

CHAPTER 1 INTRODUCTION

1.1 General

This Report presents a Master Plan for nationwide telecommunications development up to the year 2020, formulated based on the results of the first study conducted in the Federal Democratic Republic of Ethiopia (hereinafter referred to as “Ethiopia”) and in Japan.

This first study has been carried out in accordance with the work plan and schedule of the study, which were discussed and agreed upon between Ethiopian Telecommunications Corporation (hereinafter referred to as “ETC”) and Japan International Cooperation Agency (hereinafter referred to as “JICA”) on July 22, 2002.

1.2 Background of the Study

Ethiopia is a land locked country having an area of 1,100 square kilometers, and its population stood at 62 million in mid 1999.

As of Dec 2001, the total number of installed telephone exchange lines was 554,000 out of which the number of connected lines was 319,000, with most of them being concentrated in major cities.

At present, the average telephone density is 0.5 per 100 inhabitants, with only 0.07 per hundred inhabitants distributed in the rural areas. The telephone density in Ethiopia is low, even compared with neighboring countries.

Some of the switching equipment was installed more than 20 years ago and the other facilities, such as outside plants, transmission systems, and power supply systems were also constructed almost in the same era and are too old to be operated.

In 1995, the Ethiopian government placed a higher priority on the telecommunications development in the first 5-Year National Economic Development Plan. The ETC formulated the Seventh 5-Year Telecommunications Development Plan and intended to increase the telephone density to 1.28 per 100 inhabitants by the Year 2002, with the assistance of the AfDB, EIB, etc. besides its own funds.

In the year 2000, the ETC had already formulated the Eighth 5-Year Telecommunications Development Plan in conformity with the Second 5-Year National Economic Development Plan.

In view of the above, in 2001, the Government of Ethiopia requested the Japanese Government to provide technical assistance for a study on the telecommunications development plan. In response to this request, the Government of Japan decided to dispatch a JICA study team (hereinafter referred to as “Study Team”) for execution of the study.

1.3 Objectives and Scope of the Study

1.3.1 Objectives of the Study

The objectives of the study are:

- 1) To formulate a Master Plan for telecommunications development in Ethiopia up to the year 2020/21 (Phase-I Study);
- 2) To conduct a feasibility study on priority projects identified in the Master Plan (Phase-II Study); and
- 3) To pursue technology transfer to the counterpart personnel in the course of the Study.

1.3.2 Study Area

The study covers the whole of Ethiopia.

1.3.3 Scope of the Study

In order to achieve the objectives mentioned above, the Scope of Work for the study covers the following items:

【Phase-I: Master Plan】

(1) Collection, Review and Analysis of Related Data and Information

- 1) Social and economic conditions and statistics
- 2) Existing telecommunications facilities
- 3) Data on living conditions
- 4) On-going and planned projects relevant to the study
- 5) Laws, regulations, policies on telecommunications
- 6) Other relevant data and information

(2) Field Survey

General telecommunications conditions in Addis Ababa and other local area

(3) Identification of the Existing Facilities and Equipment Concerned with Telecommunications Development

(4) Analysis of Existing Telecommunications Development Plan, Telecommunications Service and Extraction of Current Problems

- 1) Management and financial situation
- 2) Organization and institution
- 3) Human resource
- 4) Telecommunications network
- 5) Forecast of socio-economic changes and future demand for telecommunications services

(5) Formulation of the Master plan

- 1) Telecommunications network plan
- 2) Telecommunications service improvement plan
- 3) Operation and maintenance
- 4) Facilities and equipment

- 5) New services strategic plan
- 6) Plan for organization and institutional aspects
- 7) Human resource development plan
- 8) Cost estimation
- 9) Financial plan
- 10) Project evaluation (financial evaluation, organizational and institutional evaluation, technical evaluation, socio-economic evaluation)
- 11) Selection of priority project (s)
- 12) Spectrum management
- 13) Management to telecommunications
- 14) Phased implementation plan (year 2005, year 2010, and year 2020)
- 15) List of priority projects
- 16) Recommendations and measures for implementation of master plan

【Phase-II: Feasibility Study】

- 1) Confirmation of the conditionality to carry out feasibility study
- 2) Supplemental data collection and analysis
- 3) Supplemental field survey
- 4) Preliminary design of facilities and equipment
- 5) Construction plan
- 6) Maintenance and operation plan
- 7) Cost estimation
- 8) Financial plan
- 9) Human resource development plan
- 10) Organizational and institutional development plan
- 11) Project (s) implementation program
- 12) Project evaluation
- 13) Rural Telecommunications development
- 14) Implementation of technology transfer seminar

1.4 Policy Framework of the Study

The Team performed its study under the following basic policies in accordance with the Scope of Work outlined for the Study, mutually agreed upon between ETC and JICA on July 4, 2001.

