

## **Chapter 10 Development Strategy of the Project**

### **10.1 Summary of Eleven Centers**

The Eleven Centers are summarized in reference to the evaluation aforementioned in "Chapter 9. Project Evaluation", and based on the urgency, level of the need and the impact.

#### **10.1.1 Items Considered**

The items listed below are considered in the summarization. Items (4) and (9) below are expressed in qualitative degree, while other items are shown in figures quantitatively.

##### **(1) Current Water Service**

The less the water consumption per population per day (WC/P/D) is, the more the urgency is high. The WC/P/D is estimated based on the consumption for the water supplied by WSS or Water Committee, which was surveyed by water consumption census carried out by the Team.

Also, current water service coverage is considered in the urgency. However, it is probable that a center, which does not have any other sources such as well and spring than those of WSS, is expected to have high water coverage, even if the water supply does not meet the population's demand. Therefore, the water service coverage is less considered than the WC/P/D.

##### **(2) Number of Existing Water Source(s)**

The center equipped with only one water source, especially in case of groundwater, is required to have additional water source(s) in order to keep continuous water supply free from unexpected total interruption caused by failure of the sole water source.

##### **(3) Level of Water Need**

The level of water need could be determined through the outcome of social analysis and a reply of 100-household-questionnaire in which the most serious problem in the household is asked. The center with many households stating water shortage as the most serious problem is required to enhance the water supply system.

##### **(4) Level of Superannuation or Timeworn-out**

In planning the replacement or rehabilitation of the existing facilities, the level of superannuation and time-lapse must be considered. However it is very difficult to judge the level quantitatively and even to know when the facilities, specially well, pump and generator, had commenced functioning in most cases. Therefore, the level is categorized into three; namely poorly worn-out, fairly worn-out and severely worn-out based on physical observation and interviews in the sites.

**(5) Benefit/Cost Ratio (B/C Ratio)**

The center which is expected with high benefit to cost is required to be implemented.

**(6) Occurrence of Water-borne-diseases**

Center(s), in which water-borne-diseases are prevailing, is given urgency to improve the water supply system. Since it is generally known that water-borne diseases hold about 70% of all diseases, the occurrence of the water-borne-diseases is assumed to be 70% among cases regarding top-ten-diseases registered in medical institutions.

**(7) Population Growth Rate**

Center(s) which is projected with higher population growth ratio for the period of between 1995 and 2000 is given higher priority in order to meet the increasing water demand. Also, population growth rate is conjectured to be closely related with economic growth. Therefore, population growth can be used as a base in conjecturing the economic growth rate.

**(8) Economic Activities**

Priority is given to the center(s), which is currently enjoying vigorous economic activities. The activities are related to number of commercial and industrial establishments. Among those establishments, hotels and restaurants are regarded as large amount of water consumers. Therefore, the economic activities are expected to be estimated by number of hotels and restaurants per 100 population.

**(9) Level of Indirect Benefit**

Indirect benefit level is also considered, which is qualitatively estimated based on social impact to the society as mentioned in "9.6 Indirect Benefit Evaluation".

**10.1.2 Summary of Centers**

Among those items aforementioned, the first three items such as item (1) "water consumption per person per day", item (2) "number of existing water source(s)" and item (3) "water need" are highly considered in the implementation, since this Project is expected as an emergency measure to improve/enhance the current deteriorating water supply rather than one which could bear certain benefit.

Item (4) superannuation is highly considered for the purpose of rehabilitation and/or replacement of the parts of the existing water supply system.

Although item (5) B/C Ratio is an important indicator when judging if the project is benefitable, the ratio is referred to when prioritizing between the two projects which are considered to have almost same priority based on the first three items of (1), (2) and (3), while item (6) to (9) are less considered comparing to item (1) to (5), and referred to when

prioritizing among projects which have almost same priority judging from the former Items of (1) to (5).

Based on the above, Table 10.1.1 presents the summary, among Eleven Centers. Aykel and Nefas Mewcha are currently equipped with only one water source, which covers a little water consumption, and the population's water need is very high. Although Debre Tabor is equipped with two boreholes and the third one is planned to start functioning soon, both the current water consumption and the water coverage ratio are very low.

**Table 10.1.1 Summary of the Centers**

Items	Dupti	Mille	Bati	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
1. WC/P/D,liter Water Coverage, %	17.4 45	17.8 98	16.0 87	8.0 96	2.3 71	3.7 34	4.7 93	12.3 46	10.7 83	8.1 67	9.9 83
2. No. of Existing Water Sources	2	2	4	1	1	2 (3)**	1	1	2	2	1
3. No. of Water Need/ 100 Household	15	12	0	11	32	15	45	23	30	21	40
4. Superannuation*	2	1	3	1	1	2	1	1	3	2	1
5. B/C Ratio, %	223	99	60	84	144	100	106	77	86	336	159
6. Water-borne Disease per year as %	21	9	17	17	25	18	34	9	21	11	8
7. Population Growth Rate, %	5.0	8.0	3.5	6.0	5.5	4.5	7.0	7.5	5.0	6.0	3.0
8. No. of Hotels&Rest- nts/100 population	22	45	4	9	10	22	15	3	4	3	7
9. Indirect Benefit***	2	2	3	2	1	1	1	2	2	2	2

Note: \* 1:Severely worn-out, 2:Fairly worn-out, 3:Worn-out

\*\* The third borehole is expected to start the service in November, 1995.

\*\*\* 1:Highly expected, 2:Fairly expected, 3:Expected

## 10.2 Project Implementation Program

In principle, the implementation of Eleven Centers is programmed in accordance with the urgency stated above. In addition, geographical condition between centers and construction amount which can be done for each fiscal year must also be considered.

The implementation of Eleven Centers project is proposed to be divided into three groups taking into consideration the geographical relationship among Eleven Centers. The geographical relationship is considered on condition mainly represented by the distance among centers. The groups are proposed as mentioned below:

Group I	: Aykel, Nefas Mewcha, Debre Tabor, Werota	... 4 towns
Group II	: Dejen, Chagni, Bichena, Bure	... 4 towns
Group III	: Dupti, Mille, Bati	... 3 towns

## 10.3 Project Cycle Management (PCM)

PCM is a management tool for development project, covering all stages such as planning, implementation and monitoring/evaluation. PCM is composed of three steps; namely participatory planning, appraisal and monitoring/evaluation, and provides consistency and logicity throughout the project cycle. A format called Project Design Matrix (PDM) is produced to interlink these three steps with each other at the participatory planning stage. In this Study, the first step of PCM is conducted with producing a PDM, and the latter two steps are to be carried out after the completion of the Study and throughout the implementation and monitoring/evaluation stages.

Participatory planning is further divided into such steps as participation analysis, problem analysis, objectives analysis, alternatives analysis, project design matrix and plan of operations.

### 10.3.1 Participation Analysis

Participation analysis aims at understanding the social and cultural factors in the Project area. People, groups and organizations, which may be affected by the Project, must be analyzed at the beginning of the Project planning stage. During this Study, the analysis had been made based on the meetings with various focused groups and interviews with key informants such as Woreda, Kebele, school teachers, municipality, health center and clinic. Beside those, a questionnaire of "What is the most serious problem for you?" was also made in 100-household-survey. By performing such activities, the core of potential hindrances in their society had been clarified. Outcomes from the meetings and interviews are described in relevant each study report of Chapter 3.7 "Social Background and People's Awareness", and the result of the questionnaire is referred to in the following.

### 10.3.2 Problem Analysis

The most serious problem, defined as core problem, is shortage of water except economic difficulty in most cases as shown on Figure 10.3.1. The problem analysis clarifies "Cause and Effect" relationship of the existing problems with setting the core problem at the beginning. A tree is produced to show the relationship, identifying substantial/direct causes and effects as shown on Figure 10.3.2. The figure suggests the project components to remove the society's hindrances, composed of: 1) construction of new water supply system, 2) rehabilitation of the existing facilities, 3) initiating community participation, 4) set-up of comprehensive water tariff system and 5) training technical staff for O&M.

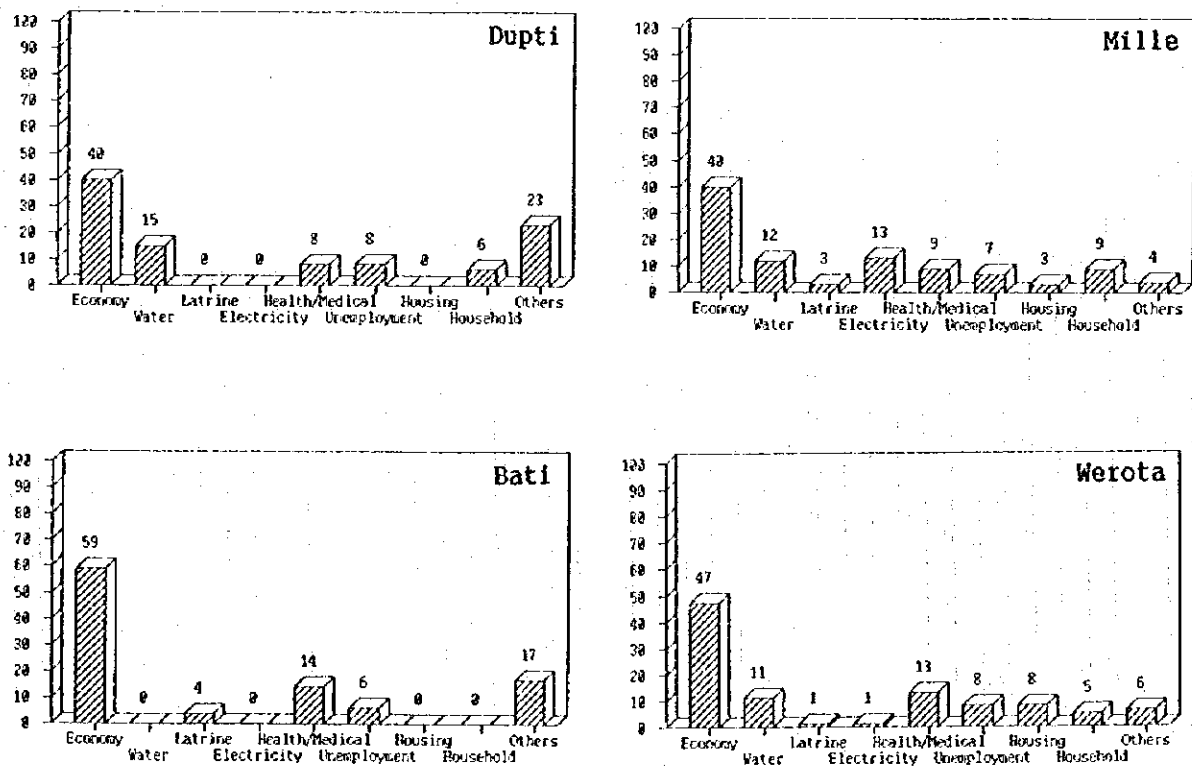


Figure 10.3.1 Summary of the Most Serious Problem

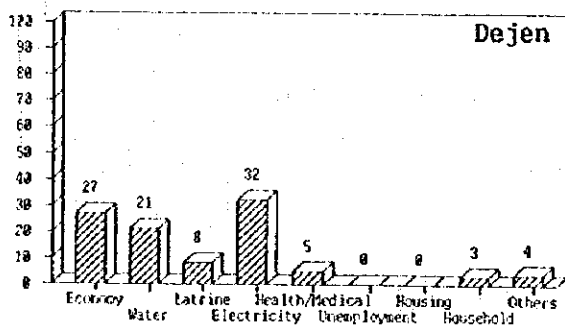
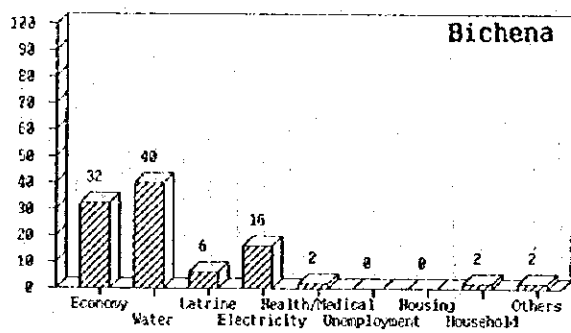
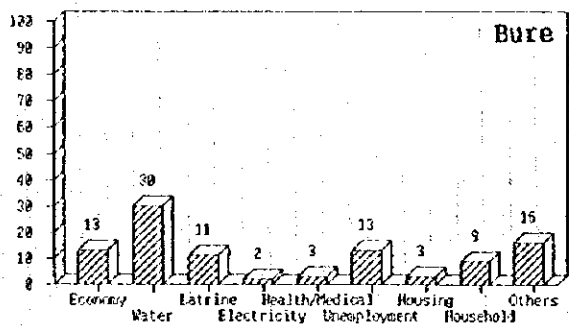
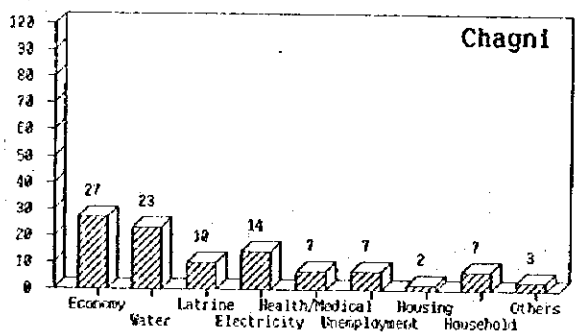
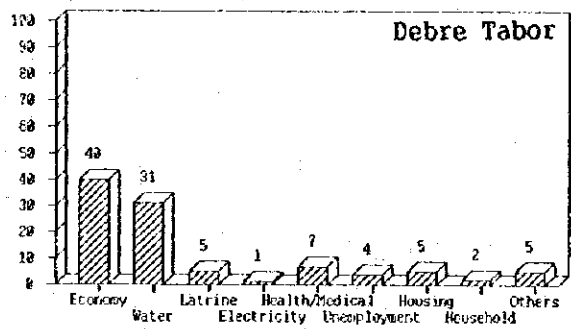
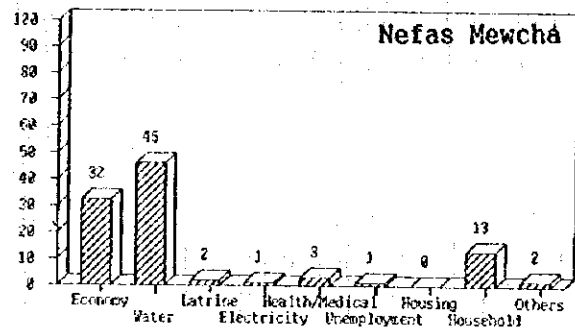
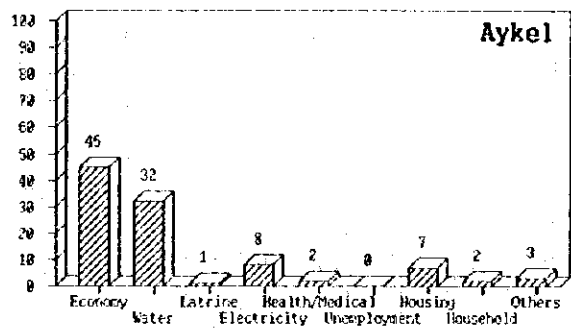


Figure 10.3.1 Summary of the Most Serious Problem

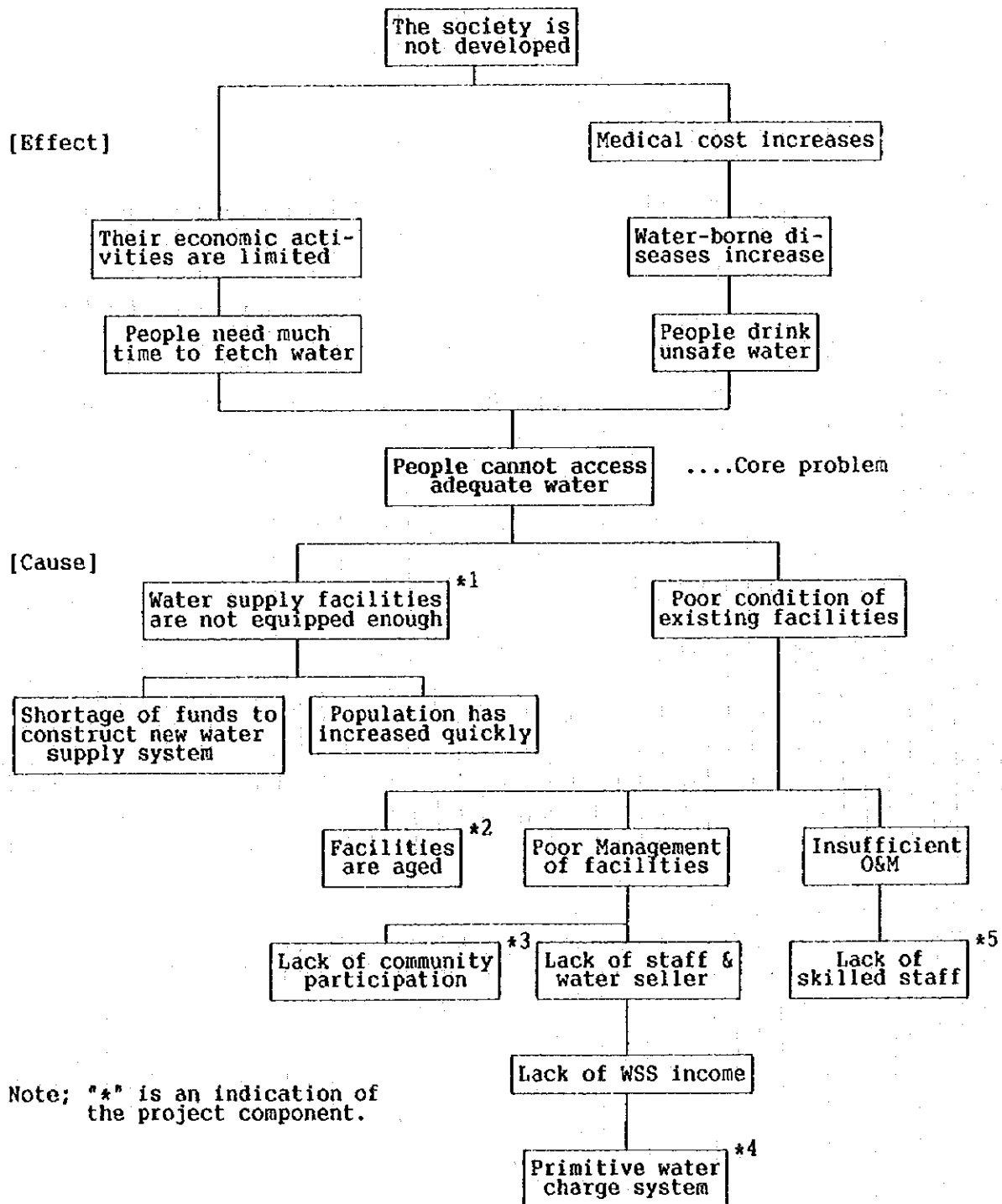


Figure 10.3.2 Problem Tree in the Society

### 10.3.3 Objectives Analysis

By rewording the negative "Cause-Effect" relations of problem tree into the positive "Means-Ends" relations, the problem tree is transformed into an objective tree which describes the means for solving the problems and the effects of the solutions. The objectives tree identifies the "desirable conditions" after the problems are solved, and becomes the basis for the examination of the approaches for improving the situation. The objectives tree is presented in Figure 10.3.3 by reformulating the problems to positive statements with some additional means.

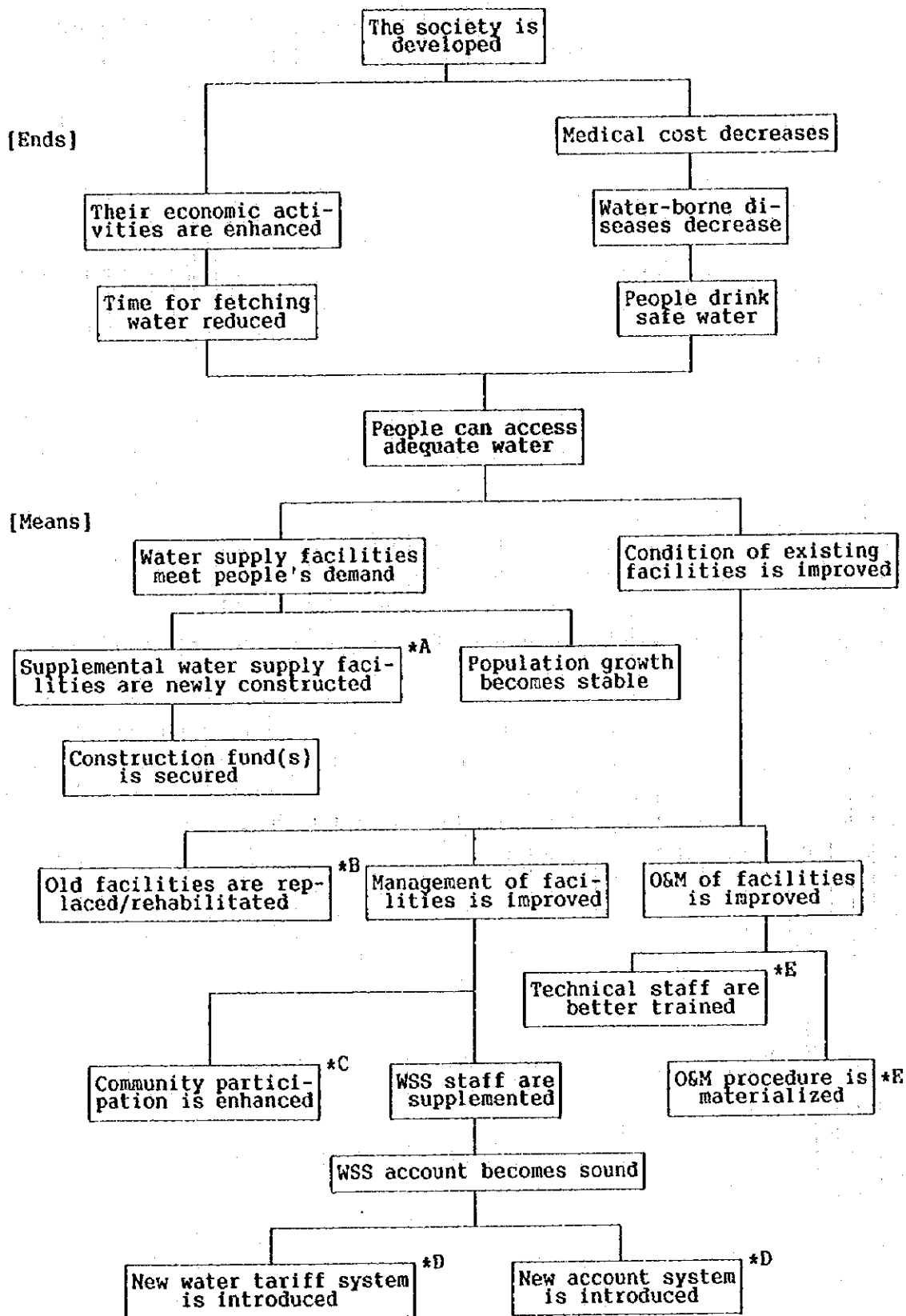
### 10.3.4 Alternatives Analysis

The alternatives analysis identifies the project components and selects concrete project strategies based on the information attained in the objectives analysis. With looking at the objectives tree in Figure 10.3.3, several groups of "Means-Ends" branches assembling towards the center can be seen, from which the project components are suggested as listed below with same reference items of A, B, C shown on the figure. Item "F. Enhancement of sanitary facilities and people's awareness" is additionally considered to keep water source(s) free from contamination, to enhance the effect of water supply project, and thus to contribute to developing the society.

