

Annex: LIST OF PARTICIPANTS OF THE MEETING ON THE DRAFT FINAL REPORT

(Tanzanian side)

Ministry of Water and Livestock Development:

Mr. C. N. Sayi	Director, Rural Water Supply
Mr. R. N. T. Kwigizile	Assistant Director, Design Supervision (Rural)
Ms. J. A. Mukumwa	Assistant Director, Rural Water Supply
Mr. Alex Musilanga	Senior Engineer
Ms. Grace Nsanya	Senior Hydrogeologist
Mr. S. Barenga	Senior Engineer

Regional Water Department:

Mr. S. H. Geugeu	Regional Water Engineer (Mtwara)
Mr. Y. F. A. Monjesa	Regional Water Engineer (Lindi)

(Japanese Side)

JICA Study Team

Mr. Kunio Fujiwara	Team Leader/ Hydrogeologist
Mr. Shuji Arakawa	Water Supply Engineer
Ms. Anna-Stella Kaijage	Sociologist

JICA Tanzania Office

Mr. Kaoru Suzuki	Assistant Resident Representative
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UNITED REPUBLIC OF TANZANIA

MINISTRY OF WATER AND LIVESTOCK DEVELOPMENT

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Ref. No. MW/W.10/70/56

18 May, 2001

JICA Representative
P.O. Box 9450
DAR ES SALAAM

**RE: COMMENTS ON MTWARA AND LINDI REGIONS STUDY ON
GROUND WATER DRAFT FIND REPORT-MAY 2001**

Please refer to the above heading.

We have received and discussed with the consultants, about the findings given in the draft Final Report of May 2001.

We would like to present our comments also in writing, as appended herewith.

A handwritten signature in black ink, appearing to be 'C.N. Sayi'.

C.N. Sayi

For: PERMANENT SECRETARY

A handwritten signature in black ink, appearing to be 'C.N. Sayi'.

A handwritten signature in black ink, appearing to be 'C.N. Sayi'.

**STUDY ON WATER SUPPLY AND SANITATION
IN LINDI AND MTWARA REGIONS
COMMENT ON DRAFT FINAL REPORT
VOL I – MAY 2001**

Item 2.1.3 Comparison between 1995 and 1984 1975 and 1984

- Page 7: Development of water supply between 1975 and 1984
3rd para: first sentence: After 1975 “..... add “..... due to population increase”.....

Item 2.1.5: Update of planning criteria

- Page 10: Item (5): Institutional arrangement.
The topic is on institutional issues but the description is simply on community participation.
The topic should describe regional, district, village and community issues.

Item 2.2.3: Institutional aspects

- Page 11: Para 1:
After the last sentence, add the words: “..... these shall be based on the revised draft National Water Policy 2000”
- Page 12:
Since the topic is on institutional aspects there should be an additional sub-item (5) showing national, regional, district village and community arrangement.
- **General comment:**
The master plan framework has so far concentrated on groundwater. The study must also concentrate on surface water for all villages, short of which establishment of masterplan framework shall not be complete for future reference and utilisation.
A separate volume should be prepared for Master Plan Framework for ease of reference, as compared to being mixed with the summary or main reports.

Chapter 3: Water supply sector

Page 13:

- This chapter should start with Investment Policy as item 3.1
- Item 3.1 on operation and maintenance should then become item 3.2.
- A new item 3.3 on Sanitation and hygiene education should be introduced as required by the draft National Water Policy 2000.
- On operation and maintenance of urban water supply, the word LUWSA should read LUWASA, and the word MUWSA should read MTUWASA.
- The last sentence should read as follows: Masasi, Tandahimba, Newala, Nachingwea, Kilwa, Ruangwa and Liwale, however
- **3.1.2 Operation and maintenance**
After the last sentence, add a new sentence reading “Ultimately, VWCs will transform into legally registered user entities”.



Item 3.2.2: RWE's office.

- Page 16: part (2)
 - (a) Lindi RWE office: 4th line:
 - remove one hydrologist, and replace the other hydrologist by "hydrogeologist"
 - (b) Mtwara RWE office: third line
 - replace one hydrologist by "hydrogeologist"
- Page 17:
Add a new item 3.2.5 on Private sector as required by the National Water Policy.