The Ethiopian Telecommunication Corporation (ETC) is a monopoly on telecom services in Ethiopia. Private sector participation is expected in the near future, but only a part of ETC's capital will be made open to strategic partners. Globally, network expansion strategy is shifting from the traditional wire line to mobile due to declining investment cost of network deployment, shorter

period of construction and perceived value of mobility. The Master Plan (hereinafter referred to as “M/P”) under the study therefore proposes a strategic scenario of a national network expansion plan, upon deliberation with counterpart, and considering the characteristics of mobile communication systems.

The Team proposes the plan by giving careful consideration to the above mentioned network development trends and the continuation of a monopoly after equity partner’s participation. The scenario for participation of the private sector in the telecommunications industry is included in the M/P, which includes network planning, based on new technologies, new service development plan, a facility expansion plan, an operation & maintenance service improvement plan, an organization management plan, standardization of technical criteria, an financial plan and spectrum (frequency) management plan.

The role of private investors and services shall be defined by the government in advance, as a part of the preparation work to facilitate private sector participation. The preparation shall be preceded for business regulations, tariff systems, and standardization of technical criterion .

1.4.1 Policy Framework of the Master Plan

- 1) To respect the society and the regional characteristics in Ethiopia
- 2) To develop a M/P that addresses both the economic and the social needs of Ethiopia with the prospect of change in social and economic situation, technical innovation and players in the telecom sector and addresses network development approach based on new technologies as opposed to the traditional ordinary fixed telephone system.
- 3) To propose an improvement plan if any, by reviewing the current 5-Year National Telecommunications Sector Development Plan and the Eightg Telecommunication Development Plan of ETC.
- 4) To include minimization of the “Digital Divide” in the M/P as one of the targets with the aim of ranking higher in the following:
 - a) The promotion of Ethiopian economic development
 - b) Minimization of regional differences in Ethiopia
- 5) To clarify the role of the government and the private sector in the telecommunication sector of Ethiopia.
- 6) To absorb waiting applicants by improving customer services as one of the important targets of the M/P.
- 7) To study “Cross Subsidies” between urban areas where high profitability is expected and the rural/remote areas, where less is feared.

- 8) To study a scenario necessary for minimizing no-telephone areas and to plan to spread the Public Telecommunication Service Network in rural areas.
- 9) To decide the telecommunication network plan and the facility plan taking into account the ICT service development scenario in Ethiopia and the implementation plan as well, for the short, middle and long term.
- 10) To propose a scenario for introduction of a development plan for new technology and services to meet the need of Ethiopian economic development.
- 11) To propose ICT service related telecommunications technology and human resource training programs for ETC's management.
- 12) To decide an improvement plan for operation and maintenance to realize effective business operations, together with standardized data formats to be used by in various divisions in ETC.
- 13) To plan a business-evaluation tool using a Balance Score Card and reflect it in the organization management plan, financial plan, etc.
- 14) To prepare a priority list of higher priority projects selected, out of projects of various priorities as envisaged by ETC, in collaboration with ETC, by the end of February, 2002

1.4.2 Policy Framework of the Feasibility Study

- 1) To select a few projects for the Feasibility Study (hereinafter referred to as "F/S") out of pre-selected priority projects, through discussion with ETC and the Team, based on clearly defined selection criteria, such as urgency, social needs, effects of project implementation, available fund/budget and available time/man-power.
- 2) The F/S shall be performed in the same level of B/D (Basic Design) Study and to prepare project implementation program including budgetary cost estimates, Bill of Quantity, project description, technical specifications, etc.
- 3) To state necessary organizational arrangement for ETC, in the project implementation schedule in order to secure the prospective effects obtained through the implementation of F/S project.
- 4) To prepare Project Design Matrix for each F/S project in order to share the outline of the Project among the persons concerned.
- 5) To finalize the demands of the F/S project by cross-checking the results of a study on the macroscopic demands of the M/P plan and the result of the microscopic demands of the F/S project.