- A. New facilities construction
- B. Rehabilitation and/or replacement of existing facilities
- C. Community building/participation and WID
- D. Application of new financial management scheme
- E. Materialization of O&M and training program of technician
- F. Enhancement of sanitary facilities and people's awareness

In this Study, new facilities and rehabilitation program have been planned and designed with those cost estimation and implementation program. To support the project from the bottom, community building/participation and WID were described, viz., how to get the community involved and women participated. New financial management scheme has also been introduced, which was represented as cross subsidization tariff structure and double entry accounting. To improve O&M of the facilities, an O&M manual which describes the procedure is presented together with this Report. Concerning sanitation, sanitary facilities as toilets and drainages have been planned and designed, and sanitary education manual written in both English and Amharic is accompanied with this Final Report.





Note: "\*" is an indication of project components.

Figure 10.3.3 Objectives Tree in the Society

### **10.3.5 Project Design Matrix (PDM)**

PDM is a format which indicates the major components of the Project identified in aforementioned objectives and alternatives analysis. The PDM is briefly shown in Table 10.3.1, stating objectives, how the objectives are achieved, external factors which play the key role in achieving success, the means with which the evaluation is made, and necessary inputs of the Project.

The outputs stated in Table 10.3.1, corresponding to the objectives, can be attained when the activities and the important assumptions are fulfilled, the project purpose is attained when the outputs and the important assumptions are fulfilled, and then the overall goal can be achieved when the project purpose and the important assumptions are fulfilled, thus the long-term success of the Project is assured when the overall goal and the important assumptions are achieved.

Verifiable indicators specify how the achievement of the activities, outputs, project purpose and overall goal can be measured. And, means of verification determines the means by which the achievement can be verified, namely; recorded data, reports, surveys and studies can serve as the means of verification.

Inputs are the inputs which are required for the project implementation such as materials, costs, number of personnel and so forth, while pre-conditions, stated at the bottom of the right column, mean pre-requisite conditions needed to start the project activities.

Plan of operation is a tool for operational management of the Project and is essential material for monitoring and evaluation, and is made in a format based on the PDM. The plan of operation is made in such way showing activities, expected results, schedule, responsible post, inputs and necessary conditions, those of which are described in the PDM. The plan of operations must be formed after the approval of the project and be modified throughout the Project cycle.

**Table 10.3.1 Project Design Matrix**

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> 1. Service of water supply is improved.  2. Water-born diseases are subdued.	By year 2010, water is served to the target coverage with amount of more than 70% of the water demand without interruption more than 2 weeks a year.  By year 2010, the diseases reduced by 20%.	WSS operation record  Records in medical institutions	WSS management is stabilized.  Medical institutions are involved.
<b>Project Purpose</b> 1. Water service coverage is improved with required water demand.  2. Sanitary facilities are improved.	By year 2005, water is served to the target coverage with amount of more than 50% of the water demand.  Toilet coverage is increased by 30%. Drainage coverage is increased by 40%.	WSS operation record  Municipality records or sampling survey	1. Electricity is not interrupted. 2. Trained technicians continue working. 3. Population growth meets projected one. 4. No. of hotels/ restaurants is not increased rapidly.
<b>Outputs</b> 1-1. New wells are constructed with new distribution system. 1-2. Aged facilities are renewed. 2. System failure is reduced. 3. WSS account is improved. 4. Public fountain is managed by community. 5. Toilet can be served. 6. Stagnant water reduced.	1. Complaints against WSS are reduced. 2. No. of interrupt'n reduced by 50%. 3. The account becomes black. 5. Toilet coverage is improved by 20%. 6. Drainage coverage is improved by 30%.	1. Complaints records or sampling interv'w 2. WSS operation record 3. Accounting book  5. Municipality records or sampling survey	1. Fuel or electricity for driving the system supplied fully. 2. Trained technicians continue working. 3. Population growth meets projected one.
<b>Activities</b> 1-1. Construct newly required facilities. 1-2. Rehabilitate and/or reprice the aged facilities. 2-1. Introduce new O&M system 2-2. Train mechanics. 3. Introduce new tariff and accounting system. 4. Make arrangement for community participation. 5-1. Make arrangement for subsidy of toilet const'n. 5-2. Construct public toilet as required. 6. Construct and/or renovate drainage system.	<b>Inputs</b> Construction equipment and machinery Materials Submersible pump Generator Casing Distribution pipes & connections Concrete materials  ※ Details are described in each center's report.	1. Materials, equipment and machineries are supplied in time 2. Land acquisition is made in time.  <b>Pre-condition</b> Residents don't object the Project.	



## **Chapter 11 Conclusion and Recommendation**

### **11.1 Conclusion**

Study on Water Supply and Sanitation Improvement has been carried out in Eleven Centers; namely, Dupiti, Mille, Bati, Aykel, Nefas Mewcha, Debre Tabor, Chagni, Bure, Chagni and Dejen. These centers are suffering from acute water shortage and deteriorating sanitary condition.

Water service coverage among Eleven Centers ranges between 34 % and 97 % currently. Even in the center with high water service coverage like Mille, Werota and Nefas Mewcha, those of which are served piped water with more than 90 % of the coverage, water consumption per capita per day is extremely low. As an example, the consumption in Mille, Werota, Nefas Mewcha and Aykel are 18 lpcd, 8 lpcd, 5 lpcd and 2.3 lpcd respectively. The lowest consumption per capita appears in Aykel, which is 2 lpcd only, and the maximum consumption is the 18 lpcd estimated in Mille. Although water quality of the sources is almost accepted with reference to WHO drinking water guideline except Dupiti, many faecal coliforms have been detected in samples collected from connections and household containers. This means the contamination is expected in such ways of through cross-connections, leaking and back-siphonage associated with aged facilities.

Sanitation condition prevailing Eleven Centers stays at low level. Although population in the centers shows relatively high awareness for sanitation, as exemplified for the knowledge of Diarrhea cause and preparation of oral rehydration solution, the majority of the people dispose off their body wastes in open fields and in traditional pit latrines. Toilet coverage in Eleven Centers ranges from 43 % to 77 %, those of which are mostly ill-maintained and poorly designed/constructed in terms of emptying and ventilation. Emptying toilet usually has to wait for long time due to unavailability of vacuum truck, and also there is very few dumping site prepared for the emptied disposal near the center. Drainage facilities are not well equipped except ones along the main road, constructed by road authority. However the existing drainages are not well maintained and often blocked with garbage and refuse, creating stagnation of water.

Taking above situation into consideration, water supply has been planned in terms of both rehabilitation and new-construction with the target years of 2005 and 2010. In this Study, water coverage in year 2010 is targeted to be between 75 % and 100 % with reference to the current coverage. Water demand is to be realized after completion of the Project with the volume estimated on the basis of 15 lpcd for public fountain, 35 lpcd for yard connection and 60 lpcd for household connection respectively.

For sanitary improvement, some types of toilet such as individual, community and public have been designed, those of which can be easily copied to facilitate the diffusion of such toilets. Typical sections of drainages are also shown in this Study, and those can be constructed by community level. Also, sullage disposal pit was shown, contributing to the disposal of household waste water. Sanitary education video and education manual will greatly contribute to the diffusion of sanitary education program, getting community involved, participated and motivated.

With reference to above, this Project shall be put the highest priority in the water supply sector for rural towns and be commenced immediately to mitigate the deteriorating condition shown in all Centers. The construction work will be commenced in considering the urgency, geographical condition among centers and the construction amount. With completion of this Project, the followings are to be realized:

- Improvement of current deteriorating water supply
- Improvement of poor sanitary condition prevailing centers
- With both above completed, subdual of water/excreta born diseases, enhancement/strengthening of community, motivation of community, reduction of overburden incurred by fetching water for specially women and girls, and enhancement of economic activities, thus achieving the sound life in Eleven Centers.

## 11.2 Recommendation

As mentioned above, this Project was concluded to be carried out immediately taking into consideration both current deteriorating condition and the effect to be born by the Project. Followings are recommendations to be undertaken during construction work as well as after completion of the Project:

- Coordination among related departments located under Ministry of Water resources (central government) shall be made with Water Supply and Sewerage Service Department being the pivot, and coordination among the central, the regional and the center shall also be effectively made. For this purpose, the Project Manager shall be appointed and a committee composed of above three level is required under the manager in order to coordinate and facilitate the implementation.
- Hydroelectricity is to be extended into such centers as Dupli, Aykel, Nefas Mewcha and Dejen by the first target year of 2005, while Mille and Chagni do not have the schedule at moment (Other centers are already supplied with hydroelectricity). Those centers, which are scheduled to have hydroelectricity, shall keep pace with the Project implementation for being extended the hydroelectricity since the operation cost of hydroelectricity could be around 60% of that of diesel generator (Financial analysis for those centers was made on condition that the hydropower was available).
- In line with the implementation of water supply project, progressive water tariff structure and double entry accounting system should be introduced. The former scheme can raise the average water tariff without affecting low-income households. The latter can draw real picture incorporating depreciation and interest payment so that WSS can have not only enough operation and maintenance cost but also fund to expand the water supply system by themselves.

- The related organizations, specially WSS, should be strengthened as programmed in order to manage the enhanced water supply and sanitation facilities effectively. WSS will have authority to revise water tariff, dismiss or employ its staff and launch on new investment subject to regional office, so that WSS will have self-independent sense and can stand on their own feet.
- A committee, composed of health/sanitary relating organizations, shall be established in each center in order to improve sanitary and health condition. This committee can also coordinate communities in preparing sanitary facilities such as toilet, sullage disposal site, drainage and etc. WSS should facilitate the coordination of the committee.
- In centers where detail topographic map is not available, topographic survey shall be carried out along planned rising and distribution pipelines, at well sites and reservoir sites. Land acquisition, where required in such works of rising main, reservoir and well, shall be made in time before the commencement of the construction.
- In many of the Study centers there has been a degree of dependency syndrome. This was felt most strongly in Bati, and other areas where there has been a history of relief aid. To get the community motivated and empowered, it is very efficient if the management and operation of facilities are made by the community itself. In this regard, "Community Management of Public Fountain" and "Community Management of Community Toilet" are recommended. According to the household survey, the majority of people are in favor of the public fountain managed by the community.
- Community, particularly women and girls, must be involved in confirmation of the water supply and sanitation facilities design, system and devices at the commencement of the implementation stage. This is made specially for finalization of public fountains' design and location, design of toilet facilities, and management scheme of those facilities. Exercises of involving the community are extremely motivating factor. It provides them with a feeling of involvement and thus provides empowerment.
- Community participation promoter(s) should be assigned in line with the implementation of the Project, who will be responsible for coordinating instructions for the community members on the design, construction and operation and maintenance of the water and sanitation facilities as part of the long term sustainability. Also, a CPP supervisor shall be dispatched from WSSD on occasional basis to facilitate the CPP's work.
- Sanitary education manual and video titled "Simple Steps...for Better Health" should be fully utilized for the purpose of diffusion of sanitary education program as well as motivating the population for better sanitary activities. The sanitary education manual will be modified, if necessary, according to the response of the attendants, since the manual has not been tested.

- Results of the analysis for access and control suggest that they share resources with men equally within the home but that female headed households tend to be poorer than their male counterparts. Female headed households are particularly vulnerable and special attention must be paid to them during implementation to make sure that they are benefiting adequately from the Project, and this should be monitored.
- Monitoring should be made in line with the project cycle to confirm and measure the benefits to be born by this Project, those of which are increase of water coverage and water amount, subdual of water/excreta borne diseases, motivating community, reduction of time for fetching water and activating economy.



## **Annex - 1**

### **Scope of Work**

SCOPE OF WORK  
FOR  
THE STUDY  
ON

ELEVEN CENTERS WATER SUPPLY AND SANITATION

IN  
TRANSITIONAL GOVERNMENT OF ETHIOPIA

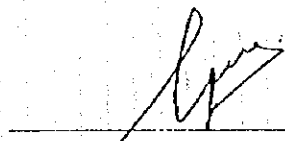
AGREED UPON BETWEEN

WATER SUPPLY AND SEWERAGE AUTHORITY,  
MINISTRY OF NATURAL RESOURCES DEVELOPMENT AND  
ENVIRONMENTAL PROTECTION


AND

JAPAN INTERNATIONAL COOPERATION AGENCY

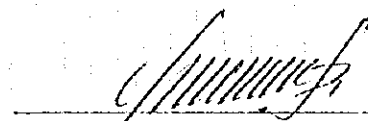
ADDIS ABABA, APRIL 8, 1994



Ato Yohannes Gebremedhin  
General Manager  
Water Supply and Sewerage Authority,  
Ministry of Natural Resources Development  
and Environmental Protection



Dr. Yuji Maruo  
Leader, Preparatory Study Team  
Japan International Cooperation Agency



Ato Geremew Getahun  
Head, Americas and Asia Department,  
Ministry for External Economic Cooperation

## I INTRODUCTION

In response to the request of Transitional Government of Ethiopia (hereinafter referred to as "The Government of Ethiopia"), the Government of Japan has decided to conduct a feasibility study on Eleven Centers Water Supply and Sanitation in Transitional Government of Ethiopia (hereinafter referred to as "the Study") in accordance with the laws and regulations in force in Japan.

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

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 the potential of groundwater resource and to formulate a groundwater development plan for water supply in the Study area.
2. to improve sanitary condition and formulate maintenance plan of water supply system to the year 2005 in the Study area.
3. to transfer planning skills and technologies to Ethiopian counterpart personnel.

## III STUDY AREA

The Study area shall cover eleven centers (Dupti, Mille, Bati, Aykel, Nefas Mewcha, Chagni, Dejen, Bure, Bichena, Debre Tabor and Werota) (approximately 844km<sup>2</sup>)

## IV SCOPE OF THE STUDY

1. Collection, review and analysis of relevant data and previous studies
  - 1) Socio-economic conditions
  - 2) Natural conditions

- Meteorology and hydrology
  - Geology and geography
  - Topography
  - Satellite and aerial photographs
  - Rivers and springs
- 3) Land use and master plan of each town
  - 4) Health and hygienic conditions
  - 5) Data on existing wells
  - 6) Existing water supply system
    - Facilities
    - Water qualities
    - Service levels
    - Operation and maintenance
  - 7) Data on water demand
  - 8) Relevant on-going and planned projects
  - 9) Laws, regulations and policies
  - 10) Institutions, organizations and administrations
  - 11) Environmental condition
  - 12) Information on sanitation
  - 13) others

## 2. Field Studies

- 1) Field reconnaissances
  - General
  - Existing water supply system
  - Geology
  - Environmental aspects
- 2) Water quality analysis of existing wells and surface water
- 3) Hydrogeological observation
  - Well-inventory
  - Well-leveling
  - Groundwater level
  - Water flow
- 4) Geophysical survey
- 5) Land survey
- 6) Environmental impact survey
- 7) Socio-economic survey

### 3. Analysis

- 1) Water quality analysis
- 2) Hydrological and hydrogeological analysis
- 3) Evaluation of groundwater potential
- 4) Projection of population growth
- 5) Projection of water demand
- 6) Socio-economic analysis

### 4. Planning and Evaluation

- 1) Plan of water resource development
- 2) Plan of water supply system
- 3) Preliminary design of the required facilities
- 4) Institution and management plan
- 5) Operation and maintenance plan
- 6) Estimation of project cost
- 7) Project evaluation (cost and benefit)
- 8) Social and economic impact assessment
- 9) Environmental impact assessment (EIA)
- 10) Implementation plan

## V STUDY SCHEDULE

The Study will be carried out in accordance with the tentative schedule attached in the Appendix.

## VI REPORTS

JICA will prepare and submit the following reports in English to the Government of Ethiopia.

### 1. Inception report:

Fifteen (15) copies at the commencement of the first work in Transitional Government of Ethiopia.

### 2. Interim report:

Twenty (20) copies within eight (8) months after the commencement of the Study. *mm*

3. Draft final report:

Ten(10) copies for each town within eleven(11) months after the commencement of the Study. The Government of Ethiopia will submit its comments to JICA within thirty(30) days after receipt of the Draft final report.

4. Final report:

Twenty(20) copies for each town within thirty(30) days after the receipt of comments on the Draft final report.

VII UNDERTAKINGS OF THE GOVERNMENT OF ETHIOPIA

1. To facilitate smooth conduct of the Study, the Government of Ethiopia shall 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 Ethiopia 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 and any other charges on equipment, vehicles, machinery and other materials brought into Ethiopia 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 remittances as well as utilization of the funds introduced into Ethiopia 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 Ethiopia to Japan, and
  - 8) to provide medical services as needed. Its expenses will be chargeable on members of the Team.
2. The Government of Ethiopia shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, 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 members of the Team.
  3. Water Supply and Sewerage Authority (hereinafter referred to as "WSSA") shall act as a counterpart agency to the Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
  4. WSSA shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:
    - 1) available data and information related to the Study,
    - 2) counterpart personnel and supporting staff,
    - 3) suitable office space with necessary furnitures in Addis Ababa, and
    - 4) credentials and identification cards.

#### VII UNDERTAKINGS OF JICA

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

1. to dispatch, at its own expense, study team to Ethiopia,
2. to pursue technology transfer to the Ethiopian counterpart personnel in the course of the Study.

IX CONSULTATION

JICA and WSSA shall consult with each other in respect of any matter that may arise from or in connection with the Study.

APPENDIX TENTATIVE STUDY SCHEDULE

MONTH DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13
	WORK IN ETHIOPIA	[ ]										[ ]	
WORK IN JAPAN	[ ]								[ ]			[ ]	
REPORT PRESENTATION	▲ IC/R							▲ IT/R		▲ DF/R			▲ F/R

IC/R: Inception Report      DF/R: Draft Final Report  
IT/R: Interim Report      F/R: Final Report



## **Annex - 2**

### **List of Members Related to the Study**

**1. Team Members**

Mr. TAMAKI Kazunori	Team Leader/Water Supply Planning
Mr. MOCHIZUKI Selmi	Groundwater Development/Hydrogeology
Mr. HARADA Yoichi	Water Supply Facilities/ Operation and Maintenance
Ms. MORGAN, Joy Scott	Social Analysis/Sanitary Education/ Women in Development
Dr. Karim Aliibhai	Social Analysis/Sanitary Education/ Women in Development
Mr. ISHIBASHI Naomichi	Institutional/Financial Analysis/ Project Evaluation
Mr. YAMAZAKI Akira	Geophysics
Mr. TESHOME Workie	Sanitary Improvement Planning
Mr. HASHIGUCHI Kosei	Water Quality/Environment/ Facilities Design
Mr. MASANGKAY Wilson	Coordinator

**2. Counterpart Personnel**

Mr. Teferi Menkir	Project Manager
Mr. Dametew Assefa	Hydro-geologist
Mr. Mehari Gedam	Hydro-geologist
Mr. Testahun Aregay	Water Supply Engineer
Mr. Berhanu Gutema	Sociologist
Mr. Yemane Abraha	Geophysical Expert
Mr. Glrum Admassu	Geophysical Expert
Mr. Engidashet Bunare	Sanitary Engineer
Ms. Hana Belete	Water Quality Expert
Mr. Samson Tsewameskel	Environmentalist
Mr. Gulilat Berhane	Economist

## **Annex - 3**

### **Project Cost Estimation (Water Supply)**

Summary of Project Cost for Water Supply in 2005

Center	Project cost		Supporting work (Birr)	Price escalation (Birr,6%)	Total (Birr)
	(Birr)	(Yen)			
Dupti	14,889,898	223,000,000	3,734,097	1,117,440	19,741,435
Mille	9,115,314	136,725,000	1,327,780	626,586	11,069,680
Bati	14,970,913	224,564,000	1,549,729	991,238	17,511,880
Werota	19,390,479	290,857,000	3,371,258	1,365,704	24,127,441
Aykel	18,102,997	271,545,000	1,375,352	1,168,701	19,271,698
Nefas Mewcha	19,081,551	286,223,000	2,134,578	1,267,968	22,484,097
Debre Tabor	27,244,807	408,672,000	3,431,127	1,840,556	32,516,490
Chagni	19,942,733	299,141,000	3,179,393	1,046,962	24,169,088
Bure	15,810,837	237,163,000	3,752,516	1,173,801	20,737,154
Bichena	15,344,661	230,170,000	1,426,279	1,006,256	17,777,196
Dejen	12,924,824	193,872,000	1,032,259	837,425	14,794,508
Vehicles equipment	2,310,000	43,200,000	-	172,800	2,482,800
<b>Total</b>	<b>189,129,000</b>	<b>¥2,836,935,000</b>	<b>26,314,000</b>	<b>12,927,000</b>	<b>228,370,000</b>

Total Project Cost for Water Supply in 2010 (Unit; Thousand Birr)

No.	Description	F.C.	L.C.	Total
1.	Project cost			
1-1	Dupti			16,587
1-2	Mille			8,022
1-3	Bati			10,576
1-4	Werota			9,923
1-5	Aykel			10,546
1-6	Debre Tabor			11,789
1-7	Nefas Mewcha			13,673
1-8	Chagni			12,155
1-9	Bure			10,917
1-10	Bichena			11,239
1-11	Dejen			11,158
	<b>Total</b>			<b>126,585</b>

**Operation (Power) Cost per 1 cum Water**

Center	Required kw	Peak Coef.	Load Ratio	Consumption Power	Fuel Consumption	Unit Price	Operation Cost	Day Demand	Day Demand
	A kw	B %	C %	$A \times B \times C \times 24 = D$ kw	D	E B	$D \times E = F$	$m^3/day$ G	$B/m^3$ $F \div G$
Dupti	38.5	42	75	291		0.29	84.4	1,164	0.073
Mille	26.5	34	75	(162)	20 KVA $\times$ 1 No $5.3\ell \times 24 = 127.2\ell$	1.70	216.24	472	0.458
Bati	70.0	52	70	612		0.29	177.5	864	0.205
Werota	87.0	52	70	760		0.29	220.4	1,423	0.155
Aykel	124.7	52	65	1,012		0.29	293.5	505	0.581
D-Tabor	114.5	52	65	929		0.29	269.4	1,384	0.195
N-Mewcha	83.7	52	70	731		0.29	212.0	973	0.218
Cagni	68.5	52	70	(598)	50 KVA $\times$ 1 No $11.2\ell \times 24 = 268.8\ell$	1.70	457.0	1,198	0.381
Bure	63.2	52	70	552		0.29	160.1	782	0.205
Bichena	47.7	52	75	446		0.29	129.3	767	0.169
Dejen	50.2	52	75	470		0.29	136.3	545	0.250
Average							2,356.14	10,077	0.234

Center	Required kw	Power Source	Generator	Average Usage		Monthly Consumption	Generator Operation
	kw			C	Load %	$D \times E = F$	Fuel (Monthly)
Dupti	38.5	Public	50 <sup>KVA</sup> $\times$ 1	1/2.4	70	9,163	10 $\times$ 2 18.5
Mille	26.4	On-Site	20 <sup>KVA</sup> $\times$ 3	1/3.0	70	(4,435)	3,800 $\ell$ 5.5 $\times$ 4 2.2 $\times$ 2
Bati	70.0	Public	50 <sup>KVA</sup> $\times$ 2	1/1.92	65	17,062	5.5 $\times$ 7 1.5 + 30
Werota	87.0	"	50 <sup>KVA</sup> $\times$ 2	1/1.92	65	21,206	5.5 $\times$ 5 11 + 30 + 18.5
Aykel	124.7	"	50 <sup>KVA</sup> $\times$ 3	1/1.92	60	28,057	5.5 $\times$ 2 3.7 55 $\times$ 2
D-Tabor	114.5	"	50 <sup>KVA</sup> $\times$ 3	1/1.92	60	25,762	5.5 $\times$ 8 22 + 30 + 75 + 11
N-Mewcha	83.7	"	50 <sup>KVA</sup> $\times$ 2	1/1.92	65	20,402	5.5 $\times$ 5 30 + 18.5 + 5.5 + 2
Cagni	68.5	On-Site	70 <sup>KVA</sup> $\times$ 3	1/1.92	65	(16,697)	8,000 $\ell$ 5.5 $\times$ 6 30 + 5.5
Bure	63.2	Public	70 <sup>KVA</sup> $\times$ 1	1/1.92	65	15,405	30 + 22 + 37 + 7.5
Bichena	47.7	"	70 <sup>KVA</sup> $\times$ 1	1/1.92	70	12,521	5.5 $\times$ 4 11 $\times$ 2 + 3.7
Dejen	50.2	"	70 <sup>KVA</sup> $\times$ 1	1/1.92	70	13,177	5.5 $\times$ 3 30 + 3.7