Item 3.3.2 Findings of sample village survey

- Page 19: Ruangwa district:
Para 2: third line: replace Nachingwea by Lindi

Item 3.4.3 Design criteria for facility design

- Part (2): Page 35: first bullet.
Add a new sentence reading: "Minimum pressure at the faucets shall be 5m."
- Part (3) Design criteria for level 1 Scheme.
Page 35: Fourth bullet
Remove the last sentence starting with
"If the population" and replace by the new sentence reading "If the population of the village exceeds 1.600, the village should be recommended for consideration for future extension"
Page 36:
Add a new bullet mentioning the model of handpumps to be used in the project and reasons, so that it may have some comment at this early stage of the study.
Add another bullet reading: "Appropriate kind of handpump should be chosen to expand coverage of boreholes for Level I schemes from 50m to 80m depths (e.g. Afridev handpumps, SWN81 handpumps)", instead of 50m limitation.
Consequently, Level 2 schemes shall be reduced.

Item 4.1.2: Settlement characteristics

- Part (1): Establishment of village: Para 2 add "villages" after the word "Ujamaa".

Item 4.1.7: Household income

- Par 1, page 45:
First sentence: Replace "Rural Water Policy" by "National Water Policy 2000 (rural water supply component)"
Third line replace "Rural" by National".



- Para 2, page 45.
Second line: insert the word "Tshs." after the word "between".

Item 4.2.2 Socio-economic profile of selected 100 villages

- Page 49. Last para
After the last sentence, add a new sentence reading "Due to realistic financial constraints facing the government, the foreign funding component shall also budget for mobilisation and training aspects in the project."

Item 5.2.4: Problem villages for groundwater development

Part (C), page 60:

The last sentence should read. "In case of second and third drilling trials never hit the artesian aquifer,"

Item 7.2.2: Community participation during construction stage

Para 1, page 74:

After the last sentence, add a new sentence, reading "As a result of realistic financial constraint facing the government, funding from the foreign component shall also include training and mobilisation of the communities."

Item 7.2.3: Educational activities

Part (1), page 75:

Add a new bullet reading "Cash contribution by beneficiaries as assign of capital investment participation."

Roles of water committee

Part 5, page 77, to read.

"..... Idara ya Maji or private sector, for asking"

Roles of water committee members

- Secretary, page 77: 2nd bullet, after Maji, add "or private sector"
- Treasurer, page 77, and third bullet: add the phrase "or private sector".
- Member in charge of facility operation, page 78: First bullet; at the end of the sentence add "... or private sector".

Item 7.4.1. Monitoring work in May - June 2001

- Page 85, before the last para:
Add a new bullet reading;
"Identify potential for private sector for sensitization and promotion in the area."

Item 8.2.2 Water schemes using spring sources

second para, page 88:

Remove "Miyuyu in Newala"; after Kilimahewa put a comma and add "Chiodya"; and correct Madangua to become "Madangwa."

Item 9.2.5: Cost estimates for facility construction

The cost estimate given is USD 15.5 million as opposed to another figure of USD 18.1 million given on top of table 11.3. on page 98; clarification is required.

Item 11.2.1: Financial project cost

- The table should have a breakdown to be given in Volume 2, both for foreign and local portions. This should not be a secret to the Tanzanian government.
- The total figure of $1.8.32.701 \times 10^3$ Yen is equivalent to USD 15.5 million; the figure of USD 18.1 million given above table 11.3. needs to be clarified.
- Figures in the last row in table 11.3 seem to be incorrect, otherwise to be clarified.

Item 11.2.2: Financial sources

Part (1) (2): The government's and communities contributions

(b) Financing of operation and maintenance costs:

At the end of the last sentence, add a new sentence reading "Communities shall contribute in cash as well as in cash, to show an indication of commitment to the project.. The cash contribution shall however be used for future operation and maintenance of the community schemes."

