Federal Democratic Republic of Ethiopia

Water Supply and Sanitation Program - WaSH-II

Draft Document on

Environmental and Social

Management Framework (ESMF)

October 2013

Addis Ababa

ABBREVIATIONS AND ACRONYMS

CWA	Consolidated WaSH Account
EA	Environnemental Assessment
EBA	Environmental Baseline Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Ethiopian Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
GTP	Growth and Transformation Plan
M&E	Monitoring and Evaluation
MoFA	Ministry of Federal Affairs
MoWE	Ministry of Water and Energy
NGO	Non-Governmental Organization
OD	Operational Directive
OP	Operational Policy
PMU	Program Management Unit
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
UAP	Universal Access Plan
WIF	WaSH Implementation Framework
WB	World Bank
WSSP	Water Supply and Sanitation Program

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EXECUTIVE SUMMERY

Scope of the Environmental and Social Management Framework

1. This Environmental and Social Management Framework (ESMF) was prepared to ensure that investments under the Water Supply and Sanitation Program (WaSH- II) are implemented in an environmentally and socially sustainable manner. The ESMF outlines an environmental and social screening process that will be applied by qualified personnel at the planning stage of the program. The purpose of ESMF is to provide guidance to WaSH-II staffs, communities, and others participating in planning and implementation of WaSH-II regarding the sustainable environmental and social management of sub-programs.

2. Since the actual sub-program sites and their potential adverse environmental and social impacts could not be identified prior to implementation of sub-projects, the environmental and social screening process outlined in this ESMF will be applied by the Ministry of Water and Energy or Water Bureau experts to ensure that potential negative environmental and social impacts are identified and mitigated at the planning stage of the planned sub-programs. This ESMF is an update of the ESMF of WSSP. The ESMF was updated to reflect the changes made in WASH-II and the new programmatic approach One WaSH National Program (OWNP).

3. A Resettlement Policy Framework (RPF) has also been updated separately to enable sub-program implementers to address potential adverse social impacts. The social impacts and risks are addressed in a separate parallel Social Assessment (SA) study in which the main social impacts are identified and mitigation measures are proposed along with the RPF document. This ESMF will, therefore, be implemented along with these social safeguard instruments.

4. This ESMF was prepared by the Ministry of Water and Energy environmental specialist in consultation with the World Bank country office staff members. The WSSP ESMF documents have been updated based on both Ethiopian environmental policy procedures and the Bank's OP 4.01. Other ESMF documents, which were endorsed by Ethiopian Government and the World Bank, i.e. the Pastoral Community Development Program Phase III ESMF and the Sustainable Land Management Project-II ESMF documents were also used in preparing this ESMF. In addition, consultations with Woreda focal persons and local communities were held during a field visit to selected Woredas and Kebeles. The draft ESMF, as per the requirement of OP 4.01, has been consulted with stakeholders drawn from governmental, non-governmental organizations and other relevant stakeholders. The feedback obtained from the consultation has been incorporated.

Program Descriptions

5. WaSH-II will contribute towards the achievements of the GTP and the UAP targets which is reaching 98% coverage for improved water supply and 84% for improved sanitation by 2015. The total cost of meeting the targets of OWNP is estimated to be around US$ 2.41 billion. The current program will finance parts of the OWNP targets by pooling resources in to a basket fund. WaSH - II will be implemented through a programmatic approach that will lead to a full Sector Wide Approach (SWAP) with several development partners. Under the WaSH Implementation Framework (WIF) prepared by the government, all development partners will pool their resources in a Consolidated WaSH Account (CWA) to be managed by Ministry of Finance and Economic Development (MoFED). The program will be implemented over a period of five years starting in July 2014 and ending in May 2019.

6. The program will be implemented in all the 9 regions and the two city administrations of Ethiopia. Each Region will have its own Water Supply and Sanitation Program, including the strategies for improving rural and urban water supply and sanitation and a detailed implementation plan. Regional water bureaus will be responsible for managing the regional urban water supply and sanitation programs, while implementation of the rural components will be under woreda responsibility.

7. The program has the following components:

   Component 1. Rural WaSH
   Component 2. Urban WaSH
   Component 3. Program Management

Legal Frameworks

8. The Ethiopian legislation pertaining to environmental impact assessment and environmental management mainly includes:

   - The Constitution, 1995, which states broad principles, such as :
     - "Everyone has the right to a clean and healthy environment."
     - The responsibility of the State to ensure a clean and healthy environment for all Ethiopians,
     - No development activity should be disruptive to the ecological balance, or people concerned should be consulted in matters pertaining to environmental protection;
   - The Land Policy of Ethiopia strongly support that projects plans must include attractive and sustainable resettlement strategies to the people who are going to be displaced as a result of the development plan, and they have to be fully convinced, compensated and have to participate in all phases of the project implementation.
   - The Environmental Protection Organs Proclamation No 295/2002, establishes the Environmental Protection Agency (federal level) and states its responsibilities, and

establishes the responsibilities of regional Environmental Protection Agencies;

- The Environmental Impact Assessment (EIA) proclamation N° 299/2002, establishes the requirement of an EIA procedure for all programs, and provides the processes and procedures to be followed by program proponents with respect to EIAs.

9. WaSH-II has been categorized as Category B as per World Bank OP 4.01. Most of its environmental and social impacts will be beneficial, including for example the positive effect on health caused by the reduction in water borne diseases and the associated socio-economic benefits, considerable capacity enhancement at community, district and regional levels, and improved productivity (particularly benefiting females) generated by better availability of water.

The proposed Screening Processes

10. Environmental and social screening forms have been updated to formalize field investigations intended at identifying any environmental issues that may require specific attention and supplemental Environmental Assessment work. A generic ESIA terms of reference has also been annexed to this ESMF; it will have to be adapted to the specific requirements of the sub-programs.

Impacts, Mitigations, Environmental and Social Management Plan

11. Social benefits of the WaSH-II Program includes:

- Gain of time, especially for women and girls, that may be used for other, productive activities, and resulting gains in overall economic productivity;
- Better comfort, better quality of life and domestic hygiene,
- Employment at both construction and operation phases,
- Capacity building and training in the town, and resulting enhancement of organizational, financial and technical capacities of town, particularly for smaller towns.
- Reduction in water-borne diseases such as dysentery,
- Reduction in the potential for outbreaks of epidemic infectious diseases such as cholera.

12. Though there could be involuntary resettlement and loss of assets due to rehabilitation and construction of schemes, these negative impacts are site specific and will be localized and can be reduced or avoided with proper mitigation measures.

Capacity Building and Training

13. Capacity will be built at regional, woreda and town levels for different experts and Town Water Boards to take charge of environmental mitigation measures at construction and operation phases. The private sector (hand pump artisans, construction contractors, operation contractors, consultants) will also play their part in handling some environmental issues. However, most of the responsibilities will be dealt with at woreda level for rural water supply and at town level for urban water supply and sanitation, while regions will conduct screening, monitor and assist in the process

through the Water Bureaus and Regional Environmental Protection Agencies.

14. Experience has shown that there were two major gaps in implementing the ESMF during phase I of the WaSH program. These were limited technical capacity at all levels and absence of budget for the implementation of the ESMP. Taking this into account, two training workshops are planned for relevant staff in environmental screening as well as in the implementation of the RPF. An estimated total budget of USD 6 million will be required to implement the ESMF. The estimate includes costs for training and implementation of mitigation measures.