Summary of Cost Estimation of Water Supply in Dupiti

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	150,000	220,000	370,000
	Excavation and Earth-work	12,800	46,200	59,000
	Trench excavation	224,090	481,770	705,860
	Pipe-work	318,230	318,230	636,460
	Reservoir	324,000	324,000	648,000
	Pumping station, R.C.pump house	88,032	58,656	146,688
	Access road	89,000	207,000	296,000
	Bore-hole	1,632,000	648,000	2,280,000
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	120,000	200,000	320,000
	Electric submersible pump and necessary works	60,000	88,000	148,000
	Power supply	39,450	41,175	80,625
	Concrete work	483,400	897,900	1,381,300
	Masonry work	30,000	122,500	152,500
	Structure	103,620	241,770	345,390
	Temporary work(10% of above total)	368,462	391,020	759,482
	Total of civil work	4,053,084	4,301,221	8,354,305
2	Material & Equipment	4,025,396	281,777	4,307,173
	Sub Total	8,078,480	4,582,998	12,661,478
3	Engineering cost(12% of sub total)	1,519,377		1,519,377
4	Contingency(5% of total cost)	479,893	229,150	709,043
	Total	10,077,750	4,812,148	14,889,898
	Total(Yen: 1birr=15yen)			223,000,000
5	Buildings		3,368,921	3,368,921
6	WSSD's management cost		365,176	365,176
	Total		3,734,097	3,734,097
7	Prise escalation(6%)	604,665	512,775	1,117,440
	Total(birr)	10,682,415	9,059,020	19,741,435
II.	Target year of 2010			
1	Mobilization and demobilization			1,000,000
2	Rising line			540,000
3	Distribution network			1,200,000
4	Now borehole with materials			1,100,000
5	Pump			300,000
6	Booster pump with house			1,068,000
7	Power supply facilities			340,000
8	Chamber and structures			189,000
9	Buildings			1,124,400
10	Others			2,792,600
	Sub total			9,654,000
11	Engineering cost (10%)			965,400
12	Contingency (10%)			1,061,940
	Total			11,681,000
13	Prise escalation			4,906,000
	Grand Total			16,587,000

Summary of Cost Estimation of Water Supply in Mille

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	100,000	150,000	250,000
	Excavation and Earth-work	7,740	26,700	34,440
	Trench excavation	188,760	437,660	626,420
	Pipe-work	188,310	188,310	376,620
	Reservoir	126,000	126,000	252,000
	Pumping station, R.C.pump house	88,032	58,656	146,688
	Access road	178,000	414,000	592,000
	Bore-hole (200mm casing)	80,640	120,960	201,600
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	120,000	200,000	320,000
	Electric submersible pump and necessary works	60,000	90,000	150,000
	Power supply	23,550	30,325	53,875
	Concrete work	55,850	96,750	152,600
	Masonry work	6,000	24,500	30,500
	Structure	103,920	242,480	346,400
	Temporary work(10% of above total)	133,680	222,134	355,814
	Total of civil work	1,470,482	2,443,475	3,913,957
2	Material & Equipment	3,586,132	251,029	3,837,161
	Sub Total	5,056,614	2,694,504	7,751,118
3	Engineering cost(12% of sub total)	930,134		930,134
4	Contingency(5% of above total)	299,337	134,725	434,062
	Total(birr)	6,286,085	2,829,229	9,115,314
	Total(Yen:1birr=15yen)			136,725,000
5	Buildings		1,123,013	1,123,013
6	WSSD's management cost		204,767	204,767
	Total		1,327,780	1,327,780
7	Prise escalation(6%)	377,165	249,421	626,586
	Grand Total	6,663,250	4,406,430	11,069,680
II.	Target year of 2010			
1	Morbilization and demorbilization			300,000
2	Rising line			285,000
3	Distribution network			990,000
4	New borehole with pump & material			659,000
				560,000
5	Generating set			534,000
6	Power supply facilities			170,000
7	Chamber and structures			243,000
8	Buildings			562,200
9	Others			365,800
	Sub total			4,669,000
10	Engineering cost (10%)			466,900
11	Contingency (10%)			513,590
	Total			5,649,000
12	Prise escalatin(42%)			2,373,000
	Grand Total			8,022,000

Summary of Cost Estimation of Water Supply in Bati

No.	Description	F.C.(B)	L.C.(B)	Total(B)
1.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	120,000	200,000	320,000
	Excavation and Earth-work	6,220	20,100	26,320
	Trench excavation	203,940	454,980	658,920
	Pipe-work	198,240	198,240	396,480
	Reservoir	216,000	216,000	432,000
	Pumping station, R.C.pump house	88,032	58,656	146,688
	Access road	178,000	414,000	592,000
	Bore-hole (200mm casing)	196,480	294,720	491,200
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	240,000	400,000	640,000
	Electric submersible pump and necessary works	140,000	210,000	350,000
	Power supply	35,850	38,775	74,625
	Concrete work	67,980	120,880	188,860
	Masonry work	6,000	24,500	30,500
	Structure	108,600	253,420	362,020
	Temporary work(10% of civil work)	181,534	291,927	473,461
	Total of civil work	1,996,876	3,211,198	5,208,074
2	Material & Equipment	7,030,182	492,112	7,522,294
	Sub Total	9,027,058	3,703,310	12,730,368
3	Engineering cost(12% of sub total)	1,527,644		1,527,644
4	Contingency(5% of total cost)	527,735	185,166	712,901
	Grand Total-I(birr)	11,082,437	3,888,476	14,970,913
	Grand Total-I(Yen:1birr=15yen)			224,564,000
5	Building		1,225,795	1,225,795
6	WSSD's management cost		323,934	323,934
	Total		1,549,729	1,549,729
7	Prise escalation 6%	664,946	326,292	991,238
	Grand Total	11,747,383	5,764,497	17,511,880
II.	Target year of 2010			
1	Mobilization and demobilization			1,000,000
2	Rising line			600,000
3	Distribution network			630,000
4	New borehole with pump & materiale			659,000
5				0
6	Booster pump with house			534,000
7	Power supply facilities			170,000
8	Chamber and structures			162,000
9	Buildings			562,200
10	Others			1,838,000
	Sub total			6,155,200
11	Engineering cost (10%)			615,520
12	Contingency (10%)			677,072
	Total-II			7,448,000
13	Prise escalation(42%)			3,128,000
	Grand Total			10,576,000



Summary of Cost Estimation of Water Supply in Werota

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	200,000	300,000	500,000
	Excavation and Earth-work	19,900	75,500	95,400
	Trench excavation	296,060	667,180	963,240
	Pipe-work	467,180	467,180	934,360
	Reservoir	432,000	432,000	864,000
	Pumping station, R.C.pump house	132,048	87,984	220,032
	Access road	267,000	621,000	888,000
	Bore-hole (200mm casing)	117,120	175,680	292,800
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	360,000	600,000	960,000
	Electric submersible pump and necessary works	100,000	150,000	250,000
	Power supply	35,850	38,775	74,625
	Concrete work	67,980	120,880	188,860
	Masonry work	12,000	49,000	61,000
	Structure	147,720	344,680	492,400
	Temporary building(10% of above total)	266,486	414,486	680,972
	Total of civil work	2,931,344	4,559,345	7,490,689
2	Material & Equipment	8,409,172	588,642	8,997,814
	Sub Total	11,340,516	5,147,987	16,488,503
3	Engineering cost(12% of sub total)	1,978,620		1,978,620
4	Contingency(5% of above cost)	665,957	257,399	923,356
	Total(birr)	13,985,093	5,405,386	19,390,479
	Total(Yen:1birr=15yen)			290,857,000
5	Buildings		2,924,949	2,924,949
6	WSSD's management cost		446,309	446,309
	Total		3,371,258	3,371,258
7	Prise escalation(6%)	839,105	526,599	1,365,704
	Grand Total	14,824,198	9,303,243	24,127,441
II.	Target year of 2010			
1	Morbilization and demorbilization			400,000
2	Rising line			330,000
3	Distribution network			1,200,000
4	New borehole with puns & material			1,318,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			270,000
8	Buildings			1,030,700
9	Others			522,300
	Sub total			5,775,000
10	Engineering cost (10%)			577,500
11	Contingency (10%)			635,250
	Total			6,988,000
12	Prise escalation(42%)			2,935,000
	Grand Total			9,923,000

Summary of Cost Estimation of Water Supply in Aykel

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	200,000	300,000	500,000
	Excavation and Earth-work	15,000	54,500	69,500
	Trench excavation	267,190	614,070	881,260
	Pipe-work	287,370	287,370	574,740
	Reservoir	117,000	117,000	234,000
	Pumping station, R.C.pump house	132,048	87,984	220,032
	Access road	445,000	1,035,000	1,480,000
	Bore-hole (200mm casing)	44,800	67,200	112,000
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	360,000	600,000	960,000
	Electric submersible pump and necessary works	40,000	60,000	100,000
	Power supply	111,550	112,325	223,875
	Concrete work	90,950	159,800	250,750
	Masonry work	6,000	24,500	30,500
	Structure	103,460	241,400	344,860
	Temporary work(10% of above total)	223,037	377,615	600,652
	Total of civil work	2,453,405	4,153,764	6,607,169
2	Material & Equipment	8,211,716	574,820	8,786,536
	Sub Total	10,665,121	4,728,584	15,393,705
3	Engineering cost(12% of sub total)	1,847,245		1,847,245
4	Contingency(5% of above cost)	625,618	236,429	862,047
	Total(birr)	13,137,984	4,965,013	18,102,997
	Total(Yen:1birr=15yen)			271,545,000
5	Buildings		993,424	993,424
6	WSSD's management cost		381,928	381,928
	Total		1,375,352	1,375,352
7	Prise escalation(6%)	788,279	380,422	1,168,701
	Grand Total	13,926,263	5,345,435	19,271,698
II.	Target year of 2010			
1	Mobilization and demobilization			300,000
2	Rising line			950,000
3	Distribution network			1,200,000
4	New borehole with pumps & materials			1,318,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			324,000
8	Buildings			843,300
9	Others			488,700
	Sub total			6,138,000
10	Engineering cost (10%)			613,800
11	Contingency (10%)			675,180
	Total			7,427,000
	Prise escalation(42%)			3,119,000
	Grand Total			10,546,000

Summary of Cost Estimation of Water Supply in Nefas Mewcha

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	100,000	150,000	250,000
	Excavation and Earth-work	8,240	27,700	35,940
	Trench excavation	362,710	815,510	1,178,220
	Pipe-work	355,410	355,410	710,820
	Reservoir	234,000	234,000	468,000
	Pumping station, R.C.pump house	176,064	117,312	293,376
	Access road	178,000	414,000	592,000
	Bore-hole (200mm casing)	144,000	216,000	360,000
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	480,000	800,000	1,280,000
	Electric submersible pump and necessary works	100,000	150,000	250,000
	Power supply	55,700	58,550	114,250
	Concrete work	111,700	193,500	305,200
	Masonry work	12,000	49,000	61,000
	Structure	120,060	280,160	400,220
	Temporary work(10% of above total)	244,788	387,614	632,402
	Total of civil work	2,692,672	4,263,756	6,956,428
2	Material & Equipment	8,662,972	606,408	9,269,380
	Sub Total	11,355,644	4,870,165	16,225,809
3	Engineering cost(12% of sub total)	1,947,097		1,947,097
4	Contingency(5% of above cost)	665,137	243,508	908,645
	Total(birr)	13,967,878	5,113,673	19,081,551
	Total(Yen:1birr=15yen)			286,223,000
5	Buildings		1,718,575	1,718,575
6	WSSD's manangement cost		416,003	416,003
	Total		2,134,578	2,134,578
7	Prise escalation(6%)	838,073	434,895	1,272,968
	Grand Total	14,805,951	7,683,146	22,489,097
II.	Target year of 2010			
1	Morbilization and demorbilization			300,000
2	Rising line			690,000
3	Distribution network			1,350,000
4	New borehole with pumps & material			1,977,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			324,000
8	Buildings			937,000
9	Others			579,000
	Sub total			6,861,000
10	Engineering cost (10%)			686,100
11	Contingency (10%)			754,710
	Total			8,302,000
	Prise escalation(42%)			3,487,000
	Grand Total			11,789,000

Summary of Cost Estimation of Water Supply in Debre

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	150,000	250,000	400,000
	Excavation and Earth-work	8,240	27,700	35,940
	Trench excavation	602,200	1,357,500	1,959,700
	Pipe-work	727,110	727,110	1,454,220
	Reservoir	360,000	360,000	720,000
	Pumping station, R.C.pump house	176,064	117,312	293,376
	Access road	178,000	414,000	592,000
	Bore-hole (200mm casing)	232,320	348,480	580,800
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	540,000	900,000	1,440,000
	Electric submersible pump and necessary works	160,000	240,000	400,000
	Power supply	47,550	56,325	103,875
	Concrete work	111,700	193,500	305,200
	Masonry work	6,000	24,500	30,500
	Structure	153,610	358,420	512,030
	Temporary work(10% of above total)	346,279	538,985	885,264
	Total of civil work	3,809,073	5,928,832	9,737,905
2	Material & Equipment	12,550,886	878,562	13,429,448
	Sub Total	16,359,959	6,807,394	23,167,353
3	Engineering cost(12% of sub total)	2,780,082		2,780,082
4	Contingency (5%)	957,002	340,370	1,297,372
	Total(birr)	20,097,043	7,147,764	27,244,807
	Total(Yen:1birr=15yen)			408,672,000
5	Buildings		2,829,638	2,829,638
6	WSSD's management cost		601,489	601,489
	Total		3,431,127	3,431,127
7	Prise escalation(6%)	1,205,823	634,733	1,840,556
	Grand Total	21,302,866	11,213,624	32,516,490
II.	Target year of 2010			
1	Morbilization and demorbilization			300,000
2	Rising line			1,299,000
3	Distribution network			1,095,000
4	New borehole with pumps & material			2,636,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			270,000
8	Buildings			1,030,700
9	Others			623,300
	Sub total			7,958,000
10	Engineering cost (10%)			795,800
11	Contingency (10%)			875,380
	Total			9,629,000
	Prise escalation(42%)			4,044,000
	Grand Total			13,673,000

Summary of Cost Estimation of Water Supply in Chagni

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	142,000	266,000	408,000
	Excavation and Earth-work	4,420	14,720	19,140
	Trench excavation	369,840	839,020	1,208,860
	Pipe-work	640,590	640,590	1,281,180
	Reservoir	297,000	297,000	594,000
	Pumping station, R.C.pump house	88,032	58,656	146,688
	Access road	356,000	828,000	1,184,000
	Bore-hole (200mm casing)	145,920	218,880	364,800
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	240,000	400,000	640,000
	Electric submersible pump and necessary works	120,000	180,000	300,000
	Power supply	29,550	34,325	63,875
	Concrete work	175,980	305,680	481,660
	Masonry work	12,000	49,000	61,000
	Structure	94,300	220,060	314,360
	Temporary work(10% of above total)	272,563	436,693	709,256
	Total of civil work	2,998,195	4,803,624	7,801,819
2	Material & Equipment	8,557,278	599,009	9,156,287
	Sub Total	11,555,473	5,402,633	16,958,106
3	Engineering cost(12% of sub total)	2,034,973		2,034,973
4	Contingency(5% of above cost)	679,522	270,132	949,654
	Total(birr)	14,269,968	5,672,765	19,942,733
	Total(Yen:1birr=15yen)			299,141,000
5	Buildings		2,726,018	2,726,018
6	WSSD's management cost		453,375	453,375
	Total(birr)		3,179,393	3,179,393
7	Prise escalation(6%)	856,198	190,764	1,046,962
	Grand Total	15,126,166	9,042,922	24,169,088
II.	Target year of 2010			
1	Mobilization and demobilization			300,000
2	Rising line			678,000
3	Distribution network			1,200,000
4	New boreholes including pumps and materials			1,977,000
5	Booster pump with house			534,000
6	Generating set			560,000
7	Chamber and structures			324,000
8	Buildings			937,000
9	Others			564,000
	Sub total			7,074,000
10	Engineering cost (10%)			707,400
11	Contingency (10%)			778,140
	Total			8,560,000
	Prise escalation(42%)			3,595,000
	Grand Total			12,155,000

Summary of Cost Estimation of Water Supply in Bichena

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	100,000	150,000	250,000
	Excavation and Earth-work	8,240	27,700	35,940
	Trench excavation	415,550	937,500	1,353,050
	Pipe-work	339,260	339,260	678,520
	Reservoir	144,000	144,000	288,000
	Pumping station, R.C.pump house	132,048	87,984	220,032
	Access road	267,000	621,000	888,000
	Bore-hole (200mm casing)	92,800	139,200	232,000
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	360,000	600,000	960,000
	Electric submersible pump and necessary works	80,000	120,000	200,000
	Power supply	35,850	38,775	74,625
	Concrete work	112,440	195,240	307,680
	Masonry work	6,000	24,500	30,500
	Structure	116,660	272,190	388,850
	Temporary work(10% of above total)	221,985	371,235	593,220
	Total of civil work	2,441,833	4,083,584	6,525,417
2	Material & Equipment	6,096,042	426,722	6,522,764
	Sub Total	8,537,875	4,510,306	13,048,181
3	Engineering cost(12% of sub total)	1,565,782		1,565,782
4	Contingency(5% of above cost)	505,183	225,515	730,698
	Total(birr)	10,608,840	4,735,821	15,344,661
	Total(Yen:1birr=15yen)			230,170,000
5	Buildings		1,097,437	1,097,437
6	WSSD's management cost		328,842	328,842
	Total		1,426,279	1,426,279
7	Prise escalation(6%)	636,530	369,726	1,006,256
	Grand Total	11,245,370	6,531,826	17,777,196
II.	Target year of 2010			
1	Mobilization and demobilization			400,000
2	Rising line			552,000
3	Distribution network			1,350,000
4	New borehole with pumps & material			1,318,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			351,000
8	Buildings			1,124,400
9	Others			554,600
	Sub total			6,354,000
10	Engineering cost (10%)			635,400
11	Contingency (10%)			698,940
	Total			7,688,000
12	Prise escalation			3,229,000
	Grand Total			10,917,000

Summary of Cost Estimation of Water Supply in Bure

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	100,000	150,000	250,000
	Excavation and Earth-work	6,760	17,300	24,060
	Trench excavation	279,070	625,830	904,900
	Pipe-work	320,290	320,290	640,580
	Reservoir	99,000	99,000	198,000
	Pumping station, R.C.pump house	132,048	87,984	220,032
	Access road	178,000	414,000	592,000
	Bore-hole (200mm casing)	89,600	134,400	224,000
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	360,000	600,000	960,000
	Electric submersible pump and necessary works	60,000	90,000	150,000
	Power supply	35,850	38,775	74,625
	Concrete work	179,850	335,800	515,650
	Masonry work	60,000	245,000	305,000
	Structure	99,180	231,440	330,620
	Temporary work(10% of above total)	200,965	299,730	500,695
	Total of civil work	2,210,613	3,704,549	5,915,162
2	Material & Equipment	7,037,044	492,383	7,529,427
	Sub Total	9,247,657	4,196,932	13,444,589
3	Engineering cost(12% of sub total)	1,613,351		1,613,351
4	Contingency (5%)	543,050	209,847	752,897
	Total(birr)	11,404,058	4,406,779	15,810,837
	Total(Yen:1birr=15yen)			237,163,000
5	Buildings		3,368,921	3,368,921
6	WSSD's management cost		383,595	383,595
	Total		3,752,516	3,752,516
7	Prise escalation(6%)	684,243	489,558	1,173,801
	Grand Total	12,088,301	8,648,853	20,737,154
II.	Target year of 2010			
1	Morbilization and demorbilization			300,000
2	Rising line			1,260,000
3	Distribution network			1,200,000
4	Intake and canal			1,318,000
5	Treatment plant			0
6	Booster pump with house			534,000
7	Power supply facilities			170,000
8	Chamber and structures			324,000
9	Buildings			937,000
10	Others			498,000
	Sub total			6,541,000
11	Engineering cost (10%)			654,100
12	Contingency (10%)			719,510
	Total			7,915,000
	Prise escalation(42%)			3,324,000
	Grand Total			11,239,000

Summary of Cost Estimation of Water Supply in Dejen

No.	Description	F.C.(B)	L.C.(B)	Total(B)
I.	Target year of 2005			
1	Civil Work			
	Mobilization and Demobilization	100,000	150,000	250,000
	Excavation and Earth-work	8,240	27,700	35,940
	Trench excavation	388,480	889,130	1,277,610
	Pipe-work	217,500	217,500	435,000
	Reservoir	126,000	126,000	252,000
	Pumping station, R.C.pump house	88,032	58,656	146,688
	Access road	356,000	828,000	1,184,000
	Bore-hole (200mm casing)	72,960	109,440	182,400
	Water purification unit	10,000	15,000	25,000
	Booster pump and necessary works	240,000	400,000	640,000
	Electric submersible pump and necessary works	60,000	90,000	150,000
	Power supply	35,850	38,775	74,625
	Concrete work	112,440	195,240	307,680
	Masonry work	6,000	24,500	30,500
	Structure	101,880	237,720	339,600
	Temporary work(10% of above total)	192,338	340,766	533,104
	Total of civil work	2,115,720	3,748,427	5,864,147
2	Material & Equipment	4,838,346	338,684	5,177,030
	Sub Total	6,954,066	4,087,111	11,041,177
3	Engineering cost(12% of sub total)	1,324,941		1,324,941
4	Contingency (5%)	354,350	204,356	558,706
	Total(birr)	8,633,357	4,291,467	12,924,824
	Total(Yen:1birr=15yen)			193,872,000
5	Buildings		758,591	758,591
6	WSSD's management cost		273,668	273,668
	Total		1,032,259	1,032,259
7	Prise escalation(6%)	518,001	319,424	837,425
	Grand Total	9,151,358	5,643,150	14,794,508
II.	Target year of 2010			
1	Mobilization and demobilization			300,000
2	Rising line			2,529,000
3	Distribution network			540,000
4	New borehole with pumps & material			1,318,000
5	Booster pump with house			534,000
6	Power supply facilities			170,000
7	Chamber and structures			162,000
8	Buildings			562,200
9	Others			378,800
	Sub total			6,494,000
10	Engineering cost (10%)			649,400
11	Contingency (10%)			714,340
	Total			7,858,000
	Prise escalation(42%)			3,300,000
	Grand Total			11,158,000



(Thousand Birr)

No.	Description	F.C.	L.C.	Total
II	Vehicles and Office equipments (for officers and Engineers)			
1	4 whell car for main office (4)	800	40	
2	4 whell car for Region office (2)	400	20	
3	Pick-up car (5)	750	50	
4	Blue print machine (1)	70		
5	Computer set (1)	60		
6	Copy machine (2)	100		
7	Others (2)	20		
	<b>Total</b>	<b>2,200</b>	<b>110</b>	<b>2,310</b>



## **Annex - 4**

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## **Annex - 5**

### **Questionnaires**

Household questionnaires have been carried out at 100 households in each enter, those of which were sampled with equal interval from the register book held in Kebere Office.