Item 11.3.1: Role of "regional" water department

- Clarification is needed on who is the project Director
- There is need to have a similar project set up at the district level so as to build their capacity for future phases. This is in line with Civil Service Reform programs directives, whereby districts are the ones to be implementers.

Item 11.3.2: District level.

- The second sentence should read:
".....responsible for identification of spare parts availability and monitoring....."
- District level set up for project management should be shown

Item 11.3.3: Establishment of VWCs at Target Villages

- Para 2 page 102:
Last line to read: "..... such as Health and Community Development Departments in each district".
- Para 3, page 102:
The last sentence should read:
"DWES will be responsible for identification of availability of spare parts"

Item 11.6: Overall evaluation

Table 11.4:

- Economic: Item (2):
The population of 128.676 should match with that of 277.327 given on page 97 or clarified.



- Financial: Item (2): should read. "..... to cover full operation and maintenance costs. Supervision will be done by districts".
- Institutional: item (2); should read;by DWEs offices and foreign portion founding."

Item 12.2: Recommendations

Para 1: After the last sentence add a new sentence reading; "Due to realistic financial constraints facing the government, foreign portion of project funding shall be reconsidered to further cover part of the government portion, especially promotion and training activities of the districts and communities.

COMMENT ON VOL. 2

Figure 3.4. page 3-13.

The vertical and horizontal relationships should be revisited to reflect the true existing structures.



MINUTES OF MEETING

MEETING ON DRAFT FINAL REPORT

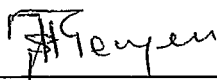
BETWEEN

OFFICIALS CONCERNED OF MTWARA REGION

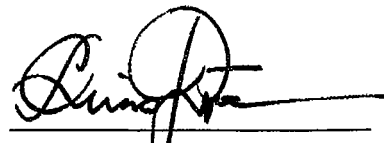
AND

JICA STUDY TEAM

May 18, 2001 MTWARA



S.H. Geugeu
Regional Water Engineer, Mtwara
Team



Kunio Fujiwara
Team Leader, JICA Study

The Draft Final Report on the Study on "Water Supply and Sanitation in Lindi and Mtwara Regions" were brought into Mtwara by the JICA study team, and 6 copies of it were submitted to the Regional Water Engineer's Office on May 17. The meeting for discussion on the report was held on the 18th of May, at the conference room of the Mtwara Town Council, presided by the Regional Educational Officer. The attendants of the meeting were the officials of the region and districts, and the team members of JICA study team, as per listed in Annex.

The meeting began with the briefing on the study sequence and contents of the Draft Final Report by the team leader of the study team. Emphasis was put on the autonomous management of the community-based independent water supply schemes in the briefing, then, this briefing was followed by the explanation on the practice of autonomous management through the pilot schemes, presented by the sociologist member of the study team.

After the discussion on the following issues, Tanzanian side understood the situation of the planned 100 villages in the 2 regions (50 villages in Mtwara region). The chairman concluded the meeting saying, "Let's do what we have to do now prior to the stage of the project implementation. What we have to begin with is the information distribution, motivation, mobilization, and training of the villagers for not only the concerned 50 villages but also to all of the villages that need the project, so that the villagers can participate the scheme from the beginning of the project."

The questions from Tanzanian side and issues discussed:

1) Regarding the sites for the pilot scheme sites:

For the question why the pilot scheme site was not taken place in the districts of Newala and Tandahimba, reply was following; "The test wells were drilled to confirm the geological composition in the different geological units distributed in the study area. Since Tandahimba and Newala have similar geological formations, 1 well was drilled in Tandahimba district. But, it was not productive. Another well to confirm the similar geological formation in Mtwara Rural could not hit the deeply located aquifer due to small capacity of the used drilling machine. The 3 wells out of 5 were productive, hence 3 wells were used as the source of the pilot scheme in Mtwara region."

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2) Regarding information on the results of pilot schemes;

The question was made against the explanation of "Success in pilot scheme will suggest the success in the coming full-scale project." The questioner wondered how people of the districts without pilot scheme sites could know success or failure of the pilot scheme. The reply from the Regional Water Engineer was "The sociologist of the consultant team will inform it to every district water engineer at the time of her next visit in Mtwara for the monitoring work on the pilot scheme sites." Another reply from the study team was "Why not contact with the Regional Water Engineer? He should know everything about the water related schemes within the region."