1. INTRODUCTION

1.1. OVERVIEW OF THE WASH-II PROGRAM

1. This document is the Environmental and Social Management Framework (ESMF) for the Water Supply and Sanitation Program (WaSH-II program). This ESMF will be applied to future rehabilitation and construction activities planned under the proposed program where the exact locations and potential adverse environmental and social impacts could not be identified prior to implementation of sub-projects. Potential adverse environmental and some social impacts will be addressed in the context of this updated ESMF, while potential social impacts related to land acquisition such as loss of livelihoods or loss of access to economic assets will be addressed in the Resettlement Policy Framework (RPF).

2. The proposed ESMF is consistent with the Bank's safeguard policy, OP 4.01. This policy requires that all Bank-financed operations are screened for potential adverse environmental and social impacts, and that the required environmental and social work be carried out on the basis of the screening results. Furthermore, the proposed screening process will bridge a gap in Ethiopia's environmental procedures which do not provide for the environmental screening of small WSS sub-programs where the future locations are not known prior to appraisal, and potential adverse environmental and social impacts cannot be identified early on. The WaSH-II program has been categorized as Category B as per the World Bank OP 4.01, and in terms of its potential environmental impacts.

3. Implementation of the ESMF, including capacity building and implementation of mitigation measures, may require an estimated budget of USD 6 million for five years.

1.2. OBJECTIVES OF THE ESMF

4. The objective of the Environmental and Social Management Framework (ESMF) is, among others to provide an environmental and social screening process for the Urban and Rural Water Supply and Sanitation Program (WaSH-II program). It also provides guidance to WaSH- II staffs, communities, and others participating in WaSH-II regarding the sustainable environmental and social management of sub-programs.

5. In general this ESMF is updated with the following general objectives:

    - Screen for potential environmental and social impacts WaSH-II subprojects;
    - Identify possible impacts and propose appropriate mitigation measures; and
    - Monitor the implementation of these measures.

1.3. METHODS OF THE ESMF PREPARATION

1.3.1. Review of Project Related Documents

6. WSSP was closed on October 10, 2013 and its follow-up program (WaSH-II) is being prepared. Since the WaSH-II sub programs are similar to that of WSSP sub projects, it was found appropriate to update the WSSP ESMF. The WSSP ESMF was prepared in February 2004 (for the WSSP) and February 2007 (for UWSSP) by independent consultants contracted by the then Ministry of Water Resources and Addis Ababa Water Supply and Sewerage Authority under World Bank financing. Other ESMF documents, i.e. the Pastoral Community Development Program Phase III ESMF and the Sustainable Land Management Project II ESMF documents were also used in updating this ESMF. The WSSP ESMF documents have been updated based on both Ethiopian environmental policy procedures and the Bank's OP 4.01. The WaSH-II PAD was also reviewed to understand the project components and sub-components, the institutional arrangement for the implementation of the project.

1.3.2. Review of Relevant Policies, Proclamations and Regulations

7. A review of the relevant environmental and social management policies, proclamations and regulations in the country was made. The information from the review was useful in addressing the gaps identified from the discussions held with stakeholders. These are listed in this ESMF to serve as references for the preparation and implementation of environmental and social management plans.

1.3.3. Consultations with Key Stakeholders

8. This ESMF has been updated by the Ministry of Water and Energy environmental specialist in consultation with the World Bank country office staff members. The Environmental Unit from the MoWE, the environmental and social specialists from the Federal Program Management Unit staff members and the environmental and social consultants (who prepared ESIAs for WaSH- I sub-projects) have also participated.

9. In addition, consultations with over 200 peoples drawn from four regional states (two major regions and two emerging and predominantly pastoral regions) namely Oromia, Southern Nations Nationality People Region (SNNPR), Afar and Somalia were held. The consultations were held along with the consultation made for RPF.

1.4. CONSULTATIONS WITH SELECTED KEY STAKEHOLDERS

10. As provided under The World Bank (WB) policy OP 4.01 and OP 4.12; public consultations were conducted in seven kebeles and four woredas which were randomly selected from Ethiopian Somali region, Afar, Oromia and Southern nation, nationality and peoples region. Consultation with communities using participatory approach was undertaken using focus group discussion with key stakeholders to discuss the WaSH program and the key elements of the ESMF and RPF. The consultation was voluntary, gender and inter-generationally inclusive and conducted in good faith.

The consultation was aimed at exploring and soliciting feedback from communities on key elements of the ESMF and RPF, particularly, the procedures and implementation arrangements, the screening processes, land compensation/entitlement matrix, dispute resolution and grievance procedures, monitoring and evaluation processes.

1.4.1. Consultation Approaches

11. The draft ESMF was circulated to all relevant institutions (e.g. environmental unit in the MoWE, World Bank, and others as appropriate) for comments. Consequently, comments were incorporated into this ESMF, together with WB comments. The consultation meetings which were held in the seven kebeles and four woredas were facilitated by the Woreda Water and Mine Office Managers and expertise of each respective region. Public consultation was conducted by the MoWE environmental and social specialists. The following strategies were used to organize the meetings:

    - The MoWE environmental and social specialists have made detail discussions with each Woreda Water and Mine Office Managers and expertise (with prior notifications to them)
    - The meetings with communities at each Kebele level were facilitated by expertise from each respective Woredas and, were technically supported by the MoWE environmental and social specialists
    - The invitation for public consultation meetings for entire members of respective kebeles were announced and facilitated by each respective Woreda expertise. Cultural leaders, community elders, landholders (who might be affected during the WaSH-II program implementation process), women, youths and vulnerable groups of peoples were invited to participate in the community consultation processes.
    - Accordingly, all community social classes such as, religious and clan leaders, women, the vulnerable and underserved groups, elders and youths were participated in the community consultation meetings.
    - Consultation meetings were conducted by the MoWE environmental and social specialists followed by translation assistance by each respective woreda expertise.

1.4.2. Issues Discussed during Consultation

12. The community members generally reflected on the beneficial impacts of the WaSH program. However, communities and expertise have insistently described that shortage of safe water for drinking is a very critical problem, particularly in the rural parts of Ethiopia. Communities and expertise from Oromia, SNNPR and Afar regional states were also revealed that the natural contamination of the ground water by fluoride is a very serious issue and is a big challenge for safe drinking water supply in the Rift Valley Region. This is consistent to the study made by Tekele-Haimanot et al.

13. According to the study made by Tekele-Haimanot et al. (1987), the region of Ethiopian Rift Valley with altitude between 500 and 1,800 meters above sea level, and is hot and dry with an average temperature of 23°C (ranges from 15°C to 38°C). In most parts of this region, ground water contains

very high concentrations of naturally occurring fluoride, well in excess of the WHO's recommended guideline value, and fluorosis is an endemic health problem including skeletal fluorosis. Dental fluorosis is found in more than 80 per cent of sampled children in the Ethiopian Rift Valley Region. The maximum prevalence is seen in the 10–14 years old age-group and 32 % of the children showed severe dental mottling. Ethiopian Rift Valley Region covers all or parts of Afar, Oromia and the Southern Nations, Nationalities and Peoples Regions (SNNPR). Groundwater sources tested in Oromia Region have excessive fluoride concentrations as compared to 30% in SNNPR and 12% in Afar Region.

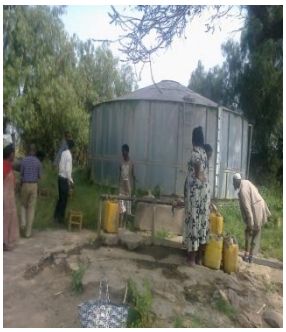
14. Similarly, from all randomly selected and visited kebeles; community and woreda representatives have reiterated that access for safe water supply is a very critical problem. Specially, Amibara Woreda administrator from Afar region described the seriousness of water supply problem in their region by saying "it is a member of our family". The community and woreda representatives from this region have also described that the hot climatic condition and lack of surface water sources in their region exacerbates the water supply problem. By the time this visit is conducted, the consultation team has observed that, from the seven visited kebeles, only Debube Shershera from SNNPR and Ananoshesho kebele from Oromia regional states have access for safe water supply.

