by one hour for school broadcasting, and an upgrading of programme contents is planned for adult education and entertainment.

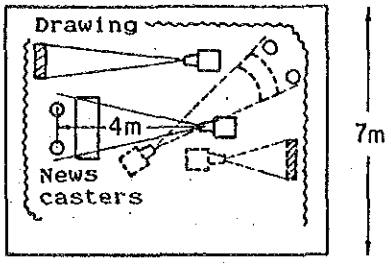
Studio occupancy is as follows in this phase.

Table 3-2-4 Studio occupancy per day after Phase 2

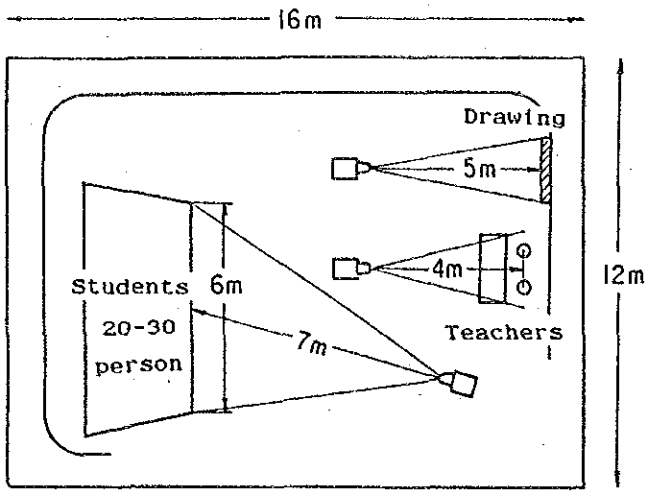
Broadcast time	Programme	Broadcasting hours	S.U.F.	Studio occupation hours
07:00 - 08:00	News	15 min.	2	hour hour 0.25 x 2 = 0.5
	Current topics, religion, yoga	45	5 on average	0.75 x 5 = 3.75
11:00 - 12:00	School hour for lower graders: arithmetic, English	30	6	0.5 x 6 = 3.0
	School hour for lower graders: song, science	30	10	0.5 x 10 = 5.0
	School hour for middle and higher graders: science, vocational	30	10	0.5 x 10 = 5.0
	School hour for middle and higher graders: history, language	30	6	0.5 x 6 = 3.0
18:00 - 22:00	News	45	2	0.75 x 2 = 1.5
	Adult education, entertainment	51	12 on average	0.85 x 12 = 10.2
	Imported programme	84	---	---
	Outdoor production	60	---	---
Total		7.0 hours		31.95 hours

Studio occupation hours amount to about 32 hours. As it is impossible to produce all the programmes for these hours in the two studios, one more studio is necessary.

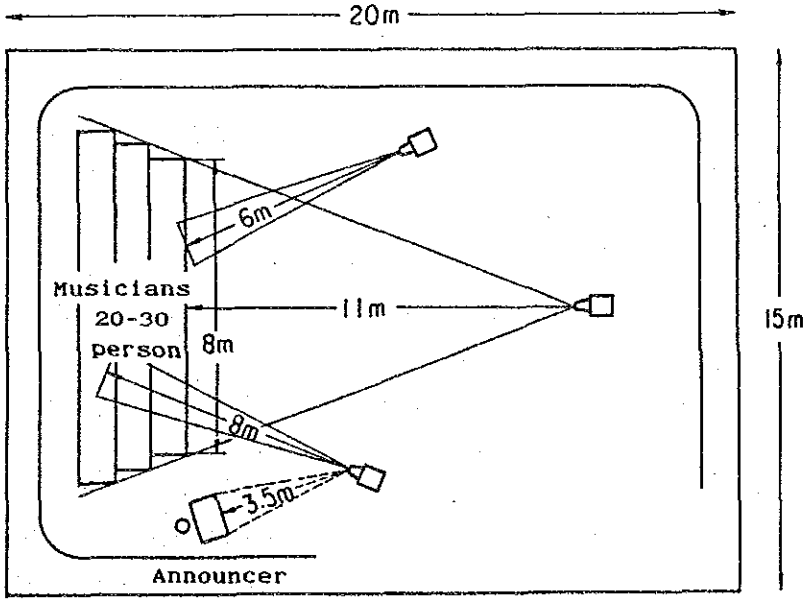
In the second phase, qualitative improvement is planned for programmes of adult education and entertainment. The size of the additional studio is determined so that the production of audience participation programmes, dramas, music, and dance is possible.