3) Regarding alternative water sources or the alternative type of the scheme;

Question was made why other alternative plans were not considered in this study program. The 3 basic concepts in the planning of the 100 schemes in the 2 regions were repeated as the reply to this question, namely, - (1) independent scheme for individual village, which makes it possible for the users to manage the scheme easier, - to supply (2) clean and (3) stable water. Groundwater as a source makes them possible, and groundwater can be developed in each of the 100 villages. It was also explained that other type of the schemes, such as rehabilitation of the existing schemes or planning of the gravity system, could be considered in the 2nd or 3rd step of the project.

(There are more than 500 villages without working supply scheme in the 2 regions. Selected 100 villages are just one portion of them; therefore, step-wised execution of the project is required.)

4) Regarding involvement of private sectors;

One of the participants suggested that the ones who are responsible in the management of the water scheme are not limited to the beneficiaries or the village water committees. He added, "The private enterprise could also manage the scheme, therefore, involvement of the private sectors should be taken into consideration in operation and maintenance of water schemes. Some expressed the approval to him. JICA study team also accepted this suggestion.

5) The Regional Water Engineer mentioned that any further comments and questions on the Draft final report is acceptable. Reply is going to the

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questioners via regional water engineer, since the close correspondence is kept between the RWE and the JICA study team.

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R. J. D.

Annex: **LIST OF PARTICIPANTS OF THE MEETING ON THE
DRAFT FINAL REPORT**

(Tanzania side)

Mr. Wahab A. Issae	Regional Educational Officer
Mr. A. P. Mageka	District Executive Director (Masasi)
Mr. L. Mrumapili	Ag. District Executive Director (Mtwara)
Mr. Limbanga M.	Ag. District Executive Director (Tandahimba)
Mr. S. L. Kasumo	District Water Engineer (Tandahimba)
Mr. Mayonbo F. A.	District Water Engineer (Newala)
Mr. C. W. Malisa	Ag. District Water Engineer (Mtwara)
Mr. Nambuta Rashidi	Ag. District Water Engineer (Masasi)

Regional Water Department:

Mr. S. H. Geugeu	Regional Water Engineer
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(Japanese Side)

JICA Study Team

Mr. Kunio Fujiwara	Team Leader/ Hydrogeologist
Mr. Shuji Arakawa	Water Supply Engineer
Ms. A. S. Kaijage	Sociologist

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MINUTES OF MEETING

MEETING ON DRAFT FINAL REPORT

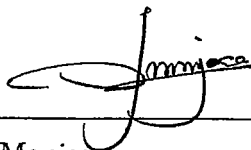
BETWEEN

OFFICIALS CONCERNED OF LINDI REGION

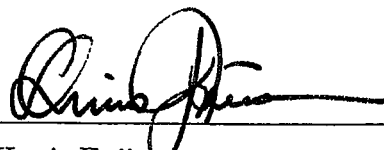
AND

JICA STUDY TEAM

May 22, 2001 Lindi



Y. F. A. Monjesa
Regional Water Engineer, Lindi



Kunio Fujiwara
Team Leader, JICA Study Team

The Draft Final Report prepared by the JICA study team on the Study on "Water Supply and Sanitation in Lindi and Mtwara Regions" were brought into Lindi, and 7 copies of it were delivered to the Lindi Regional Water Engineer's Office on May 17. The meeting for discussion on the report was held on the 22nd of May, at the conference room of the Regional Administration, presided by the Honorable Regional Administrative Secretary. The attendants of the meeting were the officials of the region and districts, and the team members of JICA study team, as per listed in Annex.

It must be mentioned that the meeting was of great success suggesting the probable success of coming project, owing much to the excellent leading of the meeting by the honorable chairman, and also to the proper arrangement of the meeting by the Regional Water Engineer calling the District Executive Directors not only the District Water Engineers.