15. However, because of the higher fluoride content of the ground water (about 6 mg/l), the community in the Ananoshesho kebele is using a defluoridation plant installed by a local NGO called Oromia Self Help Organization (OSHO). Communities from other kebeles have revealed that they are supposed to travel 10 to 30 kilometers to purchase drinking water (3 to 30 Ethiopian Birr per 20 liter) from the nearby small towns. Community representatives from Abine Germama kebele of Oromia region was also revealed that their existing water supply scheme is not used for drinking purpose because of its higher fluoride content; while the existing water supply schemes of Andido and Kebere Beyah kebeles from Afar and Somalia regions, respectively, were not functional. On the other hand, Hare and Carbikebek kebeles, both from Somali regional state, does not have water supply schemes at all. In addition, community and woreda representatives from all visited kebeles, have revealed that there is very limited capacity at all levels to properly manage their water supply schemes.

16. In the whole, the draft ESMF, as per the requirement of OP 4.01, has been consulted with stakeholders drawn from governmental and non-governmental organizations and feedback obtained from the consultation has been incorporated. The detailed report of consultation is presented in the RPF document and list of consultation participants is provided in Annex 8 of this ESMF.

Table 1: Community members consulted in their respective Woredas and Kebeles

S/N	Region	Woreda	Kebele	Male	Female	Total
1	Oromia	Adami Tulu Jidu Kombolcha	Abine Germama	22	8	**30**
			Ananoshesho	13	13	**26**
2	SNNPR	Meska	Debube Shershera	30	24	**54**
3	Afar	Amibara	Andido	24	21	**45**
4	Somalia	Kebere Beyah	Kebere Beyah	10	4	**14**
			Hare	5	17	**22**
		Jigjiga	Carbikebek	6	4	**10**
Total	**4**	**5**	**7**	**110**	**91**	**201**

From Abine Germama Kebele Ananoshesho Kebele Hare Kebele



Kebere Beyah kebele From Andido Kebele

Ccommunity members consulted in the different regions

2. PROGRAM DESCRIPTION

17. WaSH-II will contribute towards the achievements of the GTP and the UAP targets. WaSH-II will be implemented through a programmatic approach that will lead to a full sector wide approach with several development partners. Under the WaSH Implementation Framework (WIF) prepared by the government, Development partners will pool their resources in a Consolidated WaSH Account (CWA). The DFID financed and World Bank managed trust fund is a step forward towards cooperation and harmonization in the sector. Sufficient momentum and experience has been gathered in implementing the trust fund, and the implementation modality used for WSSP has been adopted by other financiers including AfDB.

18. WaSH-II will be implemented over a period of five years starting in July 2014 and ending in May 2019. The program will be implemented in all the 9 regions and the two city administrations of Ethiopia. WSSP and the Multi-Donor Trust Fund (MDTF), jointly known as WSSP, have created conducive environment for the government's move towards a programmatic approach.

19. In the GTP, the Government of Ethiopia (GoE) has set aggressive targets of reaching 98% coverage for improved water supply and 84% for improved sanitation by 2015. These targets are more ambitious than the MDG targets, which is 63% coverage for water supply and 58% for sanitation by 2015. While progress in achieving the GTP targets has been commendable (reported as 79.8% for access to safe drinking water and 93% for access to sanitation coverage in 2011/12), a recent National WaSH Inventory (NWI) has shown that actual progress has been slower than initially thought.

20. According to the NWI results, access to safe drinking water in 2011 was 52% (rural 49% & urban 75%) and access to latrine facility was 63% (rural 60% and urban 80%). In terms of institutional sanitation services the NWI indicated that 85% of health facilities and 33% of schools have improved latrine facilities, while only 31% of schools and 32% of health facilities have access to improved water supply services. At the time of the inventory, 25.5% of rural water supply schemes were not functional. Hence, the GoE's policies and strategies are designed to respond to these challenges and the proposed intervention (WASH-II) is considered a follow on to WSSP.

21. The key features of the WASH-II program include: (i) a common basket or pooled fund; and (ii) strengthening the devolution of service delivery to lower level institutions. In addition, based on the experience and lessons learned from WSSP, the proposed WaSH-II program among others will adopt: a (i) performance based, stepped approach, so that rural communities and towns only qualify to receive additional assistance as they develop capacity and meet established criteria; (ii) technology and service level choice based on beneficiaries willingness and ability to pay up-front contribution and on-going running costs; (iii) learning by doing and a cascaded approach to capacity building; (iv) involvement of the private sector to support operations, maintenance and supply of equipment; (v) establishment/ strengthening of O&M back stopping support at the federal, regional and woreda levels and (vi) integration of water supply, sanitation and hygiene services.

2.1. PROGRAM OBJECTIVES

22. The proposed development objective of the WaSH-II program is "Increased access to improved water supply and sanitation services for residents in participating Woredas/Towns and communities in Ethiopia". The program is also expected to provide improved drainage and reduce uncontrolled and unhealthy sewage flows.

2.2. PROGRAM COMPONENTS

2.2.1. Component One: Rural Water Supply, Sanitation & Hygiene

23. Funding is to be provided (i) to construct community water supply schemes and institutional sanitation facilities (ii) to promote improved hygiene and sanitation practices in beneficiary communities (iii) to strengthen and sustain capacity of beneficiary woredas to effectively plan, implement and manage their R-WaSH (iv) to strengthen and sustain the capacity of beneficiary communities to effectively plan, implement and manage their water supply and sanitation facilities.

2.2.2. Component Two: Urban Water Supply, Sanitation & Hygiene

24. Funding is to be provided (i) to improve the water production and distribution system, (ii) to support the preparation of urban sanitation strategy and partly its implementation in beneficiary towns, (iii) to strengthen and sustain the capacity of participating water boards/committees and operators to effectively manage their water supply and sanitation facilities. Works in larger urban centers with existing water supply and sanitation systems that need to be expanded or improved are to be financed through an on-lending basis, consistent with the Government's policy on cost recovery for urban water supply and sanitation. The Water Resources Development Fund will be the implementing agency for these sub components, responsible for appraisal of proposed programs and monitoring and evaluation.

2.2.3. Component Three: Program Management:

25. Funding is to be provided to the MoFED, MoH, MoE and MoWE to build the capacity of regional health, education and water bureau as well as Woreda WaSH offices BoFEDs and WoFED personnel and regionally-based consultants to: support program implementation, refine policies and program implementation arrangements, monitor and evaluate the program, equip water quality testing and training centers, improve information availability and flow.

2.3. PROGRAM BUDGET

26. The total cost of meeting the targets of OWNP is estimated to be around US$ 2.41 billion. The current program will finance part of OWNP targets by pooling resources in to a basket fund. The development partners who have shown strong desire to join the pooled fund include IDA (US$ 200 million), DFID (US$ 122.3 million), AfDB (US$120.7 million), and UNICEF (about US$2 million per annum). Others are expected to join at a later stage. Funds are expected to be channelled to

program implementing agencies at each level through channel 1b (i.e MoFED/BoFED and WoFED).

