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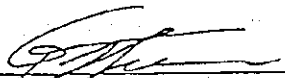


A. Scope of Work

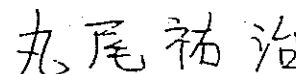
SCOPE OF WORK
FOR
THE STUDY
ON
GROUNDWATER DEVELOPMENT AND WATER SUPPLY
FOR
THE SEVEN TOWNS IN SOUTHERN REGION
OF
ERITREA

AGREED UPON BETWEEN
THE MINISTRY OF LAND, WATER AND ENVIRONMENT
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY

Asmara, April 22, 1997



TESFAI GHERMAZIEN, Ph.D.
Minister for Land, Water and Environment



Dr. Yuji MARUO
Leader of the Preparatory Study Team,
Japan International Cooperation
Agency (JICA)

I. INTRODUCTION

In response to the official request of the Government of State of Eritrea (hereinafter referred to as "the Government of Eritrea"), the Government of Japan decided to conduct a Study on Groundwater Development and Water Supply for the Seven Towns in Southern Region of Eritrea (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Eritrea.

The present document sets forth the Scope of Work for the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

- (1) to evaluate potential of water resources, focusing on groundwater
- (2) to formulate a development plan for water supply and sanitation
- (3) to conduct feasibility study for water supply project
- (4) to pursue technology transfer to counterpart personnel in the course of the Study.

III. STUDY AREA

The Study will cover following 7 towns in Southern Region.

- Adiquala, Segeneiti, Adi Keyih, Senafe, Mendefera, Dekemhare, Debarwa

IV. SCOPE OF THE STUDY

Stage I: Data Collection and Evaluation of Present Condition

1. Collection, review and analysis of related data and information
 - a. social and economic conditions
 - b. natural conditions (topographical maps, hydrogeological maps, meteorological data, hydrological data, geological data, aerial photo, etc.)
 - c. other projects relevant to the Study
 - d. existing well data and existing water supply services
 - e. sanitary conditions
 - f. present conditions and policies related to "Women in Development (WID)"
 - g. laws, regulations and policies on water resource development, water supply and sanitation
 - h. other relevant data and information
2. Topographic surveying
3. Diagnostic survey of existing water supply facilities
4. Water quality analysis for existing water supply facilities

5. Survey on actual conditions of seven towns
 - a. condition of water use and sanitation
 - b. social and economic aspects
 - c. people's awareness on health and hygiene and their willingness to pay for better water supply services
 - d. cultures and habits on water supply and sanitation
 - e. women's social situation
6. Initial Environmental Evaluation (IEE)

Stage II: Water Resources Potential Survey

1. Field reconnaissance
 - a. topographical and geological investigation
 - b. rivers and springs
 - c. hydrogeological investigation
2. Preparation of inventory of existing wells
3. Geophysical exploration
4. Test well construction, well logging, pumping test and water quality analysis
5. Leveling survey for observation wells
6. Observation of groundwater level
7. Observation of river flow and water quality analysis
8. Water balance analysis and preparation of hydrogeological map
9. Evaluation of water resources potential

Stage III: Development Plan for Water Supply and Sanitation

1. Water demand projection and confirmation of planning framework
2. Formulation of water sources development plan
3. Formulation of water supply facility plan
4. Formulation of operation and maintenance plan and institutional development plan
5. Sanitation development plan
6. Cost Estimation
7. Evaluation
 - a. socio-economic evaluation
 - b. institutional and technical evaluation

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- c. environmental impact
- 8. Formulation of implementation program
- 9. Selection of projects for feasibility study

Stage IV: Feasibility Study on Development Projects

- 1. Supplementary investigation
- 2. Water demand projection and confirmation of planning framework
- 3. Formulation of groundwater development plan
- 4. Formulation of water supply facility plan
- 5. Preliminary design of facilities
- 6. Cost Estimation
- 7. Formulation of operation and maintenance plan and institutional development plan
- 8. Evaluation
 - a. financial plan and evaluation
 - b. institutional and technical evaluation
 - c. socio-economic evaluation
 - d. environmental impact assessment (EIA)
- 9. Formulation of implementation program

V. SCHEDULE OF THE STUDY

The Study will be carried out in accordance with the tentative schedule as attached in the appendix. The schedule is tentative and subject to modification if such necessity should arise during the course of the Study and mutually agreed to by both parties.