The meeting began with the briefing on the study sequence and outputs of the Study by the team leader of the study team. In his briefing, emphasis was put on the autonomous management of the community-based independent water supply schemes and the significance of the pilot schemes taken place in the study program. Following after his briefing, introduction of activities on pilot schemes was presented by the sociologist member of the study team.

The honorable chairman announced: "Now that the study is over, what remains is implementation of the project. Let's discuss on what is necessary to be done by each of the responsible party prior to the implementation of the project."

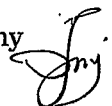
The topics and issues mainly discussed in the meeting are as follows:

(Regarding community participation in the project and sanitation)

RWE: The communities' contribution on the investment cost shall be made available before the project takes place. The accumulation of water fund amounting about Tsh.200,000.00 may be done as the commitment of the villagers, then, this amount can be later used as O/M cost immediately after construction of the facilities. The RWE also mentioned that sanitation and hygiene education should be the component, which would be taken care of at the implementation stage.

(Regarding restricted design of the facility)

Complain was made on the limited length of distribution pipe, which might cause many



people walk long distance to the water points especially in the big villages. The questioner agreed with the idea that the study team should duly consider the design available for future expansion. The team also suggested there would be the improvement of the situation of maximum 2.5 km walking, compared with existing situation of 3-20 km walking.

(Regarding monitoring work on pilot scheme)

The participants appreciated the provision of monitoring indicators for the pilot scheme sites. The DED Kilwa mentioned that these indicators could be applicable to all the villages where water schemes are in operation, not only for the pilot scheme sites.

The DC Lindi Rural appreciated the provision of monitoring guideline. She added the comment; "This should be taken as an additional working tools to the district."

The regional planning officer mentioned that the monitoring activity should not be taken on ad-hoc basis; continuous and patient monitoring should be necessary for realization of the main implementation.

The sociologist of the JICA study team reminded the participants that the effective monitoring could be done involving all the stakeholders, clarifying their individual responsibilities.

(Regarding improvement of performances of technocrats)

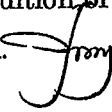
The DED Kilwa pointed out that the implementation of the development programs at the village level were not going well; caused mainly by the poor performances of the technocrats such as insufficient talking to people, in addition to the poor cooperation of villagers. He mentioned that the concerned technocrats should change methodology in approaching people and taking patient discussions with the villagers on the issues of water scheme for a successful implementation of the project.

One of the participants added that the community development departments should be incorporated in community mobilization and sensitization.

The DC Lindi Rural agreed with above opinions, and added that involvement of DCs and members of the parliament were also important in mobilization of the communities because communities tended to listen to them.

(Regarding supply sources)

The DC agreed the concept of supply of clean and safe water by development of groundwater in the planning of the schemes. She mentioned that existing condition of water use, such as unsanitary rainwater collection method, should be improved.

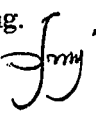


A member of parliament Ruangwa mentioned that the use of rainwater was inevitable at the areas where water resources development was very difficult; the important thing might be boiling treatment of collected rainwater.

(Regarding women's participation)

The DED Kilwa mentioned that women's participation had been difficult to achieve, since women usually kept quiet in many forum, e.g., District Council and elsewhere.

More effort should be made to mobilize women to participate in decision-making.

Operation of the water committee by women participation might be a good case study. 



**Annex: LIST OF PARTICIPANTS OF THE MEETING ON THE DRAFT
FINAL REPORT**

(Tanzania side)

Mr. Musa Mdidi	Regional Administrative Secretary
Hon. Philip A. Magani	Member of Parliament (Ruangwa)
Ms. F. Mikidadi	District Commissioner (Lindi)
Mr. M. H. Semgangwa	District Executive Director (Kilwa)
Mr. M. M. Sapanjo	District Executive Director (Ruangwa)
Mr. N. J. Mwasaga	District Executive Director (Nachingwea)
Mr. S. M. Kilozo	Ag. District Executive Director (Lindi)
Mr. Brown Kimtungu	Ag. District Executive Director (Liwale)
Ms. J. J. Mbuttu	Town Director (Lindi)
Mr. Edmund G. K. Siame	District Planning Officer (Ruangwa)
Mr. Joel Nkesela	District Planning Officer (Nachingwea)
Mr. Said Msomala	District Planning Officer (Liwale)
Mr. Jipe Ngawino	Ag. District Planning Officer (Lindi)
Mr. Zambzi Mamboleo	For District Planning Officer (Kilwa)
Mr. Amria Chingwalu	District Water Engineer (Kilwa)
Mr. C.J. Mkama	District Water Engineer (Lindi)
Mr. Valentine L. Ndyano	District Water Engineer (Ruangwa)
Mr. R. R. Mnkya	District Water Engineer (Nachingwea)
Mr. Charles Isowe	District Water Engineer (Liwale)
Mr. Chaggaka Kalimbia	LUWASA Managing Director