3. LEGAL FRAMEWORKS

3.1. OVERVIEW

27. The first attempt to develop environmental regulations in Ethiopia dates back from 1989, when the development of the Conservation Strategy of Ethiopia (CSE) was launched. Before this CSE was finalized in 19971 together with the Environmental Policy2, the new Constitution of Ethiopia (1995) affirmed the right of every Ethiopian citizen to a clean and healthy environment and established the responsibility of the State in ensuring this right.

28. In 2002, a more comprehensive legal and regulatory framework was developed in the form of three proclamations: (i) on Environmental Protection Organs, (ii) on Environmental Impact Assessment, and (iii) on Environmental Protection Control.

3.2. RELEVANT PROVISIONS OF THE ETHIOPIAN LEGISLATIONS

3.2.1. The Constitution, 1995

29. The Constitution has an exclusive article on the environment and therefore states in its Article 44 Sub Article 1 that: “All persons have the right to live in a clean and healthy environment.” Furthermore, concerning compensation to Project Affected Peoples (PAPs), Sub Article 2 provides that: “All persons who have been adversely affected or whose rights have been adversely affected as a result of state programs have the right to commensurate monetary or alternative means of compensation, including relocation with adequate state assistance. ″ Regarding public consultation and participation, in Article 92 sub Article 3, it states that: “People have the right to full consultation and to the expression of views in the planning and implementation of environmental policies or projects that affect them directly.”

3.2.2. Ethiopian Land Tenure Policy

30. The Land Policy of Ethiopia strongly support that projects plan must include attractive and sustainable resettlement strategies to the people who are going to be displaced as a result of the development plan, and they have to be fully convinced, compensated and have to participate in all phases of the project implementation. It is the right for existing land owner to be compensated fully and satisfactorily if land is expropriated by the state.

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[1] Conservation strategy of Ethiopia, 1997 (5 volumes), Environmental Protection Authority

2 Environmental Policy, April 2, 1997, Environmental Protection Authority

3.2.3. Expropriation of Land Holdings for Public Purposes and Compensation, Proclamation No. 455/2005

31. **Power to expropriate Landholding:** Woreda or an urban administration shall up on payment in advance of compensation, have the power to expropriate rural or urban holdings for public purpose where it should be used for a better development projects to be carried out by public entities, investors.

32. **Notification of expropriation order**: In this context the landholders will be notified in writing, when they should vacate and the amount of compensation to be paid to them. The responsibility of implementing Agency, as defined in the proclamation, include preparing detail data pertaining to the land needed for its works and send same, at least one year before the commencement of the works and to the organs empowered to expropriate land, pay compensation in accordance with this proclamation to landholders whose holdings have been expropriated.

33. As per Article 7 of the Proclamation, the amount of compensation is on the bases of certain conditions, which includes:

    - The landholder whose holding has been expropriated shall be entitled to payment of compensation for his property situated on the land and permanent improvements he made to such land;
    - The amount of compensation for the property shall be determined on the basis of replacement cost of the property, and if it is in urban area, it may not, in any way, less than the current cost of constructing a single room low cost house.
    - Compensation for permanent improvement to land shall be equal to the value of capital & labor expended, & on the land, and costs of removal, transportation and erection shall be paid as compensation for a property that could be relocated & continue its services as before.

34. It has been also indicated in the Proclamation Article 8, that the displacement compensation shall be paid within the following condition:

    - A rural landholder, whose landholding has been permanently expropriated, in addition to Article 7, be paid displacement compensation which is equivalent to ten times the average annual income he secured during the five years preceding the expropriation of the land.
    - A rural landholder or holders of communal land whose landholding has been provisionally expropriated shall, in addition to Article 7, be paid until repossession of the land, and also for lost income based on the average annual income secured during the five years preceding the expropriation of the land, however, such payment shall not exceed the amount of compensation payable under the above article.
    - If Woreda administration confirms that a substitute land which can easily be ploughed and generate comparable income is available for the holder, the compensation to be paid as mentioned above shall only be equivalent to the average annual income secured during the five years preceding the expropriation of the land.

- For urban landholder whose holding has been expropriated shall be provided with a plot of urban land, and be paid displacement compensation equivalent to the estimated annual rent of the demolished dwelling house. For the business houses to be demolished, mutatis mutandis shall apply.

35. Certified private or public institution or individual consultants on the basis of valuation formula adopted at the national level shall carry out the valuation of property situated on land to be expropriated.

3.2.4. Environmental Protection Organs Proclamation No 295/2002

36. This Proclamation, published in the Federal Negarit Gazeta dated October 31st, 2002, contains the following main provisions:

- It re-establishes the Environmental Protection Agency (EPA)[3] as a Federal Government Agency, accountable to the Prime Minister,
- It establishes the EPA's powers and duties, including the following:
  - Coordinate measures ensuring that environmental objectives provided by the Constitution are met;
  - Prepare, review and update environmental policies strategies and laws, and monitor and enforce their implementation;
  - Establish a system for Environmental Impact Assessments and review program EIAs where these programs are submitted to federal licensing, or where they are likely to entail interregional or international impacts;
  - It also establishes the responsibilities of regional governments in setting up their own Regional Environmental Agencies, these being in charge, amongst others, of implementing federal environmental standards, and environmental monitoring, protection and regulation.

3.2.5. Environmental Impact Assessment Proclamation No 299/2002

37. This Proclamation, published in the Federal Negarit Gazeta dated December 3rd, 2002, establishes the requirement of an Environmental Impact Assessment (EIA) procedure for all programs, and provides the processes and procedures to be followed by program proponents with respect to EIAs. The EIA process described in the proclamation includes consultation requirements: reports are to be made public, and the comments made by the public and in particular by the communities likely to be affected by the implementation of a project (PAPs) are to be solicited and taken into consideration in the review process undertaken by the federal or regional environmental agency in charge of the program.

[3] *Initially established by Proclamation N° 9/1995 in response to the requirements of the then newly passed Constitution.*

3.2.6. Environmental Pollution Control Proclamation No 300/2002

38. This Proclamation, published in the Federal Negarit Gazeta dated December 3rd, 2002, provides the framework for the further development of environmental regulation instruments and standards, and establishes requirements applicable to municipal or hazardous waste. It also creates an environmental police to enforce environmental regulations and standards.

3.2.7. Environmental Policy

39. This document was developed together with the CSE with assistance from the World Conservation Union (IUCN). It includes 9 policy objectives, 19 guiding principles, 10 sectoral policies (one of which on Water Resources) and 10 cross-sectoral policies (one of which on Community Participation and another on EIAs).

40. The principal features of the Environmental Policy are:

- Provides for protection of human and natural environments
- Provides for an early consideration of environmental impacts in projects / program design
- Recognizes public consultation
- Includes mitigation and contingency plans
- Provides for auditing and monitoring
- Establishes legally binding requirements
- Institutionalizes policy implementation

3.2.8. EIA Guideline

Objectives of the EIA Process

41. The EPA has issued in July 2000 a "Guideline Document" for Environmental Impact Assessments. This document states the objectives of the EIA process, as follows:

- Integration of environmental considerations in development planning processes, in order to make use of natural resources in a responsible manner; and
- Protection and enhancement of the quality of all life forms.