1.4.3 Policy Framework for the Technology Transfer

To correspond to high demands of technology transfer to the Ethiopian side, i) A Technology Transfer Seminar for explanation of Draft Final Report, ii) Workshops and iii) On the Job Training (OJT) through joint implementation of the Study by the Team and Ethiopian Counterparts will be implemented during the course of the Study.

In the Technology Transfer Seminar, i) methods applied during the Study, ii) criteria adopted in the Study, iii) outline of the M/P, iv) processes applied in the selection of priority project(s) and v) outline of the F/S will be presented not only by the Team but also by Ethiopian counterparts. The Team proposes participation of around 50 people not only from ETA and ETC, but also from various organizations such as Ministry of Finance and Economic Development and the Ministry of Infrastructure that are related to telecommunications.

Workshops would be held once a month during the study period in Ethiopia. In the workshops presentations on specific topics, as proposed in the table below, will be made not only by members of the Team but also by Ethiopian counterparts. After presentation of each topic, discussions on problems in the sector and on implementation of the Study among participants will be made for an exchange of opinions and information. The purposes of these workshops include not only technology transfer but also close participation in the Study by Ethiopian counterparts. Director-level managers will be invited to the workshops to give their opinions and policy advices on the Study

Table 1.4-1 Workshop Schedule

No.	Topic	Time
1	Study Team: Methodology for Demand Forecast	Late Dec. 2001
2	Study Team: Methodology for Traffic Projection Study Team: New Technology and Network Study Team: PCM Workshop Ethiopian Side: Current Conditions on Customer Services and Tariff System	Late Jan. 2002
3	Study Team: Criteria and Targets applied in the Study, Economic and Financial Analysis Ethiopian Side: Current Conditions on Introduction of New Technology and Services Ethiopian Side: Policies on Improvement and Expansion of the Services	Late Aug. 2002
4	Study Team: Process employed for the F/S Ethiopian Side: Constraints for the Implementation of Priority Project(s) Study Team: Results and Process of the F/S	Late Aug. 2002

1.4.4 Selection of Priority Projects

When selecting priority projects due consideration will be given to prevailing different social circumstances of nations and races living in each region in Ethiopia., In addition, the following items will be considered respecting the intention and the financial validity of the ETC when selecting the priority of projects.

- 1) Realization of starting a business
- 2) Available man-power / time of the Team
- 3) Economical, financial and technical viewpoints
- 4) Impartial provision of telecommunications services
- 5) Dissolution of expanding waiting applicants in area/region
- 6) Solutions provided for old facilities that are the causes for frequent line problem
- 7) Improvement of overloaded backbone networks
- 8) Check the point to be developed for activation of local economy, etc.
- 9) Rural telecommunications network

1.5 Work Schedule of the Study

1.5.1 Overall Time Schedule of the Study

JICA dispatched the Study Team to Ethiopia between December 8, 2001 and March 11, 2002, for executing the first study in Ethiopia, followed by the first study in Japan, for preparation of an Interim Report.

Overall schedule of the Study and its principal items are given in Figure 1.5-1.