Questionnaire on Socio-Economic and Cultural Background

Name of Center: ( ) Code No. of Samples: ( )

1. What tribes are you? ( ), ( )  
What languages do you speak? ( ), ( )
2. What religion does your household believe?  
1) Christianity 2) Islam 3) Other ( )
3. What occupation do your household members have?  
(You put M for men and W for women.)  
1) Agriculture ( ) 2) Stock Raising ( )  
3) Commerce ( ) 4) Industry (Factory) ( )  
5) Administration (Government) ( )  
6) Other ( ) ( )
4. Do you own free plot area? 1) Yes 2) No  
If "yes", how much? ( ) ha
5. Do you have livestock? 1) Yes 2) No  
If "yes", How much each?  
1) Cow/Ox ( ) 2) Sheep/Goat ( ) 3) Horse/Mule ( )  
4) Donkey ( ) 5) Camel ( ) 6) Chicken ( )  
7) Other ( ) ( )
6. What level of education have your household members reached?  
(You put M for men and W for women.)  
1) No Schooling ( ) 2) Elementary School ( )  
3) Junior High School ( ) 4) Senior High School ( )  
5) College ( ) 6) University ( )  
7) Other ( ) ( )
7. Average Monthly Household Income  
1) Less than 50 birr: ( ) birr  
2) 50 - 99 birr  
3) 100 - 199 birr  
4) 200 - 299 birr  
5) 300 - 399 birr  
6) 400 - 599 birr  
7) 600 - 799 birr  
8) 800 - 999 birr  
9) 1,000 - 1,499 birr  
10) 1,500 - 1,999 birr  
11) 2,000 birr or more: ( ) birr

8. Average Monthly Household Expenditure

- 1) Food and Beverages ( ) birr
- 2) Clothing and Footwear ( ) birr
- 3) Rent ( ) birr
- 4) Interest and Repayment ( ) birr
- 5) Electricity and Energy ( ) birr
- 6) Water Bill ( ) birr
- 7) Savings ( ) birr
- 8) Others ( ) ( ) birr

9. Total Floor Area: ( ) m2 (Observation)

10. When and with what do members of your household wash their hands?  
(Put M for men, W for women and C for children.)

	Soap	Ash	Mud	Water	Other
After defecation :	( )	( )	( )	( )	( )
Before cooking :	( )	( )	( )	( )	( )
Before eating :	( )	( )	( )	( )	( )
After disposals of children's stools :	( )	( )	( )	( )	( )
After handling animal dung :	( )	( )	( )	( )	( )

11. How do you keep your kitchen utensils?

- 1) Shelf/Cabinet 2) Floor/Ground 3) Other ( )

If shelf/cabinet, who organized it? 1) Men 2) Women

12. How is left-over food stored?

- 1) Covered 2) Open to the flies

13. Is cooked food bought at the market? 1) Yes 2) No

If "yes", who purchase the food?

- 1) Men 2) Women 3) Boys 4) Girls

Do they notice if the food is stored covered or not?

- 1) Yes 2) No

14. What raw food do you eat? You can mark more than one.

- 1) Vegetables 2) Meat 3) Fruit

Before it is eaten, is it washed?

- 1) Vegetables : (1) Yes (2) No  
 2) Meat : (1) Yes (2) No  
 3) Fruit : (1) Yes (2) No

15. How much medical cost was spent on average for a patient to recover from diarrhea or scabies including the cost for medical check-up and medicine? ( ) birr

16. 1) Are you satisfied with the type of toilet you use now?  
 (1) Yes (2) No
- 2) If "no", what type of toilet do you want to have?  
 (1) Septic Tank / Cesspool (2) Dry Pit  
 (3) Community Toilet (4) Open Field  
 (5) Others ( )
17. To the household which does not have a septic tank or cesspool type toilet, supposing the government provides a credit to you to construct such a toilet and later on you pay back the loan on long-term installment, are you interested to apply for such a credit?  
 1) Yes 2) No

If "yes", what will be the maximum monthly amount you can afford to pay? ( ) birr

18. What is the thing you want most from the authorities concerned in connection with sanitation. State below whatever you have in mind.

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19. What is the most serious problem for your household?

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Surveyor : ( ) Date: ( )

Supervisor: ( ) Date: ( )





5. To the household which does not have house connection or yard connection, supposing the government provides a credit to you to install a house connection or yard connection and later on you pay back the loan on long-term installment, are you interested to apply for such a credit?  
 1) Yes            2) No

If "yes", what will be the maximum monthly amount you can afford to pay?  
 (    ) birr

6. What is the thing you want most from the authorities concerned in connection with the supply and use of water? State below whatever you have in mind.
- 
- 

7. Current available water source  
 [(1) piped water (2) public well including shallow well (3) your own well (4) water vendor (5) others] Mark appropriate ones.

8. Water Usage  
 [(1) drinking and house keeping (2) other domestic use (3) livestock (4) home garden (5) cottage industry] Mark appropriate ones.

9. How much volume of water from charged system do you use for livestock, home garden or cottage industry, and how much do you pay for it per month? Fill up the following table.

Item	Livestock	Home Garden	Cottage Industry
Volume of Water (liters per day)	(    )	(    )	(    )
Water Charge (birr per month)	(    )	(    )	(    )

PIPED WATER

10. What kind of service are you getting?  
 [(1) house connection (2) yard connection (3) public fountain]  
 Mark only one.

If (1) (go to "HOUSE CONNECTION")  
 (2) (go to "YARD CONNECTION")  
 (3) (go to "PUBLIC FOUNTAIN")

11. How much are you willing to pay for water? [    ] birr/m<sup>3</sup>

HOUSE CONNECTION

12. How many taps do you have in your house?  
 [(1) one (2) two (3) three or more] Mark only one.

13. How much do you pay for water charge per month?  
 [    ] birr

14. Present status of service on quality.  
[(1)good (2)average (3)not good] Mark only one.
15. Present status of service on quantity.  
[(1)good (2)average (3)not good] Mark only one.
16. Do you have shower? [(1) Yes (2) No] Mark only one.
17. Do you have flush toilet? [(1) Yes (2) No] Mark only one.

#### YARD CONNECTION

18. How many households are using one yard connection?  
[(1)one (2)two (3)three (4)four (5)five or more] Mark only one.
19. How many taps does the yard connection have?  
[(1)one (2)two (3)three (4)four (5)five or more] Mark only one.
20. How much volume of water do you use? [ ] liters per day
21. How much do you pay for water charge per month?  
[ ] birr per month
22. Present status of service on quality and quantity.  
[(1)good (2)average (3)not good] Mark only one.

#### PUBLIC FOUNTAIN

23. 1) How far is the public fountain from your house?  
[(1)less than 100m: ( )m (2)100m-199m (3)200m-399m  
(4)400m or more: ( )m] (one way) Mark only one.
- 2) How many times do you go to the public fountain on average per day?  
[ ] times
- 3) How much time do you spend fetching water at a time?  
[ ] hours [ ] minutes
- 4) How many persons from your household go to the public fountain at a time? [ ] person(s)
- 5) Who go to the public fountain?  
[(1)men (2)women (3)boys (4)girls] Mark appropriate ones.
24. How many taps does the public fountain have?  
[(1)one (2)two (3)three (4)four (5)five or more] Mark only one.
25. 1) How much volume of water do you collect at the public fountain at a time? [ ] liters
- 2) How much do you pay for collection of water at a time?  
[ ] birr [ ] cents
26. When do you prefer the public fountain to be open?  
[(1) early morning (2)afternoon (3)evening] Mark only one.

## PUBLIC WELL

27. Water availability  
[(1)available throughout year (2)during rainy season only  
(3)partly in dry season also] Mark only one.
28. Water supply facilities  
[(1)electric pump (2)hand pump (3)use of rope and bucket]  
Mark only one.
29. 1) How far is the public well from your house?  
[(1)less than 100m: ( )m (2)100m-199m (3)200m-399m  
(4)400m or more: ( )m] (one way) Mark only one.
- 2) How many times do you go to the public well on average per day?  
[ ] times
- 3) How much time do you spend fetching water at a time?  
[ ] hours [ ] minutes
- 4) How many persons from your household go to the public well at  
a time? [ ] person(s)
- 5) Who go to the public well?  
[(1)men (2)women (3)boys (4)girls] Mark appropriate ones.
30. 1) How much volume of water do you collect at the public well at  
a time? [ ] liters
- 2) Is the water charged? [(1)Yes (2)No] Mark only one.
- 3) If yes, how much do you pay for collection of water at a time?  
[ ] birr [ ] cents
31. Do you fetch enough water? [(1)Yes (2)No] Mark only one.

## OWN WELL

32. Water availability  
[(1)available throughout year (2)during rainy season only  
(3)partly in dry season also] Mark only one.
33. Water supply facilities  
[(1)electric pump (2)hand pump (3)use of rope and bucket]  
Mark only one.
34. Do you have enough water in your own well? [(1)Yes (2)No]  
Mark only one.

## WATER VENDOR

35. How much water do you buy per day? [ ] liters
36. How much do you pay for water per day? [ ] birr [ ] cents

37. In which season do you buy water?  
[(1)dry season (2)rainy season (3) throughout year]  
Mark only one.

38. Do you get enough water from the vendor? [(1)Yes (2)No]  
Mark only one.

OTHERS

39. What other sources do you use?  
[(1)spring (2)river (3)pond (4)rain water] Mark appropriate ones.

40. 1) How far are the spring/river/pond from your house?  
[(1)less than 100m: ( )m (2)100m-199m (3)200m-399m  
(4)400m or more: ( )m] (one way) Mark only one.

2) How many times do you go to the spring/river/pond on average per day? [ ] times

3) How much time do you spend fetching water at a time?  
[ ] hours [ ] minutes

4) How many persons go to the spring/river/pond at a time?  
[ ] person(s)

5) Who go to the spring/river/pond?  
[(1)men (2)women (3)boys (4)girls] Mark appropriate ones.

41. How much water do you collect at a time? [ ] liters

42. Do you fetch enough water? [(1)Yes (2)No] Mark only one.

43. 1) How is water carried from the water source?  
(1) Carried in the jerry can or pot by people.  
(2) Carried in the jerry can or pot by donkeys  
(3) Other ( )

2) In what sort of container is it collected and stored?  
(1) Pot (2) Jerry can (3) Barrel (4) Other ( )

3) With what is the top of the water container covered when it is stored?  
(1) Cup (2) Grass (3) Twig (4) Wood Lid (5) Other ( )

4) How is water taken from the water container?  
(1) Poured (2) Cup dipped (3) Other ( )

If cup, where is it stored?

(1) Shelf/Cabinet (2) Placed on the floor/ground  
(3) Other ( )

Surveyor : ( ) Date: ( )

Supervisor: ( ) Date: ( )

Questionnaire on Sanitary Condition

Name of Center: ( ) Code No. of Samples: ( )

1. Gender of the household head. 1) Male 2) Female
2. How many people are there in your household?

Item	Male	Female	Total
Adult (15 years and more)	( )	( )	( )
Children (less than 15 years)	( )	( )	( )

3. How is solid waste disposed?  
 1) Thrown anywhere 2) In open pit 3) In covered pit 4) Burnt
4. How is wastewater disposed?  
 1) Anywhere 2) Pit 3) Drain 4) Vegetable Garden
5. Is the home heavily infested with flies? (Observation)  
 1) Yes 2) No
6. Are livestock kept within the family home? 1) Yes 2) No  
 How is the animal waste disposed?  
 1) Fuel 2) Fertilizer 3) Pit 4) Anywhere
7. What type of toilet do the members of your household use?  
 (Put M men, W for women, B for boys, G for girls.)  
 1) Septic Tank / Cesspool ( ) 2) Dry Pit ( )  
 3) Community Toilet ( ) 4) Open Field ( )  
 5) Other ( ) ( )
8. If the answer to question 7. is 1), fill up the table.

	Yes	No
1) Clean squatting hole	( )	( )
2) Clean slab	( )	( )
3) Well fitting lid	( )	( )
4) No flies	( )	( )
5) Good ventilation	( )	( )
6) Not filled up with body waste	( )	( )

9. If your answer to question 7. is 1) or 2), how far is the location of your latrine from the nearest water source (well, spring or river)?  
 ( ) m
10. What anal cleansing materials are used?  
 (Put M for men, W for women, B for boys, G for girls.)  
 1) Stone ( ) 2) Water ( ) 3) Paper ( )  
 4) Twig ( ) 5) Leaves ( ) 6) Nothing ( )

11. How and by whom is infant excreta disposed?  
(Put M for men, W for women, B for boys, G for girls.)  
1) Thrown away in open field.( )  
2) Put in "popo" and then thrown away.( )  
3) Put in "popo" and then put in the toilet.( )
12. Do any members of your household know how to prepare ORS correctly?  
(Correct explanation required.) 1) Yes 2) No  
If "yes", who know it? 1) Men 2) Women 3) Boys 4) Girls
13. Do any members of your household know why people get diarrhea?  
(Correct explanation required.) 1) Yes 2) No  
If "yes", who know it? 1) Men 2) Women 3) Boys 4) Girls
14. Have any members of your household participated in health or hygienic education session given by the town or school?  
1) Yes 2) No  
If "yes", answer the following questions:  
Who participated in it? 1) Men 2) Women 3) Boys 4) Girls  
Do you think it was satisfactory? 1) Yes 2) No
15. Have any members of your household participated in community sanitation works of the town? 1) Yes 2) No  
If "yes", who participated in it?  
1) Men 2) Women 3) Boys 4) Girls
16. How do you think your household can involve itself in the improvement of sanitary conditions in the town?  
1) Cash contribution 2) Participation in materials  
3) Participation in labor
17. Have any members of your family suffered from water-borne diseases in the last 6 months? Fill up the number of cases for each type of water-borne diseases.  
1) Diarrhea ( ) 2) Malaria ( ) 3) Scabies ( )  
Did any members of your family attend the health post with any of these diseases? 1) Yes 2) No  
If "yes", who?  
1) Men 2) Women 3) Boys 4) Girls
18. Have any members in your family died of illness before 5 years old in the last 10 years? 1) Yes 2) No  
If "yes", how many have died? ( )

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Surveyor : ( ) Date: ( )

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Supervisor: ( ) Date: ( )

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Questionnaire on Water Use Condition for Commerce

Name of Center: (                    )                    Code No. of Samples: (            )

I. Identity of Respondent

1. Name : (                    )

2. Position : (                    )

II. Identity of Establishment

1. Name : (                    )

2. Address : (                    )

3. Number of Workers : Males : (            ) persons  
Females: (            ) persons

4. 1) Total Floor Area : (            ) m<sup>2</sup>  
2) Total Plot Area : (            ) m<sup>2</sup>

5. Average Monthly Sales

- 1) Less than 1,000 birr: (            ) birr
- 2) 1,000 - 1,999 birr
- 3) 2,000 - 4,999 birr
- 4) 5,000 - 9,999 birr
- 5) 10,000 - 19,999 birr
- 6) 20,000 - 49,999 birr
- 7) 50,000 - 99,999 birr
- 8) 100,000 birr or more: (            ) birr

6. Classification of Activities

- 1) Retail Trade (Shop, Supermarket, etc.)
- 2) Restaurant
- 3) Hotel
- 4) Others (                    )

III. Questions

1. What are the major sources of water you daily use? You can choose more than one.

- 1) Piped Water Supply                    2) Well                    3) Surface Water
- 4) Others (                    )

2. How much do you consume water on average per day?

- 1) Piped Water Supply : (            ) liters
- 2) Well : (            ) liters
- 3) Surface Water : (            ) liters
- 4) Others : (            ) liters



3. If one of your sources of water is piped water supply, how much do you pay for the water supply service on average per month?  
( ) birr

4. If one of your sources of water is piped water supply, answer the following questions.

1) Are you satisfied with the existing operation and maintenance status of the water supply facilities?

(1) Yes (2) No

2) If "no", in what respect are you not satisfied? You can choose more than one.

- (1) Sometimes water stops coming.
- (2) Water quality is not good.
- (3) Facilities are deteriorating.
- (4) The volume of water is not enough.
- (5) Water price is too expensive.
- (6) Others ( )

3) Supposing WSSA provides enough training and technical and financial assistance to a new water committee in the initial stage and eventually piped water supply is completely transferred to and managed by the committee including remuneration, water tariffs and technical aspects, do you agree to such a proposal?

(1) Yes (2) No

4) Supposing WSSA provides enough training and technical and financial assistance to the private sector in the initial stage and eventually piped water supply is completely transferred to and managed by the private sector including remuneration, water tariffs and technical aspects, do you agree to such a proposal?

(1) Yes (2) No

\_\_\_\_\_  
Surveyor : ( ) Date: ( )

\_\_\_\_\_  
Supervisor: ( ) Date: ( )



- 1) Piped Water Supply                    2) Well                    3) Surface Water  
 4) Others (                    )

2. How much do you consume water on average per day?

- 1) Piped Water Supply : (                    ) liters  
 2) Well : (                    ) liters  
 3) Surface Water : (                    ) liters  
 4) Others : (                    ) liters

3. If one of your sources of water is piped water supply, how much do you pay for the water supply service on average per month?  
 (                    ) birr

4. If one of your sources of water is piped water supply, answer the following questions.

1) Are you satisfied with the existing operation and maintenance status of the water supply facilities?

- (1) Yes                    (2) No

2) If "no", in what respect are you not satisfied? You can choose more than one.

- (1) Sometimes water stops coming.  
 (2) Water quality is not good.  
 (3) Facilities are deteriorating.  
 (4) The volume of water is not enough.  
 (5) Water price is too expensive.  
 (6) Others (                    )

3) Supposing WSSA provides enough training and technical and financial assistance to a new water committee in the initial stage and eventually piped water supply is completely transferred to and managed by the committee including remuneration, water tariffs and technical aspects, do you agree to such a proposal?

- (1) Yes                    (2) No

4) Supposing WSSA provides enough training and technical and financial assistance to the private sector in the initial stage and eventually piped water supply is completely transferred to and managed by the private sector including remuneration, water tariffs and technical aspects, do you agree to such a proposal?

- (1) Yes                    (2) No

\_\_\_\_\_  
 Surveyor : (                    ) Date: (                    )

\_\_\_\_\_  
 Supervisor: (                    ) Date: (                    )





Number of Samples for Questionnaires on Water Use Condition  
for Establishments and Institutions for ONE CENTER

1. Questionnaire for Commerce

Shops	:	3
Restaurants	:	2
Hotels	:	2
<hr/>		
Total		7

2. Questionnaire for Industry

Factories	:	3
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3. Questionnaire for Institutions

Educational	:	Elementary	:	2
		Junior High	:	1
		Senior High	:	1
	<hr/>			
		Sub-Total		4
Medical	:	Health Centers	:	2
		Clinics	:	1
		Hospitals	:	1
	<hr/>			
		Sub-Total		4
Religious	:	Churches	:	2
		Mosques	:	2
	<hr/>			
			Sub-Total	
Administrative:		Kebele	:	2
		Weroda	:	2
	<hr/>			
			Sub-Total	

<hr/>		
Total		16

<hr/>		
Grand Total		26

Note: The number of samples for each item can be changed depending on the actual situation of a Center, but the total number of samples required for a Center must be 26.

Result of Household Questionnaires (Socio-Economy)

Item	Dupli	Mille	Bati	Werota	Aykel	Debre Tabor	Neias Mewcha	Chagni	Bure	Bichena	Dejen	
1.	Amhara : 89	Amhara : 70	Amhara : 55	Amhara : 96	Amhara : 76	Amhara : 100	Amhara : 100	Amhara : 80	Amhara : 98	Amhara : 99	Amhara : 99	
	Afar : 7	Afar : 6	Afar : 15	Afar : 3	Afar : 0	Afar : 0	Afar : 0	Afar : 0	Afar : 0	Afar : 0	Afar : 0	
Langu	Tigre : 6	Tigre : 15	Tigre : 5	Tigre : 0	Tigre : 8	Tigre : 0	Tigre : 1	Tigre : 1	Tigre : 0	Tigre : 0	Tigre : 0	
	Oromo : 3	Oromo : 12	Oromo : 30	Oromo : 0	Oromo : 0	Oromo : 0	Oromo : 0	Oromo : 1	Oromo : 2	Oromo : 1	Oromo : 1	
	Other : 2	Other : 1	Other : 7	Other : 0	Other : 19	Other : 0	Other : 0	Other : 28	Other : 5	Other : 1	Other : 2	
2.	Amhara : 91	Amhara : 88	Amhara : 92	Amhara : 97	Amhara : 99	Amhara : 100	Amhara : 100	Amhara : 96	Amhara : 97	Amhara : 100	Amhara : 100	
	Afar : 8	Afar : 8	Afar : 16	Afar : 5	Afar : 0	Afar : 0	Afar : 0	Afar : 1	Afar : 0	Afar : 0	Afar : 0	
3.	Tigre : 5	Tigre : 16	Tigre : 5	Tigre : 0	Tigre : 5	Tigre : 1	Tigre : 1	Tigre : 1	Tigre : 0	Tigre : 1	Tigre : 1	
	Oromo : 4	Oromo : 11	Oromo : 31	Oromo : 1	Oromo : 0	Oromo : 0	Oromo : 0	Oromo : 2	Oromo : 2	Oromo : 10	Oromo : 2	
	Other : 2	Other : 2	Other : 6	Other : 1	Other : 3	Other : 7	Other : 10	Other : 32	Other : 7	Other : 0	Other : 6	
(1)	(1) 42. (2) 58. (3) 70	(1) 43. (2) 57. (3) 70	(1) 12. (2) 88. (3) 9	(1) 90. (2) 19. (3) 1	(1) 80. (2) 20. (3) 0	(1) 25. (2) 5. (3) 0	(1) 92. (2) 7. (3) 0	(1) 44. (2) 55. (3) 0	(1) 90. (2) 7. (3) 1	(1) 97. (2) 33. (3) 0	(1) 64. (2) 35. (3) 0	
	Yes: 21 No.: 75	Yes: 24 No.: 73	Yes: 24 No.: 65	Yes: 35 No.: 63	Yes: 63 No.: 37	Yes: 61 No.: 39	Yes: 59 No.: 41	Yes: 20 No.: 80	Yes: 30 No.: 70	Yes: 7 No.: 92	Yes: 5 No.: 94	
(2)	Ave: 0.136-0.06;	Ave: 0.094-0.06;	Ave: 0.0854-0.06;	Ave: 0.046-0.06;	Ave: 0.039-0.06;	Ave: 0.0292-0.06;	Ave: 0.566-0.06;	Ave: 0.1085-0.06;	Ave: 1.7667-0.06;	Ave: 0.6429-0.06;	Ave: 1.3-0.06;	
	0.06-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	0.05-0.5;	
4.	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	0.5-1.0;	
	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	
	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	10.0~	
5.	Yes: 32 No.: 67	Yes: 28 No.: 70	Yes: 6 No.: 93	Yes: 18 No.: 78	Yes: 31 No.: 68	Yes: 33 No.: 61	Yes: 35 No.: 61	Yes: 21 No.: 75	Yes: 45 No.: 49	Yes: 26 No.: 72	Yes: 28 No.: 71	
	(1) 5 (2) 4.04 (3) 5 (4) 1.462 (5) 1 (6) 1	(1) 5 (2) 3.214 (3) 5 (4) 1.462 (5) 1 (6) 2	(1) 3.667 (2) 2.25 (3) Err (4) Err (5) Err (6) Err	(1) 3 (2) 2.833 (3) 1 (4) Err (5) Err (6) 1	(1) 3.136 (2) 3.667 (3) 3 (4) Err (5) 4 (6) 5.429	(1) 2.526 (2) 5.125 (3) 2.5 (4) 5 (5) Err (6) 4	(1) 2.054 (2) 2.833 (3) 1 (4) Err (5) Err (6) 2.2	(1) 6.5 (2) 2 (3) 2 (4) Err (5) Err (6) 4.333	(1) 4.1 (2) 3.647 (3) Err (4) 1 (5) 4 (6) 4.1	(1) 4.1 (2) 3.647 (3) Err (4) 1 (5) 4 (6) 4.1	(1) 3.533 (2) 4.257 (3) Err (4) 1 (5) Err (6) 3.875	(1) 3.722 (2) 3.856 (3) Err (4) Err (5) Err (6) 4.25
6.	(1) 2 22.5 (2) 2 (3) 14 (4) 26 (5) 22 (6) 15 (7) 9 (8) 5 (9) 3 (10) 1 (11) 1	(1) 4 41.38 (2) 15 (3) 37 (4) 19 (5) 10 (6) 8 (7) 2 (8) 1 (9) 2 (10) 1 (11) 1	(1) 1 45 (2) 12 (3) 24 (4) 18 (5) 10 (6) 16 (7) 6 (8) 3 (9) 2 (10) 1 (11) 6	(1) 1 46 (2) 14 (3) 26 (4) 18 (5) 17 (6) 13 (7) 6 (8) 3 (9) 0 (10) 0 (11) 1	(1) 20 24.35 (2) 25 (3) 23 (4) 13 (5) 10 (6) 6 (7) 1 (8) 1 (9) 0 (10) 0 (11) 0	(1) 5 34 (2) 18 (3) 31 (4) 18 (5) 10 (6) 10 (7) 2 (8) 4 (9) 1 (10) 0 (11) 0	(1) 16 30.63 (2) 29 (3) 21 (4) 13 (5) 8 (6) 5 (7) 5 (8) 2 (9) 0 (10) 0 (11) 0	(1) 14 20.71 (2) 18 (3) 28 (4) 23 (5) 6 (6) 8 (7) 1 (8) 2 (9) 0 (10) 0 (11) 0	(1) 10 40.7 (2) 14 (3) 21 (4) 14 (5) 12 (6) 10 (7) 9 (8) 6 (9) 0 (10) 0 (11) 4	(1) 4 40.75 (2) 8 (3) 17 (4) 18 (5) 21 (6) 11 (7) 9 (8) 6 (9) 2 (10) 0 (11) 4	(1) 2 40.5 (2) 5 (3) 23 (4) 16 (5) 16 (6) 18 (7) 7 (8) 5 (9) 2 (10) 4 (11) 1	(1) Ave. 232 Birt (2) 27.75 (3) 11.21 (4) 2330 (5) 49.46
	(1) 179.7 (2) 41.35 (3) 29.42 (4) 13 (5) 42.67	(1) 128.4 (2) 23.31 (3) 25.32 (4) 18.5 (5) 38.92	(1) 251 (2) 38.28 (3) 31.94 (4) 34 (5) 45.67	(1) 167 (2) 78.07 (3) 13.09 (4) 243.6 (5) 28.61	(1) Ave. 125 Birt (2) 17.73 (3) 12.92 (4) 22.14 (5) 21.87	(1) Ave. 176.7 Birt (2) 23.41 (3) 14.69 (4) 170.8 (5) 27.93	(1) Ave. 148.8 Birt (2) 21.1 (3) 13.6 (4) 14.5 (5) 30.2	(1) Ave. 161.4 Birt (2) 24.89 (3) 13.82 (4) 5.5 (5) 5.333	(1) Ave. 199 Birt (2) 48.38 (3) 13.46 (4) 1803 (5) 13.67	(1) Ave. 215.6 Birt (2) 62 (3) 12.26 (4) 1221 (5) 50.79	(1) Ave. 232 Birt (2) 27.75 (3) 11.21 (4) 2330 (5) 49.46	