Responsibilities in Dealing with EIAs – Competent Agency

42. The guidelines define the Competent Agency will have to take responsibility for the EIA process, including the review of the initial proposal, of the reports and of the final decision on the acceptability of the submitted EIA. It affirms the role of the EPA as the Competent Agency at the federal level in Ethiopia, and the role, in the long term, of regional environmental agencies when they are established, in dealing with EIAs at the regional level. However, in recognition of the fact that all regional environmental agencies will not be established soon, the document mentions that the Regional Environmental Coordination Committee must take the responsibility of EIAs at regional level, with

technical support from the federal EPA where needed. The federal EPA should remain the Competent Agency for EIAs:

- where programs may have inter-regional or inter-national impacts,
- where they may entail impacts on environments of national or international significance,
- where the proponent is a federal agency, including the Federal Investment Authority,
- Or where the federal EPA agrees that an EIA be referred to it by the regional level due to its complexity or to the lack of capabilities at regional level.

EIA Processes and Procedures

43. The process as described by the guideline is the following:

- Application,
- Pre-Screening,
- Screening,
- Scoping,
- EIA and Environmental Impact Report,
- Review and decision by the Competent Agency.

Categorization of Programs

44. The guideline categorizes programs into three "schedules" according to their potential impacts:

- Schedule 1 includes "sub programs which may adverse and significant environmental impacts, and may therefore require a full EIA", as well as "programs in environmentally sensitive areas irrespective of their nature";
- Schedule 2 includes "sub programs whose type, scale or other relevant characteristics have potential to cause some significant environmental impacts, but not likely to warrant an environmental impact study";
- Schedule 3 includes "sub programs which would have no impact and do not require an environmental impact assessment".

45. Programs related with water and sanitation is categorized as follows:

- Categorized in schedule 1:
  - Construction of dams, impounding reservoirs with a surface area of 100 hectares or more;
  - Ground water development greater than 4000 m3/day;
  - Canalization and flood-relief work (large scale);
  - Drainage plans in towns close to water bodies;
  - Programs that cause the resettlement of more than 100 families.
- Categorized in schedule 2:
  - Rural water supply and sanitation;

- Sewerage system;
- Electricity transmission lines.

3.3. WORLD BANK SAFEGUARD POLICIES

3.3.1. Applicable World Bank Safeguard Policies

46. Three safeguard policies of the World Bank have been triggered by the WASH II. The polices are OP 4.01(Environmental Assessment), OP 4.12 (Involuntary Resettlement), OP 4.10 (Indigenous Peoples

47. **OP 4.01** Since the potential adverse environmental and potentially localized impacts of the WaSH program could not be identified prior to appraisal, this ESMF has been updated consistent with OP 4.01. It outlines an environmental and social screening process which will enable qualified program personnel to screen sub-programs for potential negative environmental and social impacts and to identify, implement and monitor appropriate mitigation measures.

48. **Physical Cultural Resources OP/BP 4.11:** The policy is triggered by WaSH- II because sub-projects involve construction of access road, ground and surface water development, and other similar infrastructures, which may potentially affect physical and cultural resources. The necessary steps of public consultations, engagement of cultural or religious leaders, local authorities need to be conducted before decision on sub-project implementation is made. Sub-projects will be screened for their impacts on physical cultural resources (see screening form) and mitigation measures to avoid impacts on physical cultural resources have been suggested.

49. **OP 4.12** is to be complied with where involuntary resettlement may take place as a result of the program; involuntary resettlement is understood in a broad sense, including any impacts on livelihoods that may result from land acquisition; OP 4.12 includes requirements that:

    - Resettlement should be avoided where feasible, or minimized, exploring all available alternative program designs.
    - Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the program to share in program benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
    - Regardless of the legality of land tenure, displaced persons should be assisted in their efforts to improve their livelihoods and standards of living, or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of program implementation, whichever is higher.

4. ENVIRONMENTAL AND SOCIAL CONTEXT AND BASELINE CONDITIONS

4.1. GEOGRAPHICAL OVERVIEW

50. Ethiopia is located in the Horn of Africa, and bordered by Djibouti, Eritrea, Sudan, Kenya, and Somalia. The total surface area of the country is 1,110,000 km^2. Altitude ranges from 4,620 m above sea level at the highest peak, Ras Deshen, to 110 m below sea level in the Danakil Depression. A large portion of the country consists of high plateaus and mountains varying in altitude between 2,000 and 3,000 meters, with a number of rivers originating from these highlands. The East African Rift Valley separates the northern and south-western highland from the south-eastern highland. In contrast with these highlands, hot and semi-arid to arid lowlands lie in the Eastern and Western parts of the country.

4.2. ECO-CLIMATIC ZONING OF THE COUNTRY

4.3. OVERVIEW

51. Ethiopia has a wide variety of climatic zones that mainly reflect the contrasts in altitude. It includes 6 zones, i.e. Wurch, High Dega, Dega, Weyna Dega, Kolla, Berha. The two zones highest in elevation are usually grouped into one single zone (Wurch/High Dega).

4.3.1. Wurch – High Dega

52. These areas are at altitudes 3,200 and above. They cover a total surface of 0.6% of the country, in the highest mountainous areas of Wollo, Gonder and Gojam (all in Amhara Regional State). The climate is cold, annual rainfall is in the range of 1,000 to 1,600 mm, with grassland forming most of the vegetation. These areas support less than 1% of the population, mainly active in cattle and sheep rearing. They include protected natural areas.

4.3.2. Dega

53. Dega is found between altitudes of 2,400 and 3,200 m asl, in Tigray, Wollo, Gonder, and Gojam in Amhara Regional State, and in Harrerge, Arsi and Bale in Oromiya Regional State. Rainfall is in the range of 1,000 to 2,000 mm annually, but some areas may experience erratic distribution of rains. Primary vegetation typically comprises of various species of coniferous shrubs and trees. Many springs and rivers originate in this area. This area supports about 20% of the population on 10% of the country surface, with farming systems combining subsistence and cash crops with cattle rearing.

4.3.3. Weyna Dega

54. This zone is found between altitudes of 1,500 and 2,400 masl, and occupies a vast majority of the surface of the western half of Ethiopia, with about 30% of the total country surface. It is home to about 70% of the population of the country. Most of the surfaces of the main four Regional States (Amhara, Oromiya, SNNP and Tigray) fall in Weyna Dega. Rainfall can vary between 800 and 1,600 mm, hence the subdivision between wet Weyna Dega, in the South West (SNNP), and dry Weyna

Dega in the center and northern parts of the country. These are the most densely populated areas in the country, as they have historically been the most attractive to human settlement due to their temperate climate. The main two water sheds are those of the Abbay River (Blue Nile) and Awash River.

4.3.4. Kolla

55. Kolla zones are semi-arid areas found between 500 and 1,500 m asl, in parts of Western Tigray, Western Gonder (Amhara), in the South of Oromiya Regional State (Borena) and the North of Somali Region. Temperatures are higher than in the highlands, and annual rainfall may vary between 200 and 800 mm, with erratic distribution in time and space. As a result, the vegetation is that of a dry savanna. Human activities are pastoral, with some cultivation in the most favorable areas. The population density in kola areas is low, estimated to be 10 percent of the total population.

4.3.5. Berha

56. Berha corresponds to the arid lowlands found in Afar, Somali, Benshangul Gumuz, and Gambella Regional States, as well as in the western parts of Tigray and Gonder (Amhara), and in the East of Oromiya Regional State (Harrerge and Bale). The annual rainfall is usually less than 200 mm, and temperatures are high. Population density is very low (less than 5% of the total population). Agriculture is only possible where the presence of a perennial water source allows for irrigation. Otherwise, predominantly nomadic groups base their livelihoods on pastoral activities.