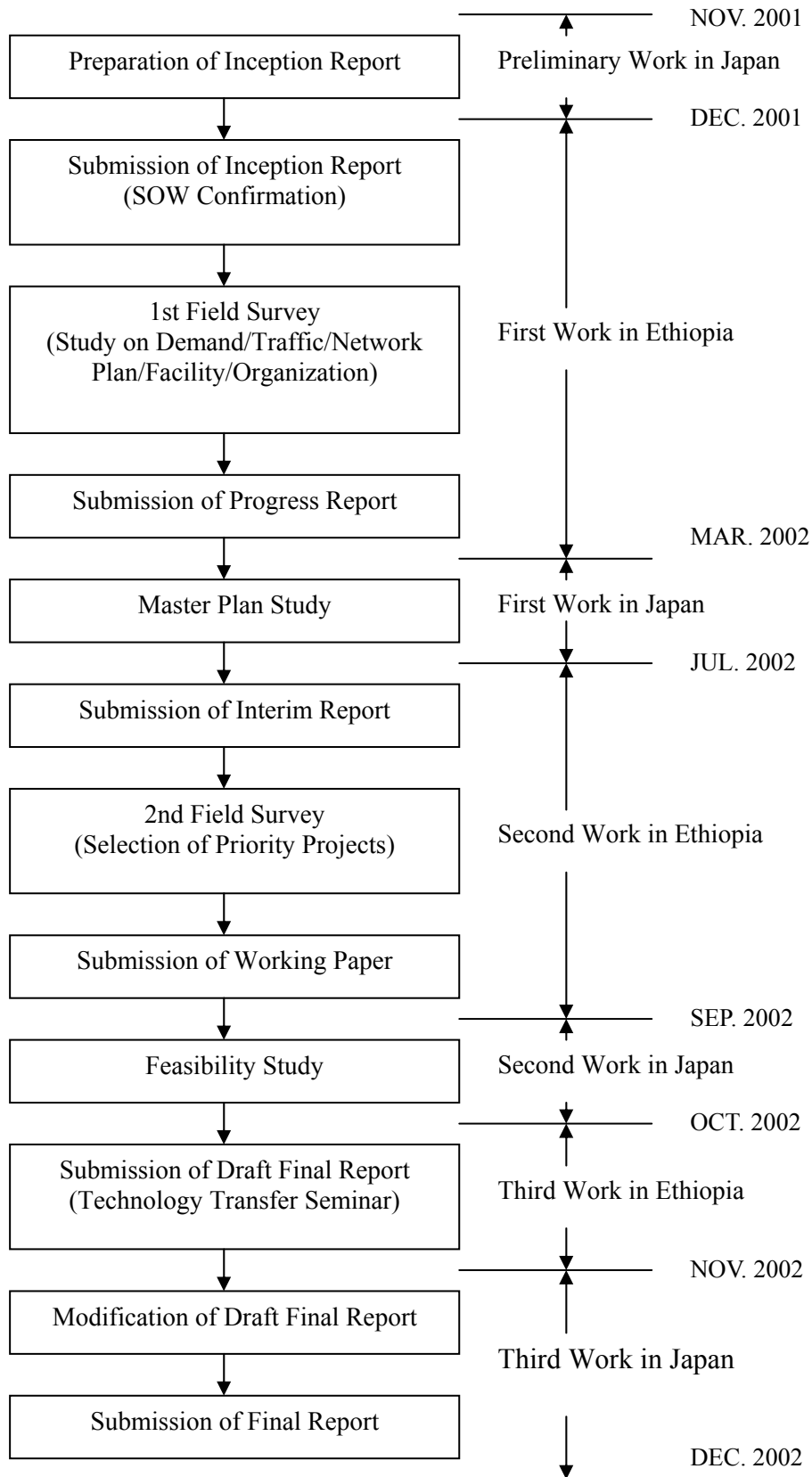


Figure 1.5-1 Work Schedule

1.5.2 Progress of the First Study in Ethiopia

During the first study in Ethiopia, from December 8, 2001 to March 11, 2002, the Study Team carried out the following work together with its counterparts:

- 1) Explanation and discussion of Inception Report submitted by the Study Team
- 2) Collection of data/information (socio-economy, telecommunications, etc.)
- 3) Analysis of data/information
- 4) Field Survey (socio-economy, demand, and facilities)
- 5) Macroscopic demand forecast
- 6) Study on long-term development strategies
- 7) Preparation of Progress Report
- 8) Technology transfer through field survey and workshop

1.5.3 Progress of the First Study in Japan

During the first study in Japan, from May 24 to July 6, 2002, the Study Team prepared a draft Master Plan based on the results of the first study in Ethiopia. The draft Master Plan mainly consists of the following:

- 1) Review of demand forecast
- 2) Traffic forecast and circuit calculation
- 3) Telecommunications network plan
- 4) Operation and maintenance plan
- 5) Human resource development plan
- 6) Project formation and selection of priority projects
- 7) Evaluation of the master plan
- 8) Technology transfer through a one-month training in Japan for a ETC counterpart

Details of the Master Plan are referred to in the respective Chapters of this Report.

1.5.4 Progress of the Second Study in Ethiopia

- 1) Explanation and discussion of the Interim Report
- 2) Discussion and selection of the objective areas of the Feasibility Study (F/S)
- 3) Collection of the additional data/information for the master plan study
- 4) Site survey of the objective areas of F/S
 - Mekele area
 - Bahir Dar area
 - O/F route from TR-III (Addis Ababa National Switching center) to Nazareth.
- 5) Micro demand survey by interview.
- 6) Draft basic design of the F/S projects.
- 7) Collection of the cost information of the local materials and labours.

- 8) Preparaton, presentation and discussion of the working paper for the out-put of the site-survey of the objective areas of F/S.
- 9) Study and the further discussion on ETC's comments on the interim report.