Regional Water Department:

Mr. Y. F. A. Monjesa	Regional Water Engineer
Mr. Bakari Mbinga	Mechanical Engineer
Mr. Maulid Nkrumah	Hydrogeologist

(Japanese Side)

JICA Study Team

Mr. Kunio Fujiwara	Team Leader/ Hydrogeologist
Mr. Shuji Arakawa	Water Supply Engineer
Ms. A. S. Kaijage	Sociologist



MINUTES OF MEETING

MEETING ON FINAL REPORT PREPARATION

FOR THE STUDY ON WATER SUPPLY AND SANITATION IN LINDI AND MTWARA REGIONS

BETWEEN

MINISTRY OF WATER AND LIVESTOCK DEVELOPMENT

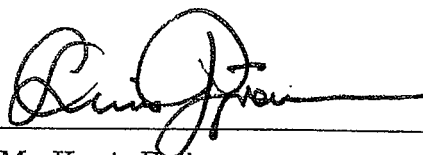
AND

JICA STUDY TEAM

Dar es Salaam, December 6, 2001



Mr. Eng. Christopher N. Sayi
Ag. Permanent Secretary
Ministry of Water and Livestock Development



Mr. Kunio Fujiwara
Team Leader,
JICA Study Team

The Study on Water Supply and Sanitation in Lindi and Mtwara Regions commenced in January 2000 will have come to the stage of final report preparation after finishing the last monitoring work on the pilot water supply schemes in December 2001.

Discussion was made on the Draft Final Report in May between the officials of the Ministry of Water and Livestock Development and JICA study team. Tanzanian side gave comments and suggestions for final report preparation to the study team and pointed out some mistakes on the draft final report. The study team has made revision on the draft in accordance with the comments given by the Ministry officials, and is going to prepare the final report adding the result of pilot scheme monitoring and further consideration on the prepared development plans, based on the monitoring results.

The major comments on the draft final report from the Ministry officials were related with:

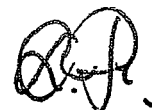
- (1) Some of study outputs are not in accordance with the new National Water Policy 2000, and
- (2) Some of the design criteria used for the planned facilities differ from those in Ministry's Design Manual

The revision so far made on the report, however, have not entirely met with the comments to a complete satisfaction of Tanzanian side, because the revision has not been entirely extended to the major points suggested by the Tanzanian side.

The further discussion for preparation of the Final Report was made on the 4th and 5th of December 2001, between the Ministry of Water and Livestock Development and the JICA Study Team.

Since the matters of "situation in general" and "peculiarity of the project site" were considered in the former discussions, the discussion this time was extended on the mutual concessions of the matters. The study team well understood about the importance of national water policy and/or design manual for consideration, and the Tanzanian side well understood peculiarities of the project area. An agreement for further revision of the report is as described in Annex 1.


The participants for this meeting is as per listed in Annex.2.



Another issue discussed in this meeting was confirmation on how to hand over the vehicles and survey equipment, for which approval of JICA was given in reply of the request from the Ministry. The vehicles would be ^{delivered} ~~posted~~ to the two regions ~~and delivered~~ by the study team when they visit the site for the final monitoring work of the pilot schemes, and the survey equipment and materials would be left to the care of the 2 Regional Water Engineers concerned.