4.4. MAIN ENVIRONMENTAL ISSUES RELATED WITH WATER IN EACH ECO-CLIMATIC ZONE

4.4.1. Wurch – High Dega

57. In this eco-climatic zone, the low density of population results in few potential threats to the natural environment. However, these areas have potential for water catchment serving population located downstream in lower areas. Some environmental and social issues that will need to be considered in the event of these high altitude areas being used for water supply activities are the following:

- Vulnerability of local high altitude eco-systems,
- Presence of protected areas, and risks implied by induced access into these areas,
- Erosion that may be caused by construction activities on steep slopes.

4.4.2. Dega

58. The population of Dega areas has increased faster than the national average in the last 20-30 years, due to influx of population from other zones. Towns are expanding in this area. However, water sources, whether ground or surface water, are generally sufficient to accommodate this increasing population without significant environmental impacts caused by water withdrawals. However, care needs to be taken on the following issues.

- Conflicts between upstream and downstream users in the case of significant abstractions for urban water supply;
- Potential for pollution of water courses and of ground water by deficient sanitation in urban and semi-urban areas;
- Erosion that may be caused by construction activities on steep slopes.

4.4.3. Weyna Dega

59. Like in the Dega zone, Weyna Dega areas experience a steep increase of the population, particularly of the urban population, and the general inadequacy of sanitation and industrial effluent treatment result in water contamination that may affect both shallow groundwater and surface water courses. Some of the potential environmental issues related with WSS are:

- Conflicts between upstream and downstream users;
- Contamination of shallow to medium-depth groundwater by inadequate sanitation, especially in urban areas;
- Contamination of surface water by untreated discharges of industrial effluents and by inadequate urban sanitation;
- Locally, over-abstraction of ground water or surface water for urban water supply;
- Potential for water borne diseases from inadequate drainage around water points;
- High solid content of surface water resulting from erosion in the water shed; and
- Erosion caused by construction activities, in addition to the general tendency to erosion.

4.4.4. Kolla and Berha Areas

60. The main risks in these zones are in relation with the influx of pastoral and semi-pastoral population (and their livestock), or sedentary farmers from other areas, that may result from the development of permanent water points. Such water points (deep boreholes or livestock watering ponds) result in adverse environmental and social impacts in an already fragile environment, such as overgrazing and the resulting vegetation degradation, deforestation, and conflicts between settlers and pastoralists.

5. POTENTIAL PROGRAM IMPACTS

5.1. WATER AND SANITATION SYSTEMS CONSIDERED UNDER THE WSSP

5.1.1. Water Supply Systems

61. The following table shows, in summary, the physical components of the water supply systems likely to be considered under the WSS Program, for both rural and urban settings:

Table 2 Physical Components Considered under Rural & Urban Water Supply Sub-Programs

System	Water production	Water treatment and storage	Water distribution

System	Water production	Water treatment and storage	Water distribution
Rural	Hand-dug well	None	Hand-Pump
	Drilled well	None	Hand-Pump
	Drilled well with submersible pump	Small capacity, on-site storage and treatment	Limited piped distribution network with a few public taps, or on-site distribution
	Spring catchment	On-site storage	On-site distribution or Gravity distribution system with a few public taps
Pastoralists	Surface water catchment (run-off catchment, pond, small dam)	None	None
	Pastoral open well	None	None
	Pastoral drilled well with submersible pump (with generator or solar)	None	On-site troughs and taps
Urban	Spring catchment	Raw water treatment system and storage	Gravity distribution system
	River intake (run of river)	Raw water treatment plant and treated water storage	Pressure transmission and distribution system with public and private taps
	River intake with existing, rehabilitated dam	Raw water treatment plant and treated water storage	Pressure transmission and distribution system with public and private taps
	Drilled well(s) with submersible pump(s)	Raw water treatment plant and treated water storage	Pressure transmission and distribution system with public and private taps
	Combination of the above	Raw water treatment plant and treated water storage	Pressure distribution system with public and private taps

5.1.2. Sanitation Systems

Rural Systems

62. The WSS Program will promote the integration of sanitation with improvements to water supply. For rural sanitation, improved pit latrines will be the choice option in the vast majority of communities. However, the Program would not directly fund the construction of latrines, but build capacity and train private artisans to build them for households on a demand-supply, market-driven, basis.

Urban Systems

63. Individual disposal systems such as latrines and septic tanks may be applicable in fringe areas of towns, and in general where low density of dwellings allow. However, urban system will likely include, at least in bigger towns and in association with the latter individual disposal systems, a piped

sewerage collection system in the core areas, with a waste water treatment plant, which may include treatment ponds where land is available or more compact plants otherwise.

5.2. POTENTIAL IMPACTS OF RURAL WATER SUPPLY SYSTEMS

5.2.1. Beneficial Impacts of Rural Water Supply Systems

- Gain of time, especially for women and girls, that may be used for other, productive activities, spare of time to go to school,
- Better comfort and better quality of life and domestic hygiene,
- Reduction in water-borne diseases such as dysentery,
- Capacity building and training in the community, and resulting enhancement of organizational, financial and technical capacities of community.

5.2.2. Adverse Impacts of Rural Water Supply Systems

64. Table 3 hereunder shows potential adverse impacts that different rural water systems may cause to the biophysical or human environment

Table 3: Potential Environmental and Social Impacts of Rural Water Supply Systems

System	Potential Adverse Impacts
R1 - Rural Hand-Dug Well with Hand-Pump and R2 - Rural Drilled Well with Hand-Pump	• The community is made dependent on a more sophisticated system that will require maintenance, organization, and finance • Water-related diseases (malaria, skin diseases) caused by lack of drainage in the immediate surroundings of the well • Ground water contamination through the well during construction or operation • Waste material extracted from the well (hand-dug wells) or waste drilling cuttings and drilling mud (boreholes), if not disposed of or reclaimed properly • Water will have to be paid for, which may not be affordable l to the poorest in the community • Land requirements for the well pad
R3 - Rural Drilled Well with Submersible Pump and small distribution system	• Same as above, plus: • Land requirements for taps and pipelines
R4 – Spring catchment with on-site storage and point of use	• Water-borne diseases (e.g. malaria, skin diseases etc) caused by lack of drainage in the immediate surroundings of the spring • Water will have to be paid for, which may not be affordable to the poorest in the community • Reduced water flow downstream, potential for conflict between upstream and downstream users • Temporary increase in the suspended solids content of water and impact on users downstream during construction • For springs in mountainous areas (Wurch/High Dega and Dega areas), potential for impacts to fragile ecosystems and wetlands
R5 – Spring catchment with on-site storage and distribution	• Same as above, plus: • Land requirements for taps and pipelines

5.2.3. Potential Impacts of Rural Systems on Groundwater

65. In no known situation in Ethiopia is a hand-dug well fitted with a hand-pump likely to have any long-term impact on the groundwater table, even if considered cumulatively (group of wells in a large community for instance). The maximum daily abstraction of such a well is that of the pump, which will not exceed 20 m^3/day, and will usually be between 3 and 10 m^3/day. This level of abstraction is always balanced by the natural recharge of the water table. The same applies to drilled wells fitted with hand-pumps.

5.3. POTENTIAL IMPACTS OF PASTORAL WATER SUPPLY SYSTEMS

5.3.1. Beneficial Impacts of Pastoral Water Supply Systems

- Gain of productivity, due to improved animal health, and potentially improved grazing opportunities if water points are adequately located,
- Gain of time, not only for women and girls but also for males who usually are within the pastoralist groups those responsible for watering the animals, which time spared can be used for other, productive activities including spare time to go to school,
- Capacity building in the community.

5.3.2. Adverse Impacts of Pastoral Water Supply Systems

66. Table 4 hereunder shows potential adverse impacts that different pastoral water systems may cause to the biophysical or human environment.