1.5.5 Progress of the Second Study in Japan

- 1) Preparation of the project implementation plan including the function specification of the project element / facility, installation standard, Bills of quantities and the project cost estimation.
- 2) Recommendation for Operation and Maintenance plan for the F/S project including the man-power requirement and the training plan.
- 3) Finacial analysis of the F/S projects to estimate the FIRR.
- 4) Preparation of draft final report dependeing on the further study on ETC's comments on the interim report and the newly collected data/information.
- 5) Preparation of the presentation materials for the "Technology Transfer Seminar".

1.5.6 Study Organization

The field survey and the 1st study were carried out in Ethiopia by the following organization:

(1) Member of JICA Study Team

Table 1.5-1

No.	Name	Duty in Charge
1	Ryoji Sasaki	Team Leader
2	Muneo Kurono	Network Planning, New Technology and Services
3	Takashi Yamamoto	Switching System/Traffic Forecast
4	Shinichi Shoji	Outside Plant/Demand Forecast
5	Ryusuke Takehira	Transmission System
6	Takashi Matsuoka	Radio System
7	Tatsuya Kobayashi	Customer Service
8	Tomoyuki Kuroda	Economic/Financial Analysis
9	Ryuichi Ohno	Tariff System
10	Naoki Hara	Organization/Human Resource
11	Kiyofumi Ymamura	Operation and Maintenance
12	Tadashi Yoshitsugu	Administrative Support

(2) JICA Advisory Committee

Table 1.5-2

No.	Name	Duty in Charge	Dep't/Division	Position
1	Takashi Miyashita	JICA Advisory Committee	Ministry of Public Management, Home Affairs, Posts and Telecommunications	Chairman
2	Takeshi Hirose	"	"	Member
3	Kosuke Odawara	Coordination	JICA Headquarter	Project Management

ETC Counterpart Team

Table 1.5-3

No.	Name	Duty in Charge	Dep't/Division	Position
	Seifu Shawel	Overall Coordination	Project and Technical Planning Division	Division Manager
1	Zelalem Bekele(*)	Network Planning	Project and Technical Planning Division	Deputy Division Manager
2	Lulseged Aregay		“	Deputy Division Manager
3	Kifllllu Asfaw		Human Resource Development	Deputy Division Manager
4	Erizka Abdulkadir	New Technology	Project and Technical Planning Division	Deputy Division Manager
5	Adege Bekele		Information Technology and New Service Department	Chief Engineer
6	Derege Getachew	New Services	“	Deputy Division Manager
7	Mengesha Alemu		Project and Technical Planning Division	Staff Engineer
8	Mekonnen Gudissa	Switching	Project and Technical Planning Division	Staff Engineer
9	Melaku Kassahun		Project and Technical Planning Division	Staff Engineer
10	Gebbru Kebede		Telecom Infrastructure Department	Team Leader
11	Temessgen Tesfeya		Project and Technical Planning Division	Staff Engineer
12	Mesay Mekonnen	Traffic Forecast	Project and Technical Planning Division	Deputy Division Manager
13	Tesfaye Ketema (*)	OSP	Project and Technical Planning Division	Senior Engineer
14	Yarred Ezzkias		Telecom Infrastructure Department	Staff Engineer
15	Abdulsemed Hussein	Demand Forecast	Marketing Division	Division Manager
16	Mulubhan Tesffaya		Project and Technical Planning Division	Staff Engineer
17	Birkenesh Adugna (*)	Transmission System	Project and Technical Planning Division	Staff Engineer
18	Mohammed Yimam		Project and Technical Planning Division	Staff Engineer
19	Teklemariam Laeke	Radio System	Telecom Infrastructure Department	Staff Engineer
20	Mohammed Ahmed	Operation and Maintenance	Tele Service Department	Chief Engineer
21	Samuel Barbe	Customer Service	Tele Service Department	Deputy Division Manager
22	Mueze Tsegaya	Economic/ Financial Analysis		S·Financial Analysis
23	Fikru Kassa		Project and Technical Planning Division	Senior Expert II
24	Jemal Mohammed	Organization/ Human Resource	Human Resource Development	Deputy Division Manager
25	Tizibit Fantahun		General Manager	Team Leader
26	Dagnachew Desta	Tariff System	Project and Technical Planning Division	Team Leader
27	Amanuel Tesema	Administration	Project and Technical Planning Division	Senior Administration Assistant

(*): Counterpart Coordinator