Production of News and Information Programme in 65m^2 Studio



Production of Educational Programme in 200m^2 Studio



Production of Music Programme in 300m^2 Studio

Fig. 3-2-1 Example of the Programme Production in each Studio

An area of about 300 m^2 is necessary for the studio to produce discussion programmes with about 100 participants, a drama in which five sets are used, and programmes of traditional entertainment (e.g. music and dance) by about 30 performers. Examples of programme production in the above mentioned studios are shown in Fig. 3-2-1.

In the third phase, one hour extension is planned for broadcasting hours in the evening for adults. An OB van is arranged for that purpose. The van can be regarded as an outdoor studio. Sport programmes, entertainment from a theater, reports from the national assembly, an interview with well-known persons, etc., are produced by means of the OB van.

The master control room is used mainly to transmit programmes. It is also used to carry out work as listed below.

(1) Services for smooth transmission of programmes, keeping in communication with studios, spots of outdoor relay broadcasting, the programming department, and transmitter stations

(2) Transmission of test pattern, starting and closing programme, transmission of the emergency notification pattern in case of an accident, and superimposition of time

(3) Recording of foreign news, system conversion, and telecine work

In general, programmes are transmitted from the master control room or the continuity studio. Transmission from master control is suitable for broadcasting when there are plenty of resources from studios or from the outside and when most broadcasts are completely taped programmes. Transmission from the continuity studio is suitable for broadcasting when there is a small amount of resources and transmission is done by framing incompleted programmes. So the continuity studio cannot produce programmes while it is being used for transmission.

The development plan intends to broadcast programmes by way of the continuity studio in the first phase, in due consideration of the small quantity of resources and of the effective utilization of the studios. In the second phase, master control is added to provide the transmission function when another studio is constructed and resources are increased.

2-2. Facilities for Programme Production and Transmission

In designing studio facilities, it is required to facilitate the maneuverability of each piece of equipment in order to make immediate control possible for the variety of programmes within a short period, referring to human engineering in the design and production. The policy of operation and design is explained in the following:

(1) During the process of programme production, the camera man (CA) and floor director (F.D) engage in the studio work and other persons operate the equipment of the subcontrol room. Jobs of each operator are specified as in the following:

(PD) : Overall direction of programme production.
Determination of picture framing, cueing

(F.D) : Direction of production work within studio

(T.D) : Direction of technical matters

(S.W) : Switching of pictures and video effects origination.
The jobs of TD and SW are served by one person in a small-scale programme.

(V.E) : Adjustment of equipment, operation of VTR and Opaque Scanner.

(L.D) : Adjustment and setting of lighting equipment.
The jobs of V.E and L.D are also served by one person in a small programme production.

(Mix) : Mixing of sound

(A.A) : Operation of tape recorder, disk player etc.
The jobs of Mix and A.A are served by one person in a small scale programme.

(C.G) : Operation of character generator

(C.A) : Operation of studio camera

(2) Studio camera

Recently, some cameras for outdoor picture shooting are being used in studios. They are usually using pickup tubes, but cameras with a C.C.D. (Charge Coupled Device), which is almost permanent in life, have been put into practical use. Such cameras hardly need readjusting and performances have improved. Adoption of such cameras is considered.

The suitable number of cameras is two for the small studio where interviews or information programmes are produced, and three for the medium and large studios where programmes for schools and women and dramas, etc., are produced.

As to the OB vans, two cameras are necessary for the small OB Van, mainly intended for news-gathering, and three or four cameras are necessary for the large one, for programme production at an external stadium or stage.

(3) Studio lighting

Studio lighting apparatus are hung from grids or buttons and the brightness of lighting is controlled with the aid of dimmer units. Lighting equipment in the continuity studio for presenting news programmes is generally fixed and hung from a ceiling grid, and one button switching makes it possible to operate it.

As to the medium and large-scale studio, buttons, each with a length of about 4m to 6m, are hung from the ceiling grid so as to adjust the height easily. Brightness of the lighting will be controlled from the control console.

Electric capacity of lighting for each studio is designed to give 0.6 kVA/m^2.