Table 4: Potential Environmental and Social Impacts of Pastoral Water Supply Systems

System	Potential Adverse Impacts
R6 – Surface Water Catchment (Pond, Dam, Run-Off)	• Water-borne diseases (malaria) caused by standing water • Potential bacteriological contamination downstream (if a water course has been dammed to create the water point) • Potential for increased animal concentration in the surroundings of the water point, with resulting overgrazing, ecosystem and grazing resources degradation • Potential for permanent human settlement of pastoralists or others • Potential for social conflicts between traditional users of the area and settlers or pastoralists coming from other areas to water their livestock
R7 – Pastoral Open Well	• Water-borne diseases (malaria, skin diseases…) caused by lack of drainage in the immediate surroundings of the well, which may affect both humans and animals • Ground water contamination through the well during construction or operation • Potential for increased animal concentration in the surroundings of the well, with resulting overgrazing, ecosystem and grazing resources degradation • Potential for permanent human settlement of pastoralists or others • Potential for social conflicts between traditional users of the area and settlers or pastoralists coming from other areas to water their livestock • Potential adverse impact on physical cultural resources

System	Potential Adverse Impacts
R8 – Pastoral Well with Submersible Pump	• Same as above, plus: • The community is made dependent on a more sophisticated system that will require maintenance, organization, and finance • Water will have to be paid for, which may not be affordable to the poorest in the community

5.4. DETRIMENTAL IMPACTS OF URBAN WATER SUPPLY SYSTEMS

5.4.1. Beneficial Impacts of Urban Water Supply Systems

67. Potential beneficial impacts of urban water supply systems are the following:

- Gain of time, especially for women and girls, that may be used for other, productive activities, and resulting gains in overall economic productivity;
- Better comfort, better lifestyle and domestic hygiene,
- Reduction in water-borne diseases such as dysentery, cholera and others,
- Employment opportunity both during construction and operation phases,
- Capacity building and training in the town, and resulting enhancement of organizational, financial and technical capacities of town.

5.4.2. Detrimental Impacts

Table 5: Potential Adverse Environmental Impacts of Urban Water Supply Systems

Component	Potential Adverse Environmental Impacts (Bio-Physical)
Spring Catchment	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Reduced water flow downstream due to water abstraction, potential for conflict between upstream and downstream users related with this reduction of flow • For springs in mountainous areas, potential for impacts to fragile ecosystems and wetlands related with the catchment (where the natural flow downstream feeds a marsh or wetland) • Limited loss of flora and fauna
Well and well fields	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Noise, dust and vibration • Impact of ground water abstraction on ground water table level and its availability to other users • Impact of ground water abstraction on potential changes in water salinity where there is a complex balance within the aquifer between fresh water and salty water • Impact of the chemicals contained in the drilling fluids on groundwater quality

Component	Potential Adverse Environmental Impacts (Bio-Physical)
	• Limited loss of flora and fauna • Potential impact on physical cultural resources
Dam rehabilitation and operation	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Noise, dust and vibration
Raw Water Treatment Plants	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Potential impacts associated with reagent management and disposal • Potential impacts associated with treatment sludge management and disposal • Noise, dust and vibration at construction phase, noise and vibration at operation phase • Loss of flora and fauna
Transmission Pipelines	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Potential leaks at operation phase with health risks associated with standing water • Dust at construction phase • Loss of flora and fauna
Distribution Pipelines	• Disturbance to topsoil created by earthmoving works and heavy vehicle traffic at construction phase • Potential leaks at operation phase with health risks associated with standing water • Dust at construction phase • Loss of flora and fauna • Potential adverse impacts on physical cultural resources.
Public Taps	• Potential leaks at operation phase with health risks associated with standing water, particularly malaria

Table 6: Potential Adverse Social Impacts of Water Supply Systems

Component	Potential Adverse Social Impacts

All systems	Land requirements at construction phase (staging areas, access roads, storage areas) Long-term land requirements at operation phase and associated potential for physical displacement and impacts on livelihoods In areas where the distribution network is expanded, water that was previously free of charge will have to be paid for, which may be detrimental to the poorest in the community The town water supply is made dependent on a more sophisticated system that will require enhanced organization for maintenance, revenue collection and generally management Increase in malaria due to risks of development of standing water Impacts on public health due to increased dust, noise, traffic accidents, and increased wastes, particularly asbestos/cement pipes

5.5. POTENTIAL IMPACTS OF SANITATION SYSTEMS

5.5.1. Beneficial Impacts

68. Potential beneficial impacts of sanitation systems are the following:

- Reduction in water-borne diseases such as dysentery,
- Reduction in the potential for outbreaks of epidemic infectious diseases such as cholera,
- Capacity building and training in the town or community, and resulting enhancement of organizational, financial and technical capacities of town,
- Provision of employment for construction and operation.

5.5.2. Detrimental Impacts

Table 7: Potential Environmental and Social Impacts of Sanitation Systems

System	Potential Adverse Impacts
Latrines and other individual sanitation systems	- Impact on groundwater in situations where water table is shallow - Impact of potential improper sludge disposal - Health hazards associated with inappropriate sitting of sanitation systems in relation to water supply systems - Health hazards associated with unreliable emptying services

Piped sewerage system and waste water treatment works	- Potential impact of effluent discharge on water bodies - Potential impact of effluent infiltration on soils and groundwater where infiltration is used as a disposal method - Potential impact of the handling of sludge and other sanitation- related solid waste - Increase in the number of mosquito larvae and related increase in mosquito-borne diseases, primarily malaria - Land acquisition requirements for pipelines, treatment works and other structures - The cost of the sanitation service will have to be recovered, which may be detrimental to the poorest in the community - The town is made dependent on a more sophisticated system that will require maintenance, organization, and finance - Potential impacts on physical cultural resources

6. PROPOSED SCREENING AND ENVIRONMENTAL MANAGEMENT PROCESS – TYPICAL MITIGATION MEASURES

6.1. GENERAL

69. As mentioned above, the Ethiopian EIA guideline categorizes programs into three "schedules" according to their potential impacts: Schedule 1, Schedule 2 and Schedule 3. The WaSH- II program is likely to include several types of sub programs, resulting from the demand of towns and communities. These sub-programs will vary in magnitude and technical scope, from the rural hand-dug well to full urban water and sewerage systems.

Table 8: Categorization of Sub-Programs to be considered under the WaSH II program

System	Ethiopian regulations	World Bank
Rural Drilled Well with Submersible Pump and small distribution system	2	
Spring catchment with on-site storage and distribution	2	
Surface Water Catchment (Pond, Dam, Run-off…)	2	
Pastoral open well	2	
Spring catchment, treatment and gravity transmission and distribution system	2	B
Dam upgrade to ensure compliance with safety requirements	2	B
Raw water treatment plant	2	B
Transmission pipelines	2	B or C depending on the location
Distribution pipelines and distribution network	2	B or C depending on the location
Well or well fields with pumping station(s), treatment and pressure distribution system	2, unless groundwater withdrawal is more than 4,000 m3/day	B
Rehabilitation or expansion of existing transmission or distribution systems	2	B or C depending on the location
New distribution systems	2	B or C depending on the location
Latrines and other individual sanitation systems	2	B or C depending on the location
Piped sewerage system and waste water treatment works	2	B

System	Ethiopian regulations	World Bank
Leak detection	-	C
Institutional and capacity-building components	-	C

6.2. SCREENING PROCESS

Overview

70. The screening aims at categorizing the sub-projects into one of the following environmental and social categories. The field personnel in charge of the screening will propose the environmental category. Screening will also help to propose whether a proposed sub program will further require a full-fledged Resettlement Action Plan (RAP), per procedures outlined in the Resettlement Policy Framework.