Result of Household Questionnaires (Socio-Economy)

Item	Dupli	Mille	Bati	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
6.	(6) 43.8 (7) 25.1 (8) 35.41 Ave. 34.02 ~10m <sup>2</sup> : 1 10~20: 14 20~30: 34 30~40: 27 40~50: 13 50~60: 6 60~70: 1 70~80: 1 80~90: 1 90~100: 0 100~: 1	(6) 15.29 (7) 3.402 (8) 15.23 Ave. 33.66 ~10m <sup>2</sup> : 1 10~20: 20 20~30: 27 30~40: 19 40~50: 10 50~60: 3 60~70: 5 70~80: 3 80~90: 3 90~100: 1 100~: 1	(6) 8.164 (7) 7.956 (8) 14.6 Ave. 36.18 ~10m <sup>2</sup> : 4 10~20: 22 20~30: 16 30~40: 24 40~50: 13 50~60: 5 60~70: 4 70~80: 2 80~90: 1 90~100: 1 100~: 6	(6) 6.846 (7) 6.167 (8) 4.312 Ave. 34.76 ~10m <sup>2</sup> : 12 10~20: 13 20~30: 23 30~40: 14 40~50: 17 50~60: 8 60~70: 3 70~80: 5 80~90: 2 90~100: 0 100~: 2	(6) 10.26 (7) 46.73 (8) 7.67 Ave. 37.05m <sup>2</sup> ~10m <sup>2</sup> : 2 10~20: 12 20~30: 15 30~40: 18 40~50: 34 50~60: 11 60~70: 4 70~80: 0 80~90: 2 90~100: 0 100~: 1	(6) 10.92 (7) 52 (8) 14.32 Ave. 42.82m <sup>2</sup> ~10m <sup>2</sup> : 3 10~20: 14 20~30: 15 30~40: 12 40~50: 19 50~60: 18 60~70: 9 70~80: 2 80~90: 2 90~100: 2 100~: 2	(6) 8.9 (7) 44.6 (8) 3.4 Ave. 40.2m <sup>2</sup> ~10m <sup>2</sup> : 4 10~20: 8 20~30: 9 30~40: 8 40~50: 44 50~60: 11 60~70: 4 70~80: 4 80~90: 2 90~100: 0 100~: 0	(6) 4.715 (7) 22.56 (8) 7.847 Ave. 39.09m <sup>2</sup> ~10m <sup>2</sup> : 3 10~20: 25 20~30: 18 30~40: 17 40~50: 12 50~60: 5 60~70: 7 70~80: 2 80~90: 1 90~100: 1 100~: 5	(6) 7.363 (7) 128.1 (8) 43.04 Ave. 55.55 ~10m <sup>2</sup> : 0 10~20: 7 20~30: 9 30~40: 8 40~50: 15 50~60: 15 60~70: 9 70~80: 10 80~90: 8 90~100: 4 100~: 7	(6) 6.301 (7) 127.4 (8) 10.26 Ave. 54.7 ~10m <sup>2</sup> : 0 10~20: 2 20~30: 7 30~40: 16 40~50: 27 50~60: 9 60~70: 9 70~80: 8 80~90: 9 90~100: 5 100~: 7	(6) 5.432 248.3 (8) 14.3 Ave. 55.74 ~10m <sup>2</sup> : 1 10~20: 6 20~30: 6 30~40: 12 40~50: 19 50~60: 16 60~70: 11 70~80: 3 80~90: 6 90~100: 4 100~: 10
8.	(1) 58 (2) 15 (3) 26 Men: 12 Women: 59	(1) 54 (2) 16 (3) 28 Men: 3 Women: 53	(1) 46 (2) 23 (3) 31 Men: 3 Women: 51	(1) 6 (2) 23 (3) 69 Men: 0 Women: 8	(1) 11 (2) 48 (3) 40 Men: 4 Women: 7	(1) 45 (2) 25 (3) 30 Men: 3 Women: 40	(1) 29 (2) 30 (3) 39 Men: 17 Women: 13	(1) 34 (2) 54 (3) 11 Men: 6 Women: 29	(1) 42 (2) 29 (3) 28 Men: 18 Women: 23	(1) 26 (2) 66 (3) 8 Men: 14 Women: 10	(1) 30 (2) 52 (3) 17 Men: 14 Women: 11
9.	(1) 86 (2) 14 Yes: 20 No: 73	(1) 68 (2) 29 Yes: 20 No: 79	(1) 97 (2) 1 Yes: 42 No: 53	(1) 97 (2) 1 Yes: 10 No: 87	(1) 92 (2) 8 Yes: 65 No: 35	(1) 98 (2) 1 Yes: 41 No: 58	(1) 95 (2) 3 Yes: 4 No: 91	(1) 82 (2) 18 Yes: 18 No: 79	(1) 83 (2) 17 Yes: 2 No: 98	(1) 9 (2) 0 Yes: 8 No: 91	(1) 98 (2) 1 Yes: 5 No: 93
10.	(2) Men: 9 Women: 9 Boys: 5 Girls: 0	(2) Men: 4 Women: 11 Boys: 3 Girls: 2	(2) Men: 6 Women: 10 Boys: 19 Girls: 8	(2) Men: 1 Women: 1 Boys: 7 Girls: 1	(2) Men: 0 Women: 19 Boys: 25 Girls: 22	(2) Men: 7 Women: 12 Boys: 14 Girls: 9	(2) Men: 0 Women: 1 Boys: 3 Girls: 1	(2) Men: 0 Women: 8 Boys: 5 Girls: 6	(2) Men: 0 Women: 0 Boys: 1 Girls: 1	(2) Men: 0 Women: 8 Boys: 0 Girls: 0	(2) Men: 0 Women: 3 Boys: 0 Girls: 2
11.	(3) Yes: 17 No: 15 (1) 77 (2) 19 (3) 83	(3) Yes: 13 No: 6 (1) 90 (2) 12 (3) 62	(3) Yes: 31 No: 22 (1) 96 (2) 14 (3) 92	(3) Yes: 1 No: 9 (1) 93 (2) 38 (3) 65	(3) Yes: 22 No: 43 (1) 70 (2) 33 (3) 23	(3) Yes: 20 No: 20 (1) 40 (2) 41 (3) 61	(3) Yes: 4 No: 0 (1) 52 (2) 41 (3) 50	(3) Yes: 3 No: 14 (1) 77 (2) 56 (3) 92	(3) Yes: 0 No: 10 (1) 75 (2) 84 (3) 80	(3) Yes: 7 No: 0 (1) 97 (2) 58 (3) 75	(3) Yes: 5 No: 0 (1) 81 (2) 75 (3) 75
12.	1) Yes: 78 No: 0 2) Yes: 5 No: 33 3) Yes: 62 No: 2 Ave. 35.7 ~1 Birr: 0 1~2: 1 2~3: 1 3~4: 0 4~5: 0 5~6: 0 6~7: 0	1) Yes: 80 No: 1 2) Yes: 7 No: 38 3) Yes: 58 No: 2 Ave. 64.08 ~1 Birr: 0 1~2: 4 2~3: 4 3~4: 2 4~5: 0 5~6: 3 6~7: 0	1) Yes: 92 No: 0 2) Yes: 5 No: 9 3) Yes: 72 No: 15 Ave. 27.25 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 0 4~5: 0 5~6: 0 6~7: 0	1) Yes: 76 No: 4 2) Yes: 2 No: 58 3) Yes: 55 No: 17 Ave. 19.25 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 0 4~5: 1 5~6: 2 6~7: 1	1) Yes: 66 No: 2 2) Yes: 0 No: 29 3) Yes: 5 No: 9 Ave. 9.097 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 0 4~5: 3 5~6: 7 6~7: 2	1) Yes: 34 No: 7 2) Yes: 5 No: 36 3) Yes: 29 No: 32 Ave. 14.32 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 4 4~5: 0 5~6: 8 6~7: 1	1) Yes: 49 No: 1 2) Yes: 4 No: 37 3) Yes: 44 No: 5 Ave. 17.26 ~1 Birr: 0 1~2: 1 2~3: 1 3~4: 1 4~5: 0 5~6: 2 6~7: 2	1) Yes: 50 No: 33 2) Yes: 19 No: 49 3) Yes: 26 No: 65 Ave. 26.53 ~1 Birr: 0 1~2: 1 2~3: 1 3~4: 1 4~5: 9 5~6: 10 6~7: 3	1) Yes: 81 No: 3 2) Yes: 17 No: 69 3) Yes: 84 No: 4 Ave. 29.39 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 0 4~5: 1 5~6: 1 6~7: 1	1) Yes: 96 No: 3 2) Yes: 30 No: 31 3) Yes: 62 No: 19 Ave. 41.82 ~1 Birr: 0 1~2: 0 2~3: 0 3~4: 7 4~5: 4 5~6: 6 6~7: 2	1) Yes: 98 No: 1 2) Yes: 26 No: 50 3) Yes: 77 No: 18 Ave. 38.33 ~1 Birr: 1 1~2: 0 2~3: 0 3~4: 0 4~5: 0 5~6: 1 6~7: 0



Result of Household Questionnaires (Socio-Economy)

Item	Duppá	Mille	Badi	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
	7-8: 0 8-9: 0 9-10: 0 10-: 34	7-8: 0 8-9: 0 9-10: 0 10-: 17	7-8: 2 8-9: 0 9-10: 0 10-: 4	7-8: 0 8-9: 1 9-10: 0 10-: 12	7-8: 3 8-9: 4 9-10: 0 10-: 12	7-8: 4 8-9: 1 9-10: 0 10-: 13	7-8: 3 8-9: 2 9-10: 0 10-: 27	7-8: 0 8-9: 3 9-10: 2 10-: 38	7-8: 0 8-9: 0 9-10: 1 10-: 29	7-8: 0 8-9: 1 9-10: 1 10-: 29	7-8: 0 8-9: 1 9-10: 1 10-: 16
13.	Yes: 15 No: 84 (1) 60 (2) 22 (3) 3 (4) 0	Yes: 35 No: 64 (1) 18 (2) 45 (3) 4 (4) 6	Yes: 37 No: 59 (1) 29 (2) 30 (3) 1 (4) 2	Yes: 12 No: 88 (1) 16 (2) 71 (3) 3 (4) 3	Yes: 15 No: 85 (1) 23 (2) 51 (3) 11 (4) 0	Yes: 36 No: 64 (1) 36 (2) 27 (3) 2 (4) 1	Yes: 30 No: 68 (1) 26 (2) 41 (3) 1 (4) 0	Yes: 10 No: 89 (1) 53 (2) 34 (3) 2 (4) 0	Yes: 22 No: 78 (1) 49 (2) 34 (3) 2 (4) 0	Yes: 10 No: 89 (1) 47 (2) 35 (3) 5 (4) 5	Yes: 13 No: 84 (1) 55 (2) 34 (3) 1 (4) 1
14.	Yes: 55 No: 40 Ave: 17.75 -1 Birr: 1 1-2: 1 2-3: 3 3-4: 4 4-5: 0 5-6: 8 6-7: 0 7-8: 0 8-9: 0 9-10: 0 10-: 39	Yes: 53 No: 41 Ave: 10.76 -1 Birr: 1 1-2: 1 2-3: 8 3-4: 6 4-5: 1 5-6: 11 6-7: 0 7-8: 1 8-9: 1 9-10: 0 10-: 22	Yes: 46 No: 51 Ave: 6.047 -1 Birr: 2 1-2: 6 2-3: 5 3-4: 3 4-5: 1 5-6: 16 6-7: 0 7-8: 0 8-9: 0 9-10: 0 10-: 10	Yes: 55 No: 43 Ave: 7.191 -1 Birr: 1 1-2: 4 2-3: 4 3-4: 13 4-5: 4 5-6: 15 6-7: 0 7-8: 0 8-9: 1 9-10: 0 10-: 13	Yes: 39 No: 61 Ave: 6.667 -1 Birr: 0 1-2: 1 2-3: 0 3-4: 7 4-5: 1 5-6: 16 6-7: 1 7-8: 0 8-9: 0 9-10: 0 10-: 13	Yes: 60 No: 39 Ave: 7.426 -1: 2 1-2: 7 2-3: 11 3-4: 3 4-5: 2 5-6: 14 6-7: 1 7-8: 0 8-9: 0 9-10: 0 10-: 21	Yes: 54 No: 43 Ave: 21.18 -1 Birr: 0 1-2: 0 2-3: 0 3-4: 3 4-5: 1 5-6: 10 6-7: 0 7-8: 0 8-9: 0 9-10: 0 10-: 41	Yes: 78 No: 18 Ave: 6.563 -1 Birr: 2 1-2: 11 2-3: 17 3-4: 10 4-5: 3 5-6: 18 6-7: 2 7-8: 0 8-9: 0 9-10: 0 10-: 17	Yes: 72 No: 28 Ave: 31.17 -1 Birr: 0 1-2: 1 2-3: 3 3-4: 7 4-5: 0 5-6: 14 6-7: 1 7-8: 2 8-9: 0 9-10: 0 10-: 46	Yes: 32 No: 17 Ave: 11.8 -1 Birr: 0 1-2: 6 2-3: 4 3-4: 8 4-5: 4 5-6: 14 6-7: 2 7-8: 2 8-9: 4 9-10: 0 10-: 39	Yes: 32 No: 17 Ave: 11.25 -1 Birr: 0 1-2: 4 2-3: 7 3-4: 13 4-5: 5 5-6: 20 6-7: 3 7-8: 0 8-9: 0 9-10: 0 10-: 32

Result of Household Questionnaires (Water Use)

Item	Dupla	Mille	Bati	Werota	Aykel	Dobre Tabor	Nefus Mewcha	Chagni	Bure	Bichona	Dejen
3.1)	Yes:0 No:85	Yes:0 No:15	Yes:2 No:12	Yes:1 No:30	Yes:0 No:100	Yes:7 No:93	Yes:2 No:98	Yes:12 No:88	Yes:14 No:85	Yes:5 No:94	Yes:10 No:90
3.2) (1)	i:26, iii:58, iii:6 i:72, iii:10, iii:33, iv:14	i:6, iii:7, iii:1 i:14, iii:6, iii:3, iv:0	i:7, iii:6, iii:0 i:9, iii:4, iii:3, iv:0	i:9, iii:19, iii:2 i:21, iii:11, iii:17, iv:7	i:4, iii:66, iii:30 i:58, iii:14, iii:68, iv:40	i:15, iii:53, iii:25 i:37, iii:36, iii:45, iv:38	i:25, iii:42, iii:32 i:84, iii:40, iii:52, iv:8	i:51, iii:27, iii:10 i:79, iii:53, iii:9, iv:17	i:55, iii:29, iii:1 i:76, iii:17, iii:59, iv:7	i:26, iii:49, iii:20 i:48, iii:37, iii:69, iv:11	i:51, iii:36, iii:3
3.2) (2)	Ave:20.988	Ave:9.0769	Ave:4.9	Ave:6.9655	Ave:6.895	Ave:3.117	Ave:7.536	Ave:4.228	Ave:7.988	Ave:7.14	Ave:7.489
	<1 : 0	<1 : 0	<1 : 0	<1 : 0	<1 : 0	<1 : 7	<1 : 0	<1 : 1	<1 : 0	<1 : 0	<1 : 0
	1 : 0	1 : 0	1 : 1	1 : 1	1 : 0	1 : 29	1 : 4	1 : 17	1 : 0	1 : 1	1 : 1
	2 : 1	2 : 3	2 : 2	2 : 1	2 : 8	2 : 19	2 : 11	2 : 10	2 : 6	2 : 11	2 : 4
	3 : 5	3 : 0	3 : 1	3 : 3	3 : 9	3 : 9	3 : 15	3 : 27	3 : 15	3 : 24	3 : 22
	4 : 1	4 : 0	4 : 1	4 : 0	4 : 5	4 : 5	4 : 16	4 : 2	4 : 7	4 : 9	4 : 4
	5 : 12	5 : 1	5 : 3	5 : 9	5 : 25	5 : 13	5 : 18	5 : 10	5 : 17	5 : 12	5 : 17
	6 : 2	6 : 0	6 : 6	6 : 5	6 : 11	6 : 2	6 : 4	6 : 5	6 : 7	6 : 8	6 : 9
	7 : 3	7 : 0	7 : 7	7 : 1	7 : 4	7 : 0	7 : 2	7 : 1	7 : 2	7 : 2	7 : 1
	8 : 0	8 : 1	8 : 0	8 : 1	8 : 2	8 : 0	8 : 1	8 : 0	8 : 1	8 : 5	8 : 2
	9 : 0	9 : 0	9 : 0	9 : 0	9 : 1	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0
	10± : 61	10± : 8	10± : 2	10± : 8	10± : 30	10± : 6	10± : 25	10± : 8	10± : 29	10± : 1	10± : 30
4.1)	Yes:0 No:10	Yes:33 No:52	Yes:53 No:33	Yes:1 No:67	Yes:1 No:18	Yes:3 No:5	Yes:1 No:88	Yes:12 No:88	Yes:9 No:80	Yes:2 No:71	Yes:11 No:82
4.2)	i:7, iii:3, iv:4, v:0, vi:0	i:43, iii:5, iii:10, iv:15, v:7, vi:3	i:29, iii:4, iii:14, iv:4, v:5, vi:0	i:60, iii:8, iii:7, iii:19, v:2, vi:1	i:18, iii:1, iii:6, iii:13, v:0, vi:0	i:4, iii:0, iii:0, iv:0, v:0, vi:1	i:84, iii:5, iii:25, iv:52, v:0, vi:1	i:51, iii:23, iii:7, iii:13, v:10, vi:4	i:80, iii:11, iii:31, iv:20, v:7, vi:0	i:67, iii:22, iii:26, iv:28, v:2, vi:0	i:82, iii:15, iii:36, iv:31, v:0, vi:0
4.3)	Yes:11 No:0	Yes:61 No:14	Yes:94 No:53	Yes:39 No:29	Yes:33 No:17	Yes:5 No:2	Yes:41 No:48	Yes:56 No:13	Yes:79 No:10	Yes:56 No:19	Yes:82 No:12
4.4)	Yes:3 No:8	Yes:24 No:52	Yes:8 No:77	Yes:2 No:66	Yes:11 No:40	Yes:5 No:2	Yes:25 No:63	Yes:10 No:59	Yes:10 No:79	Yes:21 No:55	Yes:12 No:82
5.1)	Yes:44 No:54	Yes:56 No:35	Yes:38 No:59	Yes:59 No:38	Yes:74 No:29	Yes:81 No:19	Yes:73 No:26	Yes:70 No:8	Yes:47 No:11	Yes:65 No:7	Yes:59 No:3
5.1)	Ave:25.15	Ave:10.66	Ave:7.027	Ave:12.33	Ave:10.3	Ave:7.892	Ave:20.72	Ave:5.571	Ave:19.51	Ave:9.015	Ave:6.948
	<1 : 0	<1 : 1	<1 : 0	<1 : 0	<1 : 0	<1 : 3	<1 : 0	<1 : 0	<1 : 0	<1 : 0	<1 : 0
	1 : 0	1 : 3	1 : 4	1 : 0	1 : 9	1 : 1	1 : 7	1 : 1	1 : 0	1 : 1	1 : 1
	2 : 0	2 : 7	2 : 6	2 : 4	2 : 4	2 : 7	2 : 2	2 : 7	2 : 2	2 : 2	2 : 3
	3 : 1	3 : 4	3 : 1	3 : 5	3 : 6	3 : 11	3 : 1	3 : 11	3 : 4	3 : 10	3 : 14
	4 : 1	4 : 3	4 : 1	4 : 1	4 : 2	4 : 3	4 : 1	4 : 2	4 : 1	4 : 9	4 : 7
	5 : 7	5 : 11	5 : 11	5 : 19	5 : 20	5 : 20	5 : 10	5 : 28	5 : 9	5 : 12	5 : 12
	6 : 0	6 : 1	6 : 2	6 : 3	6 : 2	6 : 0	6 : 0	6 : 2	6 : 1	6 : 5	6 : 3
	7 : 0	7 : 1	7 : 0	7 : 1	7 : 3	7 : 1	7 : 0	7 : 0	7 : 0	7 : 1	7 : 1
	8 : 0	8 : 1	8 : 0	8 : 0	8 : 0	8 : 2	8 : 0	8 : 0	8 : 0	8 : 2	8 : 2
	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0	9 : 0
	10± : 19	10± : 17	10± : 8	10± : 22	10± : 37	10± : 23	10± : 57	10± : 13	10± : 29	10± : 25	10± : 15
6.	Water : 54	Water : 34	Water : 19	Water : 13	Water : 23	Water : 19	Water : 46	Water : 52	Water : 71	Water : 32	Water : 38
	H.C. : 7	H.C. : 4	H.C. : 7	H.C. : 15	H.C. : 4	H.C. : 8	H.C. : 20	H.C. : 5	H.C. : 10	H.C. : 8	H.C. : 13
	Y.C. : 9	Y.C. : 12	Y.C. : 24	Y.C. : 5	Y.C. : 58	Y.C. : 44	Y.C. : 19	Y.C. : 15	Y.C. : 9	Y.C. : 24	Y.C. : 22