In addition, following message from Mr. Sumio Aoki, the Resident Representative of JICA, was conveyed to the Ag. Permanent Secretary by the study team:

- Responsibility of day-to-day maintenance will also be transferred to the Ministry along with the donation of the equipment and vehicles.
- Donated equipment and vehicles shall solely be utilized for the intended purposes.



Annex 1. Agreed Matters on Revision of the Report

1) Facility design

The Ministry's Design Manual for Water Supply and Waste Water Disposal contains design standards both for urban and rural water supply. Whereas the rural water supply mentioned in this manual designates the largely populated villages with more or less 10 thousand, majority of the prioritized 100 villages for the project implementation are much smaller villages with less population than 3000, some falling on less than 1000. The report should describe that the facilities were designed according to the design manual, but there would be some exception in designing of small-scale scheme. The most important thing for the small-scale and underdeveloped villages is the facility being designed as simple and of low cost operation as possible. The final report should emphasize the necessity of earlier implementation of the project for the prioritized villages that are in extremely needy circumstances. The low construction cost may be possible with earlier materialization of financial assistance for the project from the international agencies or the donor countries. High construction cost occasionally causes hesitation for financial assistances.

The report, therefore, should also mention that the facility design for each of the independent scheme would be re-examined at the detailed design stage for materialization of more realistic schemes by comparison with the design manual.

2) Private sector

The promotion of the private sector's involvement mentioned in National Water Policy 2000 is quite reasonable when villagers' inexperienced operation and maintenance for water supply scheme is considered. However, participation of the private sectors in the O/M for the planned small-scale schemes is not suitable, because the profit cannot be expected from the O/M services on the planned independent small-scale schemes. Participation of private sectors in O/M of large-scale piped schemes may be effective when rehabilitation programs on existing large-scale piped schemes are realized.

The final report should describe involvement of private sectors in the section of master plan framework. For example,

In order to attain more than 70% supply services coverage in the area, following 3-staged program is deemed necessary:

First stage: Construction of 100 independent supply systems to be operated by the users themselves under technical assistances from the local

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government

Second stage: Construction of 50 independent supply systems of autonomous operation, and rehabilitation of existing piped schemes for 50 villages that should be operated by the private sectors assisted by the district water departments to mobilize the beneficiaries

Third stage: Same as in Second stage (provision of 50 independent systems and rehabilitation for 50 villages)

3) Water sources

The National Water Policy (2000) describes that the objective of water supply is provision of water satisfying both quantity and quality. On the other hand, it also stipulates that almost all of water sources should be utilized as supply sources at the areas where water resources are in critical shortage. The treatment of surface water in the rural water supply scheme, however, is quite difficult in view of economical, technical and material supplying aspects. Groundwater including spring water is usually bacteria-free and stable throughout the year. However, although there exist the difficult areas for development of groundwater resources in terms of both quantity and quality, groundwater development is possible everywhere in the study area. That is why only groundwater, including spring water, was chosen as the sources of rural water supply.

4) Sanitation

Use of safe water through the year is very important thing for reduction of water-born or water-related diseases. However, it seems very difficult to practice especially for the rural people of concerned area who are long accustomed in using traditional water sources. The pilot scheme has revealed that majority of the villagers return to traditional water spots instead of using supplied water during rainy season, regardless of the frequent recommendation to use the supplied water continuously throughout the year. Such, being the cases, it seems that continuous use of supplied water could be encouraged in sanitation related matters in the concerned area rather than other environmental sanitation such as waste disposal or sewage system.

The final report should, therefore, describe following matters as methodologies for continuous use of supplied water becoming common among water users around the area.

- Introduction of soft component pertaining to education on use of safe water

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throughout the year along with realization of financial assistance for facility construction

- Suggestion of advance payment of the annual O/M fee by the water users
- Necessity of campaign to be taken up by the District Water Engineers in collaboration with the Community Development Officers under supervision by the local government



Annex 2. Participants of the Meeting

- Officials concerned of the Ministry of Water and Livestock Development

Mr. Christopher N. Sayi, Ag. Permanent Secretary

Mr. R. N. T. Kwigizile Asst. Director, Design Supervision RWSD

Mr. E. C. Mziray Asst. Director, Operation and Maintenance RWSD

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- JICA Study Team

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