(4) VTR facilities

Programme recording and play-back are conducted by using two sets of VTR in each studio.

The width of VTR tapes for broadcasting use are 1 inch, 3/4 inch and 1/2 inch. 1-in. and 3/4-in. VTR tapes for professional use are good in quality and do not deteriorate after several editings. U-matic VTR which uses 3/4 inch tapes is used for news-gathering world-wide and is inexpensive to use. Home-use VTRs such as the VHS or Betamax system are not appropriate for broadcasting use. In the plan, U-matic VTRs (high-band) are adopted, because they are now used in Nepal.

(5) Video switcher

The equipment provides the following functions;

- o Switching of the output of studio cameras or movie cameras
- o Superimposition of characters or figures in colour
- o "Wipe technique" which changes pictures based on various wipe patterns
- o "Chromakey" which makes it possible to insert a person into a scene
- o Digital Effects

(6) Audio mixer

This equipment is used to mix the output of a number of microphones, disk player, tape player etc. A suitable input is 12 to 16 machines.

(7) Colour opaque projector

This is an equipment designed to produce TV colour pictures by using characters or figures on a 3 in. x 4 in. sheet of paper or photographs of the same size.

(8) Character generator in Nepali

This is an apparatus to produce character pictures in Nepali and English by using a keyboard.

(9) Telecine

Although the development of news-gathering by VTRs in recent years has reduced programme gathering by films, movies in 35 mm or 16 mm film are used for broadcasts. A telecine is an apparatus to reproduce these movies on television.

In order to supress the noise generated from the telecine-equipment, a separating wall should be provided within the MCR.

Loading of film is executed by an operator engaged in the MCR and the start-stop operation is controlled from each studio remotely.

(10) Converter

At present, three colour television standards are being used world-wide, i.e. NTSC, PAL, and SECAM. As it is expected that the B-PAL system will be adopted in Nepal, a standards converter is used for broadcasting imported programmes produced under the other TV standards.

(11) Facilities for outdoor production

Facilities for producing programmes outdoors include news-gathering equipment (ENG) and outside broadcast (OB) vans. The equipment for ENG must be small, light, and highly reliable from the viewpoint of mobility for news-gathering and of the need to report a scene which cannot be reproduced.

OB vans include smaller ones for producing news programmes and larger ones for ordinary programmes in general. The size should be decided depending on the use and road conditions.

Each OB van must be equipped with one set of cameras, VTR, FPU, video switcher, and audio mixer, as well as an air conditioner, engine-generator, cable drums, and lighting apparatus.

(12) Power source facilities

High tension electric power supplies shall be prepared by the Nepal side and the voltage and capacity are expected to by 380V/220V, 3 phase and 1000 kVA.

Power source facilities vary considerably depending on the receiving voltage. An engine-generator is installed as an emergency power source, in view of the circumstances of the electricity supply in Nepal and the importance of television broadcasting.

As the total power consumption is enormous, use of the emergency power service to all the facilities is limited. In case of a power failure, emergency power will be supplied only to the MCR and continuity studio which transmit news and live programmes.

(13) News-gathering facilities for regional correspondent offices

Each correspondent office is equipped step by step with a camera, a VTR, lighting apparatus, etc.

Local news programmes from Biratnagar, Jaleswar (Janakapur), and Bhairahawa are expected by providing small-scale studio facilities in the future.

(14) Operation of master control

1) Two set of VTRs are alternately used to transmit the completely recorded programme.

2) Programme transmission is made by switching the output of each studio signal from the site of the event and the output of two VTRs etc., at the operation board within the rack.

3) Transmission of colour bar signal, opening and closing filler programmes, and notification programme is possible.

4) Superimposition of time indication and insertion of notification is possible.

5) When the title and character are superimposed on the picture of the relay broadcasting programme within some studio, colour locking on both pictures is made with the aid of a frame synchronizer. Connection and operation of the equipment is executed in the master control room.

6) Recording function of foreign news programme sent from an earth station is provided.

7) Loading of film is executed by an operator engaged in the MCR.

8) In order to provide the conversion function from NTSC to PAL tapes, a standards converter is installed.

9) Inter-phone system is provided to facilitate communication between the MCR, subcontrol room of each studio, and telecine room.

10) One or two staff with two shifts are expected to be engaged in the MCR.