Result of Household Questionnaires (Water Use)

Item	Dupdi	Mille	Bati	Weroha	Ayiel	Debre Tabor	Nefas Mewecha	Chagni	Bure	Bichona	Dejen	
	P.F. : 11 Others : 13 (1): 12, (2): 0, (3): 2, (4): 90, (5): 4	P.F. : 14 Others : 28 (1): 75, (2): 1, (3): 0, (4): 33, (5): 13	P.F. : 0 Others : 36 (1): 90, (2): 1, (3): 0, (4): 12, (5): 12	P.F. : 0 Others : 32 (1): 91, (2): 12, (3): 6, (4): 39, (5): 16	P.F. : 15 Others : 0 (1): 20, (2): 1, (3): 5, (4): 31, (5): 83	P.F. : 26 Others : 2 (1): 11, (2): 21, (3): 19, (4): 39, (5): 38	P.F. : 13 Others : 2 (1): 87, (2): 2, (3): 0, (4): 39, (5): 51	P.F. : 24 Others : 0 (1): 74, (2): 2, (3): 9, (4): 2, (5): 68	P.F. : 1 Others : 3 (1): 91, (2): 10, (3): 0, (4): 0, (5): 4	P.F. : 5 Others : 31 (1): 75, (2): 0, (3): 17, (4): 4, (5): 28	P.F. : 1 Others : 3 (1): 98, (2): 64, (3): 1, (4): 1, (5): 0	P.F. : 1 Others : 26 (1): 95, (2): 0, (3): 12, (4): 2, (5): 21
7.	(1): 23, (2): 81, (3): 3, (4): 0, (5): 0	(1): 97, (2): 80, (3): 4, (4): 1, (5): 1	(1): 94, (2): 97, (3): 1, (4): 1, (5): 0	(1): 77, (2): 92, (3): 0, (4): 0, (5): 0	(1): 99, (2): 99, (3): 1, (4): 0, (5): 0	(1): 97, (2): 94, (3): 3, (4): 0, (5): 0	(1): 99, (2): 95, (3): 0, (4): 1, (5): 0	(1): 93, (2): 84, (3): 2, (4): 7, (5): 0	(1): 99, (2): 51, (3): 6, (4): 0, (5): 0	(1): 98, (2): 64, (3): 1, (4): 1, (5): 0	(1): 100, (2): 73, (3): 0, (4): 0, (5): 0	
8.	(1): 0, (2): 1, (3): 8	(1): 1, (2): 40, (3): 39	(1): 1, (2): 52, (3): 32	(1): 0, (2): 24, (3): 40	(1): 0, (2): 0, (3): 14	(1): 0, (2): 2, (3): 7	(1): 1, (2): 29, (3): 56	(1): 0, (2): 40, (3): 27	(1): 4, (2): 37, (3): 46	(1): 1, (2): 26, (3): 48	(1): 1, (2): 36, (3): 56	
11	Ave. 2.434 <1 : 2 1 : 8 2 : 51 3 : 5 4 : 20 5 : 0 6 : 1 7 : 0 8 : 0 9 : 0 10 ≤ : 0	Ave. 1.512 <1 : 3 1 : 39 2 : 9 3 : 0 4 : 5 5 : 0 6 : 0 7 : 1 8 : 1 9 : 0 10 ≤ : 0	Ave. 1.119 <1 : 0 1 : 95 2 : 6 3 : 1 4 : 1 5 : 1 6 : 0 7 : 0 8 : 0 9 : 0 10 ≤ : 0	Ave. 1.494 <1 : 4 1 : 36 2 : 8 3 : 0 4 : 4 5 : 0 6 : 0 7 : 0 8 : 1 9 : 0 10 ≤ : 0	Ave. 2.496 <1 : 2 1 : 8 2 : 55 3 : 0 4 : 4 5 : 0 6 : 1 7 : 0 8 : 0 9 : 0 10 ≤ : 0	Ave. 1.504 <1 : 4 1 : 40 2 : 10 3 : 0 4 : 4 5 : 0 6 : 0 7 : 0 8 : 1 9 : 0 10 ≤ : 0	Ave. 1.117 <1 : 0 1 : 75 2 : 7 3 : 1 4 : 0 5 : 1 6 : 0 7 : 0 8 : 0 9 : 0 10 ≤ : 0	Ave. 1.299 <1 : 18 1 : 24 2 : 7 3 : 5 4 : 2 5 : 1 6 : 0 7 : 0 8 : 0 9 : 0 10 ≤ : 0	Ave. 2.955 <1 : 6 1 : 28 2 : 23 3 : 13 4 : 1 5 : 6 6 : 1 7 : 0 8 : 2 9 : 0 10 ≤ : 7	Ave. 3.054 <1 : 0 1 : 5 2 : 46 3 : 3 4 : 8 5 : 2 6 : 5 7 : 0 8 : 1 9 : 0 10 ≤ : 4	Ave. 3.156 <1 : 0 1 : 7 2 : 45 3 : 15 4 : 10 5 : 7 6 : 4 7 : 0 8 : 1 9 : 1 10 ≤ : 3	
12.	(1): 0, (2): 0, (3): 0	(1): 1, (2): 0, (3): 0	(1): 0, (2): 0, (3): 1	(1): 0, (2): 0, (3): 1	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	
13.	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. 8.5 <1 : 0 1 : 0 2 : 0 3 : 0 4 : 0 5 : 0 6 : 0 7 : 0 8 : 1 9 : 0 10 ≤ : 0	Ave. 10 <1 : 0 1 : 0 2 : 1 3 : 0 4 : 0 5 : 0 6 : 0 7 : 0 8 : 1 9 : 0 10 ≤ : 0	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. 6 <1 : 0 1 : 0 2 : 0 3 : 0 4 : 0 5 : 0 6 : 0 7 : 1 8 : 0 9 : 0 10 ≤ : 0	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -	Ave. Err <1 : - 1 : - 2 : - 3 : - 4 : - 5 : - 6 : - 7 : - 8 : - 9 : - 10 ≤ : -
14.	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	
15.	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	

Result of Household Questionnaires (Water Use)

Item	Dupli	Millie	Bati	Werota	Aykel	Dobre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
16.	Yes: 0, No: 0	Yes: 0, No: 1	Yes: 1, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 2	Yes: 0, No: 0	Yes: 0, No: 0
17.	Yes: 0, No: 0	Yes: 0, No: 1	Yes: 0, No: 1	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 0	Yes: 0, No: 2	Yes: 0, No: 0	Yes: 0, No: 0
18.	(1): 0, (2): 0, (3): 0, (4): 0, (5): 1	(1): 15, (2): 2, (3): 0, (4): 1, (5): 22	(1): 35, (2): 13, (3): 1, (4): 1, (5): 2	(1): 18, (2): 2, (3): 1, (4): 0, (5): 3	(1): 0, (2): 0, (3): 0, (4): 0, (5): 0	(1): 1, (2): 1, (3): 0, (4): 0, (5): 0	(1): 16, (2): 6, (3): 2, (4): 1, (5): 1	(1): 3, (2): 5, (3): 2, (4): 1, (5): 30	(1): 11, (2): 6, (3): 3, (4): 1, (5): 20	(1): 9, (2): 4, (3): 2, (4): 0, (5): 9	(1): 19, (2): 4, (3): 5, (4): 0, (5): 4
19.	(1): 1, (2): 0, (3): 0, (4): 0, (5): 0	(1): 38, (2): 1, (3): 0, (4): 1, (5): 0	(1): 50, (2): 3, (3): 0, (4): 0, (5): 0	(1): 23, (2): 0, (3): 0, (4): 0, (5): 0	(1): 0, (2): 0, (3): 0, (4): 0, (5): 0	(1): 2, (2): 0, (3): 0, (4): 0, (5): 0	(1): 26, (2): 0, (3): 0, (4): 0, (5): 0	(1): 41, (2): 0, (3): 0, (4): 0, (5): 0	(1): 40, (2): 1, (3): 0, (4): 0, (5): 0	(1): 24, (2): 0, (3): 0, (4): 0, (5): 0	(1): 31, (2): 0, (3): 0, (4): 0, (5): 1
20.	Ave: 90	Ave: 193.9	Ave: 78.66	Ave: 82.92	Ave: Err	Ave: 50	Ave: 87.46	Ave: 44.15	Ave: 91.71	Ave: 89.59	Ave: 59.97
	<10 : 90	<10 : 1	<10 : 4	<10 : 1	<10 : 0	<10 : 0	<10 : 0	<10 : 0	<10 : 0	<10 : 1	<10 : 2
	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 1	10 ≤ <20 : 0	10 ≤ <20 : 0	10 ≤ <20 : 1	10 ≤ <20 : 0
	20 ≤ <30 : 0	20 ≤ <30 : 1	20 ≤ <30 : 3	20 ≤ <30 : 1	20 ≤ <30 : 0	20 ≤ <30 : 1	20 ≤ <30 : 6	20 ≤ <30 : 12	20 ≤ <30 : 6	20 ≤ <30 : 2	20 ≤ <30 : 9
	30 ≤ <40 : 0	30 ≤ <40 : 3	30 ≤ <40 : 2	30 ≤ <40 : 1	30 ≤ <40 : 0	30 ≤ <40 : 0	30 ≤ <40 : 3	30 ≤ <40 : 5	30 ≤ <40 : 1	30 ≤ <40 : 0	30 ≤ <40 : 0
	40 ≤ <50 : 0	40 ≤ <50 : 0	40 ≤ <50 : 7	40 ≤ <50 : 3	40 ≤ <50 : 0	40 ≤ <50 : 0	40 ≤ <50 : 0	40 ≤ <50 : 7	40 ≤ <50 : 6	40 ≤ <50 : 1	40 ≤ <50 : 0
	50 ≤ <60 : 0	50 ≤ <60 : 1	50 ≤ <60 : 7	50 ≤ <60 : 1	50 ≤ <60 : 0	50 ≤ <60 : 0	50 ≤ <60 : 4	50 ≤ <60 : 11	50 ≤ <60 : 4	50 ≤ <60 : 7	50 ≤ <60 : 12
	60 ≤ <70 : 0	60 ≤ <70 : 3	60 ≤ <70 : 5	60 ≤ <70 : 6	60 ≤ <70 : 0	60 ≤ <70 : 0	60 ≤ <70 : 0	60 ≤ <70 : 2	60 ≤ <70 : 6	60 ≤ <70 : 0	60 ≤ <70 : 0
	70 ≤ <80 : 0	70 ≤ <80 : 0	70 ≤ <80 : 4	70 ≤ <80 : 0	70 ≤ <80 : 0	70 ≤ <80 : 1	70 ≤ <80 : 1	70 ≤ <80 : 1	70 ≤ <80 : 1	70 ≤ <80 : 10	70 ≤ <80 : 12
	80 ≤ <90 : 1	80 ≤ <90 : 15	80 ≤ <90 : 16	80 ≤ <90 : 10	80 ≤ <90 : 0	80 ≤ <90 : 0	80 ≤ <90 : 1	80 ≤ <90 : 1	80 ≤ <90 : 1	80 ≤ <90 : 0	80 ≤ <90 : 0
	90 ≤ <100 : 0	90 ≤ <100 : 11	90 ≤ <100 : 5	90 ≤ <100 : 3	90 ≤ <100 : 0	90 ≤ <100 : 0	90 ≤ <100 : 0	90 ≤ <100 : 0	90 ≤ <100 : 0	90 ≤ <100 : 0	90 ≤ <100 : 0
	100 ≤ : 0	100 ≤ : 15	100 ≤ : 11	100 ≤ : 2	100 ≤ : 0	100 ≤ : 0	100 ≤ : 12	100 ≤ : 2	100 ≤ : 16	100 ≤ : 5	100 ≤ : 3
21.	Ave: 4.5	Ave: 18.55	Ave: 9.689	Ave: 9.282	Ave: Err	Ave: 16	Ave: 6.167	Ave: 5.098	Ave: 8.171	Ave: 8.556	Ave: 7.395
	≤1 : 0	≤1 : 2	≤1 : 2	≤1 : 0	≤1 : 0	≤1 : 0	≤1 : 0	≤1 : 0	≤1 : 0	≤1 : 0	≤1 : 0
	1 : 0	1 : 0	1 : 0	1 : 1	1 : 0	1 : 0	1 : 0	1 : 2	1 : 0	1 : 0	1 : 1
	2 : 0	2 : 0	2 : 1	2 : 0	2 : 0	2 : 0	2 : 0	2 : 1	2 : 0	2 : 1	2 : 2
	3 : 1	3 : 16	3 : 27	3 : 16	3 : 3	3 : 0	3 : 5	3 : 18	3 : 3	3 : 3	3 : 3
	4 : 1	4 : 2	4 : 6	4 : 2	4 : 4	4 : 0	4 : 6	4 : 4	4 : 3	4 : 4	4 : 4
	5 : 0	5 : 2	5 : 1	5 : 0	5 : 5	5 : 0	5 : 4	5 : 5	5 : 9	5 : 2	5 : 5
	6 : 0	6 : 2	6 : 7	6 : 2	6 : 6	6 : 0	6 : 9	6 : 8	6 : 6	6 : 7	6 : 3
	7 : 0	7 : 1	7 : 5	7 : 4	7 : 7	7 : 1	7 : 2	7 : 1	7 : 1	7 : 1	7 : 5
	8 : 0	8 : 2	8 : 5	8 : 8	8 : 8	8 : 0	8 : 1	8 : 0	8 : 4	8 : 4	8 : 5
	9 : 0	9 : 0	9 : 4	9 : 9	9 : 9	9 : 0	9 : 0	9 : 2	9 : 0	9 : 0	9 : 0
	10 ≤ : 0	10 ≤ : 29	10 ≤ : 16	10 ≤ : 5	10 ≤ : 10	10 ≤ : 1	10 ≤ : 3	10 ≤ : 5	10 ≤ : 15	10 ≤ : 8	10 ≤ : 10
22.	(1): 0, (2): 0, (3): 1	(1): 12, (2): 25, (3): 4	(1): 31, (2): 9, (3): 12	(1): 3, (2): 12, (3): 8	(1): 0, (2): 0, (3): 0	(1): 1, (2): 1, (3): 0	(1): 2, (2): 21, (3): 7	(1): 2, (2): 32, (3): 7	(1): 7, (2): 29, (3): 5	(1): 3, (2): 16, (3): 8	(1): 4, (2): 29, (3): 4
23. 1)	(1): 3, (2): 1, (3): 4, (4): 0 Err	(1): 18, (2): 154.7m, (3): 9, (4): 10, (5): 3	(1): 13, (2): 11, (3): 7, (4): 0 Err	(1): 5, (2): 11, (3): 13, (4): 13	(1): 5, (2): 6, (3): 8, (4): 2	(1): 1, (2): 3, (3): 2, (4): 1	(1): 22, (2): 19, (3): 10, (4): 11	(1): 10, (2): 6, (3): 5, (4): 7	(1): 13, (2): 14, (3): 12, (4): 7	(1): 5, (2): 24m, (3): 10, (4): 14, (5): 19	(1): 9, (2): 5, (3): 14, (4): 28
	40.33m	154.7m	44.54m	17.36m	42m	80m	46.36m	65m	56.54m	24m	61.11m
	Err	Err	Err	500m	500m	500m	509.1m	928.6m	486.4m	1153m	560.7m

Result of Household Questionnaires (Water Use)

Item	Dupdi	Mille	Bati	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
23. 2)	1 time: 0 2 time: 4 3 time: 1 4 time: 0 5 time: 0	1 time: 4 2 time: 3 3 time: 0 4 time: 1 5 time: 1	1 time: 4 2 time: 5 3 time: 12 4 time: 6 5 time: 2	1 time: 3 2 time: 14 3 time: 18 4 time: 6 5 time: 1	1 time: 6 2 time: 9 3 time: 4 4 time: 2 5 time: 0	1 time: 3 2 time: 1 3 time: 0 4 time: 2 5 time: 1	1 time: 22 2 time: 20 3 time: 17 4 time: 1 5 time: 2	1 time: 1 2 time: 18 3 time: 3 4 time: 6 5 time: 0	1 time: 1 2 time: 17 3 time: 19 4 time: 3 5 time: 3	1 time: 10 2 time: 25 3 time: 10 4 time: 1 5 time: 0	1 time: 13 2 time: 24 3 time: 14 4 time: 5 5 time: 0
23. 3)	Ave. 82.73 min ≤10 : 0 10 ≤ <20 : 0 20 ≤ <30 : 1 30 ≤ <40 : 0 40 ≤ <50 : 4 50 ≤ <60 : 1 60 ≤ <70 : 2 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 6 100 ≤ : 5	Ave. 18.18 min ≤10 : 0 10 ≤ <20 : 3 20 ≤ <30 : 0 30 ≤ <40 : 2 40 ≤ <50 : 0 50 ≤ <60 : 0 60 ≤ <70 : 0 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 0 100 ≤ : 0	Ave. 69.02 min ≤10 : 0 10 ≤ <20 : 3 20 ≤ <30 : 2 30 ≤ <40 : 18 40 ≤ <50 : 7 50 ≤ <60 : 1 60 ≤ <70 : 8 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 9 100 ≤ : 10	Ave. 18.28 min ≤10 : 0 10 ≤ <20 : 4 20 ≤ <30 : 1 30 ≤ <40 : 0 40 ≤ <50 : 2 50 ≤ <60 : 0 60 ≤ <70 : 0 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 0 100 ≤ : 0	Ave. 82.62 min ≤10 : 0 10 ≤ <20 : 0 20 ≤ <30 : 0 30 ≤ <40 : 0 40 ≤ <50 : 3 50 ≤ <60 : 1 60 ≤ <70 : 6 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 6 100 ≤ : 5	Ave. 19.29 min ≤10 : 0 10 ≤ <20 : 4 20 ≤ <30 : 1 30 ≤ <40 : 2 40 ≤ <50 : 0 50 ≤ <60 : 0 60 ≤ <70 : 0 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 0 100 ≤ : 0	Ave. 67.34 min ≤10 : 0 10 ≤ <20 : 3 20 ≤ <30 : 2 30 ≤ <40 : 17 40 ≤ <50 : 7 50 ≤ <60 : 0 60 ≤ <70 : 10 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 10 100 ≤ : 13	Ave. 27.78 min ≤10 : 0 10 ≤ <20 : 8 20 ≤ <30 : 5 30 ≤ <40 : 3 40 ≤ <50 : 3 50 ≤ <60 : 0 60 ≤ <70 : 3 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 0 100 ≤ : 0	Ave. 31.7 min ≤10 : 0 10 ≤ <20 : 9 20 ≤ <30 : 8 30 ≤ <40 : 18 40 ≤ <50 : 4 50 ≤ <60 : 1 60 ≤ <70 : 5 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 2 100 ≤ : 0	Ave. 173.3 min ≤10 : 0 10 ≤ <20 : 0 20 ≤ <30 : 1 30 ≤ <40 : 1 40 ≤ <50 : 0 50 ≤ <60 : 0 60 ≤ <70 : 8 70 ≤ <80 : 0 80 ≤ <90 : 0 90 ≤ <100 : 0 100 ≤ : 38	Ave. 98.13 min ≤10 : 0 10 ≤ <20 : 0 20 ≤ <30 : 4 30 ≤ <40 : 10 40 ≤ <50 : 1 50 ≤ <60 : 0 60 ≤ <70 : 10 70 ≤ <80 : 0 80 ≤ <90 : 2 90 ≤ <100 : 1 100 ≤ : 28
23. 4)	1 person : 5 2 persons : 1 3 persons : 2 4 persons : 0 5 persons : 0	1 person : 18 2 persons : 8 3 persons : 7 4 persons : 7 5 persons : 0	1 person : 23 2 persons : 7 3 persons : 1 4 persons : 0 5 persons : 0	1 person : 39 2 persons : 3 3 persons : 1 4 persons : 0 5 persons : 0	1 person : 16 2 persons : 4 3 persons : 1 4 persons : 0 5 persons : 0	1 person : 6 2 persons : 1 3 persons : 0 4 persons : 0 5 persons : 0	1 person : 48 2 persons : 13 3 persons : 1 4 persons : 0 5 persons : 0	1 person : 20 2 persons : 7 3 persons : 1 4 persons : 0 5 persons : 0	1 person : 33 2 persons : 11 3 persons : 3 4 persons : 0 5 persons : 0	1 person : 37 2 persons : 7 3 persons : 4 4 persons : 0 5 persons : 0	1 person : 37 2 persons : 9 3 persons : 1 4 persons : 0 5 persons : 0
23. 5)	(1): 5, (2): 4 (3): 2, (4): 1 (1): 6, (2): 0, (3): 1, (4): 39, (5): 5	(1): 41, (2): 26 (3): 2, (4): 0 (1): 0, (2): 0, (3): 1, (4): 21, (5): 1	(1): 2, (2): 26 (3): 1, (4): 7 (1): 0, (2): 1, (3): 5, (4): 21, (5): 4	(1): 2, (2): 33 (3): 3, (4): 10 (1): 1, (2): 1, (3): 4, (4): 26, (5): 12	(1): 0, (2): 12 (3): 1, (4): 10 (1): 1, (2): 0, (3): 4, (4): 26, (5): 12	(1): 0, (2): 7 (3): 0, (4): 1 (1): 0, (2): 0, (3): 0, (4): 3, (5): 18	(1): 0, (2): 51 (3): 3, (4): 11 (1): 0, (2): 0, (3): 0, (4): 3, (5): 4	(1): 0, (2): 23 (3): 4, (4): 8 (1): 1, (2): 0, (3): 0, (4): 61, (5): 0	(1): 0, (2): 42 (3): 1, (4): 5 (1): 3, (2): 0, (3): 0, (4): 24, (5): 0	(1): 0, (2): 43 (3): 0, (4): 17 (1): 1, (2): 44, (3): 0, (4): 2, (5): 0	(1): 0, (2): 45 (3): 1, (4): 20 (1): 0, (2): 0, (3): 5, (4): 46, (5): 5
24.	(1): 0, (2): 0, (3): 0, (4): 2, (5): 6	(1): 0, (2): 0, (3): 1, (4): 39, (5): 1	(1): 0, (2): 1, (3): 5, (4): 21, (5): 4	(1): 1, (2): 1, (3): 4, (4): 26, (5): 12	(1): 1, (2): 0, (3): 4, (4): 26, (5): 12	(1): 0, (2): 0, (3): 0, (4): 3, (5): 18	(1): 0, (2): 0, (3): 0, (4): 3, (5): 4	(1): 1, (2): 0, (3): 0, (4): 61, (5): 0	(1): 3, (2): 0, (3): 0, (4): 24, (5): 0	(1): 1, (2): 44, (3): 0, (4): 2, (5): 0	(1): 0, (2): 0, (3): 5, (4): 46, (5): 5
25. 1)	Ave. 40.63 (Ars: 8)	Ave. 70.37 (Ars: 42)	Ave. 26.45 (Ars: 31)	Ave. 32.67 (Ars: 43)	Ave. 29.76¢ (Ars: 21)	Ave. 27.86¢ (Ars: 7)	Ave. 26.1 (Ars: 62)	Ave. 28.57 (Ars: 28)	Ave. 41.84 (Ars: 47)	Ave. 30.77 (Ars: 48)	31.25 (Ars: 56)
25. 2)	Ave. 0.09 (Ars: 8)	Ave. 0.982 (Ars: 40)	Ave. 0.068 (Ars: 30)	Ave. 0.065 (Ars: 42)	Ave. 0.119 Birr (Ars: 21)	Ave. 0.671 (Ars: 7)	Ave. 0.912 (Ars: 61)	Ave. 0.109 (Ars: 28)	Ave. 4.766 (Ars: 47)	Ave. 0.43 (Ars: 48)	Ave. 0.421 (Ars: 56)
26.	(1): 5, (2): 2, (3): 1	(1): 35, (2): 1, (3): 4	(1): 25, (2): 5, (3): 0	(1): 34, (2): 5, (3): 0	(1): 20, (2): 0, (3): 0	(1): 7, (2): 0, (3): 0	(1): 53, (2): 6, (3): 0	(1): 21, (2): 3, (3): 0	(1): 41, (2): 0, (3): 0	(1): 43, (2): 0, (3): 1	(1): 43, (2): 7, (3): 0
27.	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 8, (2): 2, (3): 1	(1): 1, (2): 0, (3): 0	(1): 20, (2): 1, (3): 1	(1): 0, (2): 0, (3): 0	(1): 4, (2): 0, (3): 0	(1): 9, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0
28.	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 11	(1): 0, (2): 0, (3): 1	(1): 0, (2): 0, (3): 22	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 4	(1): 0, (2): 1, (3): 7	(1): 0, (2): 0, (3): 0	(1): 0, (2): 0, (3): 0
29. 1)	(1): 0 Err (2): 0 (3): 0	(1): 0 Err (2): 0 (3): 0	(1): 0 Err (2): 0 (3): 0	(1): 0 Err (2): 3 (3): 6	(1): 0 Err (2): 1 (3): 0	(1): 7 32.86 (2): 4 (3): 2	(1): 0 Err (2): 0 (3): 0	(1): 0 Err (2): 2 (3): 1	(1): 1 90 (2): 0 (3): 2	(1): 0 Err (2): 0 (3): 0	(1): 0 Err (2): 0 (3): 0