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Eritrea.

1. Inception Report:

Ten(10) copies at the commencement of the first work period in Eritrea. This report will contain the schedule and methodology of the Study as well as outline of the field survey.

2. Progress Report :

Ten (10) copies about three(3) months after the commencement of the first work period in

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Eritrea.

3. Interim Report:

Ten (10) copies at the end of the first work period in Eritrea. This report will summarize the findings of the first field survey.

4. Draft Final Report:

Ten (10) copies at the third work period in Eritrea. The Government of Eritrea shall submit its comments within one (1) month after the receipt of the Draft Final Report.

5. Final Report:

Ten (10) copies within two (2) months after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF THE GOVERNMENT OF ERITREA

1. To facilitate the smooth conduct of the Study, the Government of Eritrea will take the following necessary measures:

- (1) To secure the safety of the Japanese study team (hereinafter referred to as "the Team")
- (2) To permit the members of the Team to enter, leave and sojourn in Eritrea for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees
- (3) To exempt the members of the Team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into Eritrea for the conduct of the Study
- (4) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study
- (5) To provide necessary facilities to the Team for remittance as well as utilization of the funds introduced into Eritrea from Japan in connection with the implementation of the Study
- (6) To secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study
- (7) To secure permission for the Team to take all data and documents (including photographs and maps) related to the Study out of Eritrea to Japan
- (8) To provide medical services as needed, expenses for which will be chargeable to the members of the Team.

2. The Government of Eritrea shall bear claims, if any arise, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of

their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.

3. The Ministry of Land, Water and Environment shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations for the smooth implementation of the Study. The Ministry of Land, Water and Environment shall, at its own expense, provide the Team with the followings, in cooperation with other organizations concerned:

- (1) available data and information related to the Study
- (2) counterpart personnel
- (3) suitable office space with necessary equipment in Asmara
- (4) credentials or identification cards
- (5) appropriate number of vehicles with drivers.

VIII. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, study teams to Eritrea
2. to pursue technology transfer to the Government of Eritrea counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and the Ministry of Land, Water and Environment shall consult with each other in respect of any matter that may arise from or in connection with the Study.

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TENTATIVE STUDY SCHEDULE

MONTH DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WORK IN ERITREA																	
WORK IN JAPAN																	
STAGE OF THE STUDY			STAGE I	STAGE II							STAGE III, IV						
REPORT PRESENTATION	▲ IC/R			▲ P/R				▲ IT/R							▲ DF/R		▲ F/R

Handwritten signature

B. Member of the Study Team

KUME Takao	Team Leader / Water Supply
KAWASAKI Ryoichi	Hydrogeology (A) / Groundwater Development
HIGUCHI Masao	Hydrogeology (B)
Mahbub A.K.M. REZA	Hydrology / Environment
TAKAHASHI Naoyoshi	Geophysics
HASE Masahiro	Drilling Supervisor
ISHIBASHI Naomichi	Financial Planning / O&M
Haregu GEBRESILASSIE	Sanitary / Hygiene Improvement Planning
KIMATA Noriyasu	Facility Planning / O&M
TANAKA Etsuji	Design / Cost Estimation
Tesfa Mariam TEKIE	Socio-economy / People's Participation
SHIBATA Eichi	Coordinator

C. Name of Counterpart Personnel

Mr. Ghebremichael Temnewo	Acting General Manager
Mr. Michael Negash	Chief Hydrologist
Mr. Tewelde Solomon	Chief Hydrogeologist
Mr. Fikremariam Kahsai	Head, Water Quality Test Laboratory



JICA