- **Category A** This sub-project has been categorized as A (Schedule 1) due to one or more major adverse impacts, and therefore cannot be funded under the WASH II Program. It will be either re-designed and re-submitted to the environmental screening process after re-design, or abandoned.
- **Category B** (Schedule 2) due to potential environmental issues identified which can be mitigated as follows:
    - **Category B1**: No further environmental assessment work required; application of mitigation measures as outlined in the ESMF.
    - **Category B2**: Further environmental assessment work is required. Preparation of a separate Environmental and Social Impact Assessment (ESIA) to get a better understanding of the potential environmental and social issues that have been identified in the screening process and development of a specific Environmental and Social Management Plan is required.
- **Category C**: No significant environmental issue identified, no specific mitigation required; sub-program implementation can proceed.

Screening Form

71. The screening form (Appendix 3) formalizes a rapid field investigation to screen on-site whether any environmental and social issues may require specific attention and supplemental Environmental Assessment work. All sub-programs (including the rural piping systems) will undergo the screening process in order to avoid any miss in screening potential environmental issues. However, given the current lack of capacity at woreda level to carry out these assessments, screening process will be undertaken by consultants in charge of the design of the sub-programs on behalf of the woredas for rural sub-programs.

Assignment of an Environmental Category to a Sub-Projects

6.3. CATEGORY ''A'' SUB-PROGRAM

72. Category A sub-programs are those for which the Environmental Baseline Assessment concludes that changes to the design or the sitting/routing of facilities are required. These changes may be needed to eliminate unacceptable adverse impacts such as:

- Impact on a fragile eco-system,
- Impossibility to drain run-off water from the water point site,
- Impact on inhabited dwellings,
- Impact on structures used for commercial activities or other businesses,
- Impact on graves or other cultural resources (physical cultural resources),
- Impact on land use and/or users.

73. Changes in the sub-program design may include:

- Re-siting of the water point or of another program component,
- Re-routing of a pipe-line,
- Changes in the location of an effluent discharge,
- Changes in processes used for raw water treatment or waste water treatment for instance to improve efficiency or to reduce land take.

6.4. CATEGORY ''B'' SUB-PROGRAMS

74. A sub-program categorized as "B" will either implement mitigation measures as outlined in this ESMF and based on the recommendations of the environmental and social screening process (category B1), or, a separate ESIA report will be prepared (Category B2). Generic ESIA terms of reference are attached in Appendix 2; they will be adapted to the specific requirements of the sub-programs.

6.4.1. Category B1 Sub-Programs (Not Requiring Further ESIA Work)

75. As mentioned above, sub-programs categorized as B1 will not require any further environmental assessment work. They will, however, be applied the general Environmental and Social Management Plan (ESMP) presented further in this ESMF.

6.4.2. Category B2 Sub-Projects (Requiring Further ESIA Work)

76. Examples of issues requiring the implementation of specific mitigations in cases where specific environmental or social issues are identified and where a change in the design or sitting of the sub-program is not possible include:

- Potential conflicts between upstream and downstream users,

- Impacts on a fragile ecosystem,
- Impacts on land without physical displacement or significant impacts on livelihoods,
- Potential for heavy traffic at construction phase through inhabited areas,
- Construction in water bodies (pipeline river crossings, water works in river beds-intakes),
- Construction through areas with contaminated soil.

ESIA for Category B2 will be carried out bby independent, experienced consultants; include meaningful public consultation in accordance with OP 4.01; and include public disclosure of relevant documents in a culturally-adequate form (terms of reference, draft ESIA report, draft EMP), and to demonstrate that public's comments and observations have been taken into consideration.

77. Mitigations will be detailed in an ESMP appended to the ESIA, to be addressed prior to the start of any construction activities. They may include, for example:

- Extensive consultation with upstream and downstream users to avoid conflict with the objective of reaching an agreement on water use that can be implemented and monitored by local authorities,
- Specific construction arrangements to minimize physical footprint and negative impacts on fragile ecosystems, topsoil and flora,
- Compensation per resettlement policy framework or Ethiopian proclamation,
- By-passes of heavy traffic out of inhabited areas, speed limits, speed bumps, safety awareness with children and adults,
- Coffer dams, no use of chemicals in water bodies, use of geo-synthetics,
- Excavation and disposal of contaminated soil prior to construction.

6.4.3. Consultation and Disclosure for All Category "B" Sub-Programs

Public Consultation

78. For all Category "B1" sub-projects, public consultation will include the following steps:

- Identification of interested parties (beneficiary neighboring communities, communities potentially affected by the sub-program, downstream water users, local authorities, regional authorities);
- Information on the proposed sub-program and its likely impacts, seeking feedback on impact identification and general mitigation measures as they are described in this ESMF.

79. For all Category "B2" sub-projects, public consultation will include the following steps:

- Identification of interested parties (beneficiary neighboring communities, communities potentially affected by the sub-program, downstream water users, local authorities, regional authorities);

- Initial step of consultation, before further environmental assessment work is undertaken: one initial meeting with each of the identified parties, presenting the sub-program and seeking input on the scope of work for further environmental assessment work;
- Second step of consultation, after further environmental assessment work is complete: presentation of the results of the environmental assessment, including presentation of identified impacts and proposed mitigations, seeking input on these proposed environmental management measures; this second step will include dissemination to identified interested parties of a brief summary of the environmental assessment in local language (generally Amharic and/or Oromigna).

80. In average, it is estimated that 2 to 5 meetings will be required for each of the above two steps of consultation for Category "B2" sub-programs. The consultation will be undertaken by consultants in charge of further environmental work (ESIA).

81. Any consultation meeting will be documented. A format for documenting consultation meetings is proposed in Appendix 6.

Disclosure

82. In conformance with OP 4.01, environmental assessment reports related with Category "B2"sub-programs will be made available to the public as follows:

- Disclosure (one copy of the full ESIA report, plus copies of the brief summary in local language mentioned in the previous section) at the Implementation Agency's office;
- Disclosure (at least one copy of the full report and copies of the summary in local language) at the World Bank country office in Addis Ababa;
- Disclosure through the World Bank Infoshop.

6.5. CATEGORY ''C'' SUB-PROGRAMS

83. Sub-programs for which the screening process does not identify any specific environmental or social issues are categorized as "C". A sub-program categorized as "C" will not require any further environmental and social assessment work and implementation can proceed immediately.

84. Notwithstanding their categorization as "B1" or "C", such subprograms will be applied the "Environmental Guidelines for Construction Contractors "presented in Appendix 5. This guideline is to be appended to any request for proposals and construction contract related with the WaSH-II program.

85. If any sub program entails significant social impacts and requires the development of a RAP (Resettlement Action Plan) this will be conducted in accordance to the procedures outlined in the Resettlement Policy Framework (see RPF in a separate document).

6.6. REVIEW AND CLEARANCE OF ENVIRONMENTAL SCREENING RESULTS

86. In conformance with Ethiopian EIA guidelines, environmental screening results are to be reviewed and cleared by the "Competent Agency" or by the MoWE environmental unit (MoWE is one of the federal agencies to indeed have an Environment Unit with a full mandate to review and approve environmental and social screening and ESIA study documents).

87. A sample of screening forms will be sent to the World Bank country office for potential comments after review and clearance by the MoWE environmental unit.

6.7. REVIEW AND CLEARANCE OF ESIAS

88