Result of Household Questionnaires (Water Use)

Item	Dupdi	Mille	Badi	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Deyn
29. 2)	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 2 300 1 Time : 6 2 Time : 5 3 Time : 0 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 1 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 9 523.3 1 Time : 4 2 Time : 14 3 Time : 3 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 1 600 1 Time : 3 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 5 950 1 Time : 1 2 Time : 4 3 Time : 3 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0	(4): 0 Err 1 Time : 0 2 Time : 0 3 Time : 0 4 Time : 0 5 Time : 0
29. 3)					Ave. 30 min	Ave. 43.68 min	Ave. Err	Ave. 24	Ave. 17.02	Ave. Err	Ave. Err
29. 4)	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0	1 person : 11 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 1, (2): 10, (3): 0, (4): 0	1 person : 1 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 1, (3): 0, (4): 0	1 person : 19 2 person : 3 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 17, (3): 1, (4): 6	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0	1 person : 2 2 person : 2 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 2, (3): 0, (4): 1	1 person : 3 2 person : 3 3 person : 2 4 person : 0 5 person : 0 (1): 1, (2): 8, (3): 0, (4): 2	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0	1 person : 0 2 person : 0 3 person : 0 4 person : 0 5 person : 0 (1): 0, (2): 0, (3): 0, (4): 0
29. 5)	Ave. Err (Ars: 0)	Ave. Err (Ars: 0)	Ave. Err (Ars: 0)	Ave. 19.55 (Ars: 11)	Ave. 25¢ (Ars: 1)	Ave. 30.23 (Ars: 22)	Ave. Err (Ars: 0)	Ave. 22.75¢ (Ars: 4)	Ave. 55.63 (Ars: 8)	Ave. Err (Ars: 0)	Ave. Err (Ars: 0)
30. 1)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 10 No: 1 Ave. 0.089 (Ars: 10)	Yes: 1 No: 0 Ave. 0.2 Birr (Ars: 1)	Yes: 19 No: 3 Ave. 0.4059 (Ars: 19)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 3 No: 1 Ave. 23.33 (Ars: 3)	Yes: 0 No: 8 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)
30. 2)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 2 No: 8 (1): 2, (2): 1, (3): 3	Yes: 0 No: 1 (1): 0, (2): 2, (3): 2	Yes: 16 No: 6 (1): 13, (2): 5, (3): 2	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 3 No: 1 (1): 0, (2): 2, (3): 3	Yes: 6 No: 2 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 11, (2): 0, (3): 4	Yes: 0 No: 0 (1): 10, (2): 0, (3): 2
30. 3)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 44.86¢ (Ars: 36)	Yes: 13 No: 6 Ave. 51.63¢ (Ars: 43)	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.15 Birr	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 10 No: 8 Ave. 58.33¢ (Ars: 6)	Yes: 10 No: 2 Ave. 23.75¢ (Ars: 4)
31.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 0.227	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15
32.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15
33.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15
34.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15
35.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15
36.	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 1 No: 5 Ave. 4.231	Yes: 1 No: 3 Ave. 0.48 Birr	Yes: 13 No: 6 Ave. 0.727	Yes: 0 No: 0 (1): 0, (2): 0, (3): 0	Yes: 0 No: 5 Ave. 0.959	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. Err (Ars: 0)	Yes: 0 No: 0 Ave. 0.15

Result of Household Questionnaires (Water Use)

Item	Dupli	Mille	Bati	Werota	Aykel	Debre Tabor	Nefas Mewcha	Chagni	Buro	Bichena	Dejen
	0.9-1.0 : 1 1.0- : 62 (1): 8, (2): 0, (3): 86 Yes: 7 No: 88 (1): 0, (2): 5, (3): 1 (1): 0 Err (2): 1 (3): 1 (4): 3, 2001m 1 time : 2 2 times : 3 3 times : 0 4 times : 0 5 times : 0 Ave: 128.5 (Avs: 79)	0.9-1.0 : 0 1.0- : 9 (1): 6, (2): 1, (3): 22 Yes: 12 No: 17 (1): 2, (2): 25, (3): 1 (1): 0 Err (2): 1 (3): 7 (4): 17, 1130m 1 time : 3 2 times : 2 3 times : 4 4 times : 0 5 times : 0 Ave: 76.04 (Avs: 51)	0.9-1.0 : 0 1.0- : 0 (1): 0, (2): 0, (3): 14 Yes: 3 No: 11 (1): 2, (2): 11, (3): 0 (1): 0 Err (2): 3 (3): 2 (4): 8, 1063 1 time : 3 2 times : 4 3 times : 0 4 times : 0 5 times : 0 Ave: 95.13 (Avs: 94)	0.9-1.0 : 0 1.0- : 0 (1): 8, (2): 0, (3): 33 Yes: 6 No: 35 (1): 4, (2): 15, (3): 0 (1): 0 Err (2): 3 (3): 1 (4): 14, 950.1 1 time : 10 2 times : 7 3 times : 1 4 times : 0 5 times : 0 Ave: 86.58 (Avs: 89)	0.9-1.0 : 0 1.0- : 3 (1): 14, (2): 13, (3): 19 Yes: 7 No: 28 (1): 78, (2): 14, (3): 1 (1): 0 Err (2): 1 (3): 4 (4): 86, 1190m 1 time : 32 2 times : 36 3 times : 14 4 times : 5 5 times : 9 Ave: 130.5 (Avs: 81)	0.9-1.0 : 1 1.0- : 3 (1): 14, (2): 3, (3): 26 Yes: 27 No: 16 (1): 49, (2): 7, (3): 0 (1): 0 Err (2): 3 (3): 3 (4): 48, 1048m 1 time : 26 2 times : 18 3 times : 8 4 times : 2 5 times : 0 Ave: 79.07 (Avs: 54)	0.9-1.0 : 0 1.0- : 1 (1): 19, (2): 0, (3): 21 Yes: 10 No: 30 (1): 82, (2): 64, (3): 0 (1): 1 1200m (2): 4 (3): 12 (4): 81, 1089m 1 time : 29 2 times : 52 3 times : 12 4 times : 1 5 times : 1 Ave: 96.68 (Avs: 99)	0.9-1.0 : 0 1.0- : 0 (1): 0, (2): 0, (3): 1 Yes: 1 No: 0 (1): 62, (2): 61, (3): 0 (1): 7 58.57m (2): 12 (3): 14 (4): 58, 1031m 1 time : 28 2 times : 43 3 times : 13 4 times : 4 5 times : 2 Ave: 51.62 (Avs: 91)	0.9-1.0 : 0 1.0- : 0 (1): 0, (2): 0, (3): 0 Yes: 0 No: 0 (1): 67, (2): 52, (3): 6 (1): 1 1200m (2): 10 (3): 18 (4): 67, 999.5m 1 time : 19 2 times : 47 3 times : 19 4 times : 4 5 times : 4 Ave: 56.7 (Avs: 98)	0.9-1.0 : 0 1.0- : 0 (1): 2, (2): 0, (3): 4 Yes: 1 No: 5 (1): 27, (2): 28, (3): 1 (1): 0 Err (2): 2 (3): 3 (4): 52, 1526 1 time : 31 2 times : 2 3 times : 3 4 times : 1 5 times : 0 Ave: 147.2 (Avs: 56)	0.9-1.0 : 0 1.0- : 0 (1): 3, (2): 1, (3): 0 Yes: 0 No: 4 (1): 79, (2): 10, (3): 2 (1): 0 Err (2): 0 (3): 2 (4): 89, 1753 1 time : 25 2 times : 2 3 times : 12 4 times : 7 5 times : 1 Ave: 135.7 (Avs: 91)
37.											
38.											
39.											
40. 1)											
40. 2)											
40. 3)											
40. 4)											
40. 5)											
41.											
42.											
43. 1)											
43. 2)											
43. 3)											
43. 4)											
2.											

Result of Household Questionnaires (Sanitary Condition)

Item	Dupli	Mille	Bati	Werota	Aykel	Debro Tabor	Nefas Mewcha	Chagni	Bure	Bichona	Dejen	
1.	Male: 58 Female: 41 Ave. 1.744	Male: 58 Female: 41 Ave. 1.615	Male: 50 Female: 50 Ave. 1.966	Male: 45 Female: 53 Ave. 1.728	Male: 27 Female: 33 Ave. 1.573	Male: 56 Female: 44 Ave. 1.723	Male: 67 Female: 33 Ave. 1.8	Male: 73 Female: 26 Ave. 1.721	Male: 74 Female: 24 Ave. 2.311	Male: 73 Female: 27 Ave. 1.747	Male: 68 Female: 32 Ave. 2.133	
2.	Male: 1.681 Female: 3.083 Ave. 1.569	Male: 1.604 Female: 2.818 Ave. 1.603	Male: 1.959 Female: 3.657 Ave. 2.045	Male: 2.01 Female: 3.222 Ave. 2.058	Male: 1.64 Female: 2.82 Ave. 1.92	Male: 2.111 Female: 3.571 Ave. 2.016	Male: 1.93 Female: 3.48 Ave. 1.71	Male: 1.91 Female: 3.253 Ave. 1.945	Male: 2.34 Female: 4.24 Ave. 2.985	Male: 1.827 Female: 3.21 Ave. 1.806	Male: 1.827 Female: 3.21 Ave. 1.806	Male: 2.14 Female: 3.9 Ave. 1.862
3.	Male: 1.543 Female: 2.277 Ave. 1.910	Male: 1.479 Female: 2.219 Ave. 1.849	Male: 1.984 Female: 3.159 Ave. 2.071	Male: 2.09 Female: 3.329 Ave. 2.210	Male: 1.90 Female: 3.11 Ave. 2.505	Male: 1.661 Female: 2.715 Ave. 2.188	Male: 1.67 Female: 2.70 Ave. 2.185	Male: 2.125 Female: 2.826 Ave. 2.475	Male: 1.696 Female: 3.036 Ave. 2.366	Male: 2.372 Female: 3.27 Ave. 2.826	Male: 2.031 Female: 2.976 Ave. 2.503	Male: 2.031 Female: 2.976 Ave. 2.503
4.	Male: 1.64 Female: 3.2 Ave. 2.42	Male: 1.94 Female: 3.0 Ave. 2.47	Male: 1.79 Female: 3.4 Ave. 2.59	Male: 1.98 Female: 3.0 Ave. 2.49	Male: 1.100 Female: 3.0 Ave. 2.05	Male: 1.84 Female: 3.8 Ave. 2.82	Male: 1.81 Female: 3.3 Ave. 2.55	Male: 1.61 Female: 3.15 Ave. 2.38	Male: 1.82 Female: 3.4 Ave. 2.61	Male: 1.84 Female: 3.5 Ave. 2.69	Male: 1.84 Female: 3.5 Ave. 2.69	Male: 1.82 Female: 3.13 Ave. 2.47
5.	Yes: 8 No: 6	Yes: 65 No: 33	Yes: 22 No: 78	Yes: 85 No: 14	Yes: 70 No: 30	Yes: 43 No: 56	Yes: 34 No: 66	Yes: 37 No: 63	Yes: 61 No: 38	Yes: 42 No: 58	Yes: 33 No: 67	
6.	Yes: 8 No: 55	Yes: 8 No: 68	Yes: 3 No: 50	Yes: 10 No: 46	Yes: 16 No: 49	Yes: 17 No: 47	Yes: 14 No: 52	Yes: 3 No: 87	Yes: 30 No: 69	Yes: 20 No: 80	Yes: 23 No: 75	
7.	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0	(1) Yes: 0 No: 0 (2) Yes: 0 No: 0 (3) Yes: 0 No: 0 (4) Yes: 0 No: 0 (5) Yes: 0 No: 0 (6) Yes: 0 No: 0
8.	Ave. 1752 <100: 2 100 ~ 200: 0 200 ~ 300: 0 300 ~ 400: 1 400 ~ 500: 2 500 ~ 600: 6 600 ~ 700: 4 700 ~ 800: 5 800 ~ 900: 3 900 ~ 1000: 0 1000 ~ 1100: 31	Ave. <100: 3 100 ~ 200: 3 200 ~ 300: 2 300 ~ 400: 3 400 ~ 500: 1 500 ~ 600: 1 600 ~ 700: 6 700 ~ 800: 11 800 ~ 900: 8 900 ~ 1000: 6 1000 ~ 1100: 5	Ave. <100: 0 100 ~ 200: 1 200 ~ 300: 1 300 ~ 400: 0 400 ~ 500: 0 500 ~ 600: 0 600 ~ 700: 1 700 ~ 800: 2 800 ~ 900: 0 900 ~ 1000: 3 1000 ~ 1100: 43	Ave. <100: 14 100 ~ 200: 7 200 ~ 300: 6 300 ~ 400: 3 400 ~ 500: 1 500 ~ 600: 5 600 ~ 700: 3 700 ~ 800: 1 800 ~ 900: 2 900 ~ 1000: 0 1000 ~ 1100: 6	Ave. <100: 24 100 ~ 200: 12 200 ~ 300: 11 300 ~ 400: 5 400 ~ 500: 0 500 ~ 600: 0 600 ~ 700: 0 700 ~ 800: 0 800 ~ 900: 0 900 ~ 1000: 0 1000 ~ 1100: 2	Ave. <100: 32 100 ~ 200: 10 200 ~ 300: 1 300 ~ 400: 2 400 ~ 500: 1 500 ~ 600: 5 600 ~ 700: 2 700 ~ 800: 0 800 ~ 900: 0 900 ~ 1000: 0 1000 ~ 1100: 3	Ave. <100: 0 100 ~ 200: 0 200 ~ 300: 1 300 ~ 400: 2 400 ~ 500: 2 500 ~ 600: 1 600 ~ 700: 3 700 ~ 800: 1 800 ~ 900: 4 900 ~ 1000: 3 1000 ~ 1100: 37	Ave. <100: 0 100 ~ 200: 0 200 ~ 300: 1 300 ~ 400: 2 400 ~ 500: 2 500 ~ 600: 1 600 ~ 700: 3 700 ~ 800: 1 800 ~ 900: 4 900 ~ 1000: 3 1000 ~ 1100: 3	Ave. <100: 9 100 ~ 200: 7 200 ~ 300: 5 300 ~ 400: 5 400 ~ 500: 2 500 ~ 600: 9 600 ~ 700: 5 700 ~ 800: 8 800 ~ 900: 3 900 ~ 1000: 2 1000 ~ 1100: 9	Ave. <100: 2 100 ~ 200: 3 200 ~ 300: 3 300 ~ 400: 9 400 ~ 500: 6 500 ~ 600: 8 600 ~ 700: 5 700 ~ 800: 4 800 ~ 900: 1 900 ~ 1000: 0 1000 ~ 1100: 18	Ave. <100: 6 100 ~ 200: 2 200 ~ 300: 1 300 ~ 400: 0 400 ~ 500: 3 500 ~ 600: 6 600 ~ 700: 3 700 ~ 800: 0 800 ~ 900: 2 900 ~ 1000: 0 1000 ~ 1100: 14	Ave. <100: 6 100 ~ 200: 0 200 ~ 300: 1 300 ~ 400: 0 400 ~ 500: 0 500 ~ 600: 4 600 ~ 700: 3 700 ~ 800: 3 800 ~ 900: 2 900 ~ 1000: 2 1000 ~ 1100: 28
9.	Yes: 35 No: 65 Men: 19 Women: 16 Boys: 0 Girls: 0	Yes: 29 No: 68 Men: 14 Women: 20 Boys: 1 Girls: 0	Yes: 56 No: 44 Men: 29 Women: 41 Boys: 9 Girls: 2	Yes: 19 No: 74 Men: 9 Women: 10 Boys: 1 Girls: 2	Yes: 49 No: 51 Men: 23 Women: 35 Boys: 1 Girls: 8	Yes: 52 No: 48 Men: 25 Women: 48 Boys: 1 Girls: 5	Yes: 42 No: 58 Men: 20 Women: 33 Boys: 1 Girls: 1	Yes: 21 No: 76 Men: 10 Women: 17 Boys: 2 Girls: 1	Yes: 27 No: 73 Men: 19 Women: 21 Boys: 0 Girls: 0	Yes: 3 No: 92 Men: 6 Women: 6 Boys: 0 Girls: 1	Yes: 4 No: 96 Men: 4 Women: 1 Boys: 0 Girls: 0	
10.	Yes: 72 No: 28 Men: 40 Women: 30 Boys: 4 Girls: 3	Yes: 60 No: 40 Men: 34 Women: 36 Boys: 6 Girls: 2	Yes: 56 No: 44 Men: 35 Women: 40 Boys: 6 Girls: 2	Yes: 52 No: 45 Men: 30 Women: 21 Boys: 4 Girls: 2	Yes: 65 No: 35 Men: 26 Women: 38 Boys: 3 Girls: 8	Yes: 70 No: 30 Men: 40 Women: 53 Boys: 8 Girls: 5	Yes: 60 No: 40 Men: 37 Women: 41 Boys: 6 Girls: 3	Yes: 24 No: 74 Men: 13 Women: 16 Boys: 1 Girls: 2	Yes: 32 No: 68 Men: 25 Women: 21 Boys: 3 Girls: 1	Yes: 42 No: 58 Men: 22 Women: 27 Boys: 6 Girls: 5	Yes: 37 No: 63 Men: 21 Women: 15 Boys: 9 Girls: 3	



Result of Household Questionnaires (Sanitary Condition)

Item.	Dupli	Mille	Bati	Werota	Aykel	Dobre Tabor	Nefas Mewcha	Chagni	Bure	Bichena	Dejen
11.	1) Yes: 28 No: 72	Yes: 29 No: 71	Yes: 38 No: 62	Yes: 8 No: 90	Yes: 50 No: 50	Yes: 59 No: 41	Yes: 74 No: 26	Yes: 27 No: 71	Yes: 33 No: 66	Yes: 31 No: 68	Yes: 33 No: 67
	Men: 13 Women: 12 Boys: 4 Girls: 2	Men: 31 Women: 19 Boys: 4 Girls: 2	Men: 26 Women: 22 Boys: 3 Girls: 1	Men: 2 Women: 5 Boys: 0 Girls: 1	Men: 27 Women: 31 Boys: 7 Girls: 8	Men: 30 Women: 44 Boys: 5 Girls: 9	Men: 38 Women: 47 Boys: 16 Girls: 14	Men: 16 Women: 25 Boys: 7 Girls: 5	Men: 32 Women: 27 Boys: 4 Girls: 3	Men: 13 Women: 19 Boys: 4 Girls: 4	Men: 16 Women: 13 Boys: 4 Girls: 6
12.	1) Yes: 63 No: 36	Yes: 31 No: 18	Yes: 76 No: 24	Yes: 65 No: 33	Yes: 67 No: 32	Yes: 95 No: 5	Yes: 90 No: 10	Yes: 68 No: 31	Yes: 56 No: 44	Yes: 52 No: 48	Yes: 71 No: 29
	Men: 33 Women: 35 Boys: 3 Girls: 0	Men: 48 Women: 59 Boys: 1 Girls: 0	Men: 38 Women: 59 Boys: 5 Girls: 1	Men: 32 Women: 26 Boys: 8 Girls: 2	Men: 27 Women: 37 Boys: 9 Girls: 9	Men: 43 Women: 60 Boys: 23 Girls: 5	Men: 58 Women: 58 Boys: 7 Girls: 7	Men: 40 Women: 33 Boys: 17 Girls: 9	Men: 43 Women: 34 Boys: 2 Girls: 0	Men: 37 Women: 25 Boys: 5 Girls: 6	Men: 40 Women: 38 Boys: 5 Girls: 5
13.	1) 20 (2) 11	(1) 17 (2) 9	(1) 17 (2) 10	(1) 6 (2) 13	(1) 6 (2) 0	(1) 15 (2) 2	(1) 0 (2) 2	(1) 8 (2) 1	(1) 9 (2) 5	(1) 16 (2) 3	(1) 13 (2) 5
	(3) 69	(3) 7	(3) 73	(3) 78	(3) 94	(3) 81	(3) 98	(3) 91	(3) 86	(3) 81	(3) 82
14. (1)	1) 1 person: 8	1 person: 8	1 person: 4	1 person: 2	1 person: 9	1 person: 10	1 person: 13	1 person: 19	1 person: 13	1 person: 23	1 person: 11
	2) 3	2) 6	2) 1	2) 4	2) 6	2) 4	2) 10	2) 8	2) 6	2) 12	2) 5
14. (2)	2) 11	2) 15	2) 8	2) 6	2) 4	2) 3	2) 3	2) 3	2) 3	2) 3	2) 3
	3) 0	3) 5	3) 0	3) 1	3) 0	3) 0	3) 0	3) 0	3) 0	3) 0	3) 0
15. (1)	1) 5	1) 14	1) 4	1) 11	1) 9	1) 7	1) 6	1) 14	1) 7	1) 9	1) 2
	2) 6	2) 4	2) 0	2) 6	2) 4	2) 0	2) 7	2) 6	2) 2	2) 2	2) 2
15. (2)	3) 0	3) 3	3) 1	3) 3	3) 0	3) 0	3) 0	3) 1	3) 0	3) 0	3) 0
	4) 0	4) 4	4) 0	4) 0	4) 1	4) 0	4) 0	4) 0	4) 1	4) 1	4) 0
15. (3)	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0
	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5
15. (4)	Men: 11	Men: 12	Men: 9	Men: 2	Men: 6	Men: 4	Men: 6	Men: 5	Men: 7	Men: 7	Men: 2
	Women: 3	Women: 15	Women: 2	Women: 5	Women: 6	Women: 1	Women: 11	Women: 4	Women: 63	Women: 11	Women: 2
15. (5)	Boys: 5	Boys: 9	Boys: 6	Boys: 9	Boys: 6	Boys: 10	Boys: 15	Boys: 6	Boys: 8	Boys: 8	Boys: 3
	Girls: 2	Girls: 3	Girls: 1	Girls: 3	Girls: 11	Girls: 9	Girls: 0	Girls: 1	Girls: 2	Girls: 3	Girls: 0
15. (6)	Yes: 12 No: 86	Yes: 22 No: 75	Yes: 5 No: 93	Yes: 18 No: 80	Yes: 12 No: 87	Yes: 8 No: 92	Yes: 12 No: 85	Yes: 19 No: 79	Yes: 3 No: 96	Yes: 11 No: 83	Yes: 6 No: 94
	1 person: 5	1 person: 14	1 person: 4	1 person: 11	1 person: 9	1 person: 7	1 person: 6	1 person: 14	1 person: 4	1 person: 9	1 person: 2
15. (7)	2) 6	2) 4	2) 0	2) 6	2) 4	2) 0	2) 7	2) 6	2) 2	2) 2	2) 2
	3) 0	3) 3	3) 1	3) 3	3) 0	3) 0	3) 0	3) 1	3) 0	3) 0	3) 0
15. (8)	4) 0	4) 4	4) 0	4) 0	4) 0	4) 1	4) 0	4) 0	4) 1	4) 1	4) 0
	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 1	5) 1	5) 0
15. (9)	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5
	Yes: 20 No: 06	Yes: 42 No: 51	Yes: 18 No: 73	Yes: 19 No: 79	Yes: 27 No: 72	Yes: 23 No: 77	Yes: 23 No: 74	Yes: 15 No: 84	Yes: 23 No: 6	Yes: 20 No: 74	Yes: 7 No: 90
15. (10)	Men: 11	Men: 12	Men: 9	Men: 2	Men: 6	Men: 4	Men: 6	Men: 5	Men: 7	Men: 7	Men: 2
	Women: 3	Women: 15	Women: 2	Women: 5	Women: 6	Women: 1	Women: 11	Women: 4	Women: 63	Women: 11	Women: 2
15. (11)	Boys: 5	Boys: 9	Boys: 6	Boys: 9	Boys: 6	Boys: 10	Boys: 15	Boys: 6	Boys: 8	Boys: 8	Boys: 3
	Girls: 2	Girls: 3	Girls: 1	Girls: 3	Girls: 11	Girls: 9	Girls: 0	Girls: 1	Girls: 2	Girls: 3	Girls: 0
15. (12)	Yes: 12 No: 86	Yes: 22 No: 75	Yes: 5 No: 93	Yes: 18 No: 80	Yes: 12 No: 87	Yes: 8 No: 92	Yes: 12 No: 85	Yes: 19 No: 79	Yes: 3 No: 96	Yes: 11 No: 83	Yes: 6 No: 94
	1 person: 5	1 person: 14	1 person: 4	1 person: 11	1 person: 9	1 person: 7	1 person: 6	1 person: 14	1 person: 4	1 person: 9	1 person: 2
15. (13)	2) 6	2) 4	2) 0	2) 6	2) 4	2) 0	2) 7	2) 6	2) 2	2) 2	2) 2
	3) 0	3) 3	3) 1	3) 3	3) 0	3) 0	3) 0	3) 1	3) 0	3) 0	3) 0
15. (14)	4) 0	4) 4	4) 0	4) 0	4) 0	4) 1	4) 0	4) 0	4) 1	4) 1	4) 0
	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 1	5) 1	5) 0
15. (15)	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5
	Yes: 20 No: 06	Yes: 42 No: 51	Yes: 18 No: 73	Yes: 19 No: 79	Yes: 27 No: 72	Yes: 23 No: 77	Yes: 23 No: 74	Yes: 15 No: 84	Yes: 23 No: 6	Yes: 20 No: 74	Yes: 7 No: 90
15. (16)	Men: 11	Men: 12	Men: 9	Men: 2	Men: 6	Men: 4	Men: 6	Men: 5	Men: 7	Men: 7	Men: 2
	Women: 3	Women: 15	Women: 2	Women: 5	Women: 6	Women: 1	Women: 11	Women: 4	Women: 63	Women: 11	Women: 2
15. (17)	Boys: 5	Boys: 9	Boys: 6	Boys: 9	Boys: 6	Boys: 10	Boys: 15	Boys: 6	Boys: 8	Boys: 8	Boys: 3
	Girls: 2	Girls: 3	Girls: 1	Girls: 3	Girls: 11	Girls: 9	Girls: 0	Girls: 1	Girls: 2	Girls: 3	Girls: 0
15. (18)	Yes: 12 No: 86	Yes: 22 No: 75	Yes: 5 No: 93	Yes: 18 No: 80	Yes: 12 No: 87	Yes: 8 No: 92	Yes: 12 No: 85	Yes: 19 No: 79	Yes: 3 No: 96	Yes: 11 No: 83	Yes: 6 No: 94
	1 person: 5	1 person: 14	1 person: 4	1 person: 11	1 person: 9	1 person: 7	1 person: 6	1 person: 14	1 person: 4	1 person: 9	1 person: 2
15. (19)	2) 6	2) 4	2) 0	2) 6	2) 4	2) 0	2) 7	2) 6	2) 2	2) 2	2) 2
	3) 0	3) 3	3) 1	3) 3	3) 0	3) 0	3) 0	3) 1	3) 0	3) 0	3) 0
15. (20)	4) 0	4) 4	4) 0	4) 0	4) 0	4) 1	4) 0	4) 0	4) 1	4) 1	4) 0
	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 1	5) 1	5) 0
15. (21)	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5
	Yes: 20 No: 06	Yes: 42 No: 51	Yes: 18 No: 73	Yes: 19 No: 79	Yes: 27 No: 72	Yes: 23 No: 77	Yes: 23 No: 74	Yes: 15 No: 84	Yes: 23 No: 6	Yes: 20 No: 74	Yes: 7 No: 90
15. (22)	Men: 11	Men: 12	Men: 9	Men: 2	Men: 6	Men: 4	Men: 6	Men: 5	Men: 7	Men: 7	Men: 2
	Women: 3	Women: 15	Women: 2	Women: 5	Women: 6	Women: 1	Women: 11	Women: 4	Women: 63	Women: 11	Women: 2
15. (23)	Boys: 5	Boys: 9	Boys: 6	Boys: 9	Boys: 6	Boys: 10	Boys: 15	Boys: 6	Boys: 8	Boys: 8	Boys: 3
	Girls: 2	Girls: 3	Girls: 1	Girls: 3	Girls: 11	Girls: 9	Girls: 0	Girls: 1	Girls: 2	Girls: 3	Girls: 0
15. (24)	Yes: 12 No: 86	Yes: 22 No: 75	Yes: 5 No: 93	Yes: 18 No: 80	Yes: 12 No: 87	Yes: 8 No: 92	Yes: 12 No: 85	Yes: 19 No: 79	Yes: 3 No: 96	Yes: 11 No: 83	Yes: 6 No: 94
	1 person: 5	1 person: 14	1 person: 4	1 person: 11	1 person: 9	1 person: 7	1 person: 6	1 person: 14	1 person: 4	1 person: 9	1 person: 2
15. (25)	2) 6	2) 4	2) 0	2) 6	2) 4	2) 0	2) 7	2) 6	2) 2	2) 2	2) 2
	3) 0	3) 3	3) 1	3) 3	3) 0	3) 0	3) 0	3) 1	3) 0	3) 0	3) 0
15. (26)	4) 0	4) 4	4) 0	4) 0	4) 0	4) 1	4) 0	4) 0	4) 1	4) 1	4) 0
	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 0	5) 1	5) 1	5) 0
15. (27)	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5	5) 5
	Yes: 20 No: 06	Yes: 42 No: 51	Yes: 18 No: 73	Yes: 19 No: 79	Yes: 27 No: 72	Yes: 23 No: 77	Yes: 23 No: 74	Yes: 15 No: 84	Yes: 23 No: 6	Yes: 20 No: 74	Yes: 7 No: 90

5. Average Monthly Sales

(Unit: %)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) <1000 birr	30	36	0	0	25	25
2) 1000- 1999	30	29	38	12	63	12
3) 2000- 4999	20	14	38	64	12	0
4) 5000- 9999	0	14	12	12	0	0
5) 10000- 19999	10	7	12	12	0	12
6) 20000- 49999	0	0	0	0	0	39
7) 50000- 99999	0	0	0	0	0	12
8) 100000<	10	0	0	0	0	0
Total	100	100	100	100	100	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
1) <1000 birr	45	12	0	0	0	18
2) 1000- 1999	11	0	56	33	49	30
3) 2000- 4999	0	12	11	43	0	20
4) 5000- 9999	11	26	11	0	17	9
5) 10000- 19999	22	26	11	0	0	10
6) 20000- 49999	0	12	0	0	17	5
7) 50000- 99999	0	12	0	0	17	3
8) 100000<	11	0	11	22	0	5
Total	100	100	100	100	100	100

6. Classification of Activities

(Unit: %)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Retail Trade	0	29	0	38	44	25
2) Restaurant	0	0	0	0	0	0
3) Hotel	27	64	44	50	33	25
4) Others	73	7	56	12	23	50
Total	100	100	100	100	100	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
1) Retail Trade	30	44	33	33	67	29
2) Restaurant	0	0	0	0	0	0
3) Hotel	30	33	44	33	0	37
4) Others	40	23	23	34	33	34
Total	100	100	100	100	100	100

Notes: 1. The restaurant can be considered to be included in the hotel.  
 2. Others include the bar, the bank, the wholesale shop and the petrol station.

Results of Questionnaire on Water Use Condition for Commerce

11. Identity of Establishment	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Number of Workers	11	14	9	8	9	8
Average No. of Workers	5	7	6	5	5	6

3. Number of Workers	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(Unit: persons)	11	14	9	8	9	8
Average No. of Workers	5	7	6	5	5	6

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
No. of Samples	10	9	9	9	6	102
Average No. of Workers	5	9	7	6	5	6

4.1) Total Floor Area

(Unit: m2)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Floor Area	341	265	205	172	135	357

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
Average of Total Floor Area	270	337	279	282	156	260

2) Total Plot Area

(Unit: m2)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Plot Area	1299	949	623	254	391	2005

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
Average of Total Plot Area	968	1767	960	1119	1185	1041

III. Questions

1. Major Sources of Water

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Piped Water	18	93	100	100	11	13
Supply	0	0	0	25	67	63
2) Well	0	29	0	0	11	13
3) Surface Water	82	7	0	0	78	38
4) Others						
Item	N. Mewcha Chagni Bure Bichena Dejen Total					
1) Piped Water	80	67	89	56	50	63
Supply	0	0	11	33	0	17
2) Well	10	0	0	0	0	7
3) Surface Water	40	33	44	22	50	44
4) Others						

Notes: 1) Based on the multiple answer system.  
2) Others may include the water vendor.

2. Consumption of Water per Day

Item	(Unit: litre)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Piped Water	350	1388	1052	1078	50	1300
Supply	0	0	0	140	1666	69
2) Well	0	690	0	0	75	0
3) Surface Water	499	20	0	0	110	400
4) Others						
Item	N. Mewcha Chagni Bure Bichena Dejen Total					
1) Piped Water	666	1278	893	391	512	909
Supply	0	0	120	213	0	162
2) Well	0	0	0	0	0	538
3) Surface Water	33	20	15	8	18	176
4) Others						

3. Payment for Piped Water Supply

Item	(Unit: birr/month)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	2	13	9	8	1	1
Average Payment	55	52	32	32	-	40
Item	N. Mewcha Chagni Bure Bichena Dejen Total					
No. of Samples	8	6	8	5	3	64
Average Payment	20	17	27	15	16	32

4.1) Satisfied with the existing status of water supply facilities?

(Unit: %)

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	0	8	11	0	-	0
(2) No	100	92	89	100	-	100
Total	100	100	100	100	-	100
Item	N. Mewcha Chagni Bure Bichena Dejen Total					
(1) Yes	0	0	13	0	0	5
(2) No	100	100	87	100	100	95
Total	100	100	100	100	100	100

2) If "no", in what respect not satisfied?

(Unit: %)

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(1) Intermittent Supply	50	92	89	100	-	100
(2) Water Quality	0	0	0	0	0	0
(3) Deteriorating Facil.	50	69	22	63	-	100
(4) Short Supply	100	69	11	88	-	100
(5) Expensive Price	0	0	0	0	0	100
(6) Others	50	0	0	38	-	0

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(1) Intermittent Supply	100	83	88	80	100	30
(2) Water Quality	0	33	13	60	0	10
(3) Deteriorating Facil.	88	17	63	40	67	56
(4) Short Supply	100	50	50	40	33	53
(5) Expensive Price	25	17	25	20	33	11
(6) Others	0	0	0	0	100	11

Note: Based on the multiple answer system.

3) Agree with water committee management of water supply?

(Unit: %)

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	100	92	67	75	-	100
(2) No	0	8	33	25	-	0
Total	100	100	100	100	-	100

Item	(Unit: %)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	38	67	38	50	0	63
(2) No	62	33	62	50	100	37
Total	100	100	100	100	100	100

4) Agree with private sector management of water supply?

(Unit: %)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	Total
(1) Yes	0	8	33	25	-	-	0
(2) No	100	92	67	75	-	-	100
Total	100	100	100	100	-	-	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	62	33	38	25	100	32
(2) No	38	67	62	75	0	68
Total	100	100	100	100	100	100

Results of Questionnaire on Water Use Condition for Industry

II. Identity of Establishment

3. Number of Workers	(Unit: persons)					
Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	0	0	0	0	3	3
Average No. of Workers	-	-	-	-	0	5

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
No. of Samples	2	3	3	3	3	23
Average No. of Workers	5	3	7	3	5	6

4.1) Total Floor Area

(Unit: m2)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Floor Area	-	-	-	148	139	235

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
Average of Total Floor Area	145	104	392	59	187	140

2) Total Plot Area

(Unit: m2)

Item	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Plot Area	-	-	-	1007	314	2071

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
Average of Total Plot Area	5138	482	1195	332	1157	1289

5. Average Monthly Sales

Item	(Unit: %)							Total
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor		
1) <1000 birr	-	-	-	0	33	0	0	
2) 1000- 1999	-	-	-	0	33	0	0	
3) 2000- 4999	-	-	-	33	34	67	0	
4) 5000- 9999	-	-	-	0	0	33	0	
5) 10000- 19999	-	-	-	33	0	0	0	
6) 20000- 49999	-	-	-	34	0	0	0	
7) 50000- 99999	-	-	-	0	0	0	0	
8) 100000=<	-	-	-	0	0	0	0	
Total	-	-	-	100	100	100	100	

Item	N. Mewcha Chagni Bure Bichena Dejen Total						
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	
1) <1000 birr	0	0	0	0	0	5	
2) 1000- 1999	0	67	0	0	33	17	
3) 2000- 4999	50	33	33	67	33	43	
4) 5000- 9999	50	0	0	0	0	0	
5) 10000- 19999	0	0	0	33	0	17	
6) 20000- 49999	0	0	67	0	0	13	
7) 50000- 99999	0	0	0	0	0	0	
8) 100000=<	0	0	0	0	34	5	
Total	100	100	100	100	100	100	

6. Classification of Activities

Item	(Unit: %)							Total
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor		
1) Food	-	-	-	0	50	33	0	
2) Wood	-	-	-	0	0	0	0	
3) Paper	-	-	-	0	0	0	0	
4) Textiles	-	-	-	0	0	0	0	
5) Cement	-	-	-	33	0	0	0	
6) Oil	-	-	-	67	50	67	0	
7) Chemicals	-	-	-	0	0	0	0	
8) Non-ferrous	-	-	-	0	0	0	0	
9) Iron & Steel	-	-	-	0	0	0	0	
10) Machinery	-	-	-	0	0	0	0	
11) Others	-	-	-	0	0	0	0	
Total	-	-	-	100	100	100	100	

Item	N. Mewcha Chagni Bure Bichena Dejen Total						
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	
1) Food	50	67	33	100	67	52	
2) Wood	0	0	0	0	0	0	
3) Paper	0	0	0	0	0	0	
4) Textiles	0	0	0	0	0	0	
5) Cement	0	0	0	0	0	4	
6) Oil	0	33	67	0	33	39	
7) Chemicals	0	0	0	0	0	0	
8) Non-ferrous	0	0	0	0	0	0	
9) Iron & Steel	0	0	0	0	0	0	
10) Machinery	0	0	0	0	0	0	
11) Others	50	100	100	100	100	5	
Total	100	100	100	100	100	100	

III. Questions

1. Major Sources of Water (Unit: %)

Item	N. Mewcha Chagni Bure Bichena Dejen Total						
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	
1) Piped Water	-	-	-	100	0	0	
2) Well	-	-	-	0	100	100	
3) Surface Water	-	-	-	0	0	0	
4) Others	-	-	-	0	33	0	

Item	N. Mewcha Chagni Bure Bichena Dejen Total						
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	
1) Piped Water	50	0	33	67	100	43	
2) Well	0	0	0	33	33	35	
3) Surface Water	0	0	0	0	0	0	
4) Others	100	100	67	0	0	35	

Notes: 1) Based on the multiple answer system.  
2) Others may include the water vendor.

2. Consumption of Water per Day (Unit: litre)

Item	N. Mewcha Chagni Bure Bichena Dejen Total						
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor	
1) Piped Water	-	-	-	1217	0	0	
2) Well	-	-	-	0	208	183	
3) Surface Water	-	-	-	0	0	0	
4) Others	-	-	-	0	150	0	

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
1) Piped Water Supply	350	0	300	150	570	631
2) Well	0	0	0	150	50	172
3) Surface Water	0	0	0	0	0	0
4) Others	170	175	200	0	0	178

3. Payment for Piped Water Supply (Unit: birr/month)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	-	-	-	3	-	-
Average Payment	-	-	-	37	-	-

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
No. of Samples	1	-	1	2	3	10
Average Payment	24	-	10	6	21	22

4.1) Satisfied with the existing status of water supply facilities? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	-	-	-	0	-	-
(2) No	-	-	-	100	-	-
Total	-	-	-	100	-	-

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	0	-	0	0	0	0
(2) No	100	-	100	100	100	100
Total	100	-	100	100	100	100

2) If "no", in what respect not satisfied? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Intermittent Supply	-	-	-	-	100	-
(2) Water Quality	-	-	-	-	0	-
(3) Deteriorating Facil.	-	-	-	-	33	-
(4) Short Supply	-	-	-	-	67	-
(5) Expensive Price	-	-	-	-	0	-
(6) Others	-	-	-	-	33	-

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Intermittent Supply	100	-	100	100	100	100
(2) Water Quality	0	-	0	50	0	10
(3) Deteriorating Facil.	100	-	0	100	33	50
(4) Short Supply	100	-	0	50	33	50
(5) Expensive Price	100	-	0	0	0	10
(6) Others	0	-	0	0	0	40

Note: Based on the multiple answer system.

3) Agree with water committee management of water supply? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	-	-	-	0	-	-
(2) No	-	-	-	100	-	-
Total	-	-	-	100	-	-

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	100	-	100	50	33	40
(2) No	0	-	0	50	67	60
Total	100	-	100	100	100	100

4) Agree with private sector management of water supply? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	-	-	-	100	-	-
(2) No	-	-	-	0	-	-
Total	-	-	-	100	-	-

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	0	-	0	50	67	60
(2) No	100	-	100	50	33	40
Total	100	-	100	100	100	100

Results of Questionnaire on Water Use Condition for Institutions

II. Identity of Establishment

Item	(Unit: persons)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	15	12	17	16	14	15
Average No. of Workers	18	18	19	30	30	42

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	14	14	14	14	14	159
Average No. of Workers	31	21	35	32	20	27

4.1) Total Floor Area

Item	(Unit: m2)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Floor Area	486	182	367	586	600	1014

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Floor Area	705	727	1100	677	555	639

2) Total Plot Area

Item	(Unit: m2)					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Plot Area	12732	4659	15288	23238	14160	26867

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
Average of Total Plot Area	12176	19618	17981	15359	15167	16401

5. Classification of Activities

(Unit: %)

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Educational	20	8	12	31	21	27
2) Medical	7	8	18	6	7	20
3) Religious	20	25	23	19	29	27
4) Administrative	53	59	47	44	43	26
Total	100	100	100	100	100	100

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Educational	36	29	36	29	29	25
2) Medical	7	7	7	7	7	10
3) Religious	29	36	29	28	28	26
4) Administrative	28	28	28	36	36	39
Total	100	100	100	100	100	100

III. Questions

1. Major Sources of Water

(Unit: %)

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Piped Water Supply	47	67	71	75	7	93
2) Well	0	0	0	13	0	67
3) Surface Water	7	8	0	13	36	7
4) Others	53	33	29	38	93	40

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Piped Water Supply	71	93	43	36	79	57
2) Well	0	0	0	71	0	14
3) Surface Water	14	14	14	0	0	10
4) Others	36	7	57	7	21	37

Notes: 1) Based on the multiple answer system.  
2) Others may include the water vendor.

2. Consumption of Water per Day

(Unit: litre)

Item	N. Mewcha Chagni Bure Bichena Dejen Total					
	Dupti	Mille	Bati	Werota	Aykel	D. Tabor
1) Piped Water Supply	708	2964	1871	659	100	1079
2) Well	0	0	0	2000	0	334
3) Surface Water	800	120	0	800	256	764
4) Others	147	1073	37	205	252	213

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
1) Piped Water Supply	555	902	1445	348	305	909
2) Well	0	0	0	223	0	162
3) Surface Water	113	3050	100	0	0	538
4) Others	540	60	89	0	33	176

3. Payment for Piped Water Supply (Unit: birr/month)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
No. of Samples	7	8	12	12	1	5
Average Payment	38	108	64	20	60	92

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
No. of Samples	10	13	6	5	11	90
Average Payment	16	27	44	14	11	40

4.1) Satisfied with the existing status of water supply facilities? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	43	0	8	8	0	0
(2) No	57	100	92	92	100	100
Total	100	100	100	100	100	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	0	15	0	0	18	10
(2) No	100	85	100	100	82	90
Total	100	100	100	100	100	100

2) If "no", in what respect not satisfied? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Intermittent Supply	71	88	92	92	100	100
(2) Water Quality	14	0	8	0	0	0
(3) Deteriorating Facil.	71	50	75	42	0	60
(4) Short Supply	71	38	17	58	100	100
(5) Expensive Price	0	0	0	0	0	20
(6) Others	0	0	0	0	42	0

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Intermittent Supply	100	69	83	100	55	83
(2) Water Quality	0	23	17	60	0	10
(3) Deteriorating Facil.	70	62	50	60	45	59
(4) Short Supply	90	31	50	100	45	54
(5) Expensive Price	20	15	33	40	0	10
(6) Others	0	0	33	0	45	13

Note: Based on the multiple answer system.

3) Agree with water committee management of water supply? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	100	100	83	75	0	40
(2) No	0	0	17	25	100	60
Total	100	100	100	100	100	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	80	62	67	40	36	69
(2) No	20	38	33	60	64	31
Total	100	100	100	100	100	100

4) Agree with private sector management of water supply? (Unit: %)

Item	Dupty	Mille	Bati	Werota	Aykel	D. Tabor
(1) Yes	0	0	17	25	100	60
(2) No	100	100	83	75	0	40
Total	100	100	100	100	100	100

Item	N. Mewcha	Chagni	Bure	Bichena	Dejen	Total
(1) Yes	20	38	33	60	73	32
(2) No	80	62	67	40	27	68
Total	100	100	100	100	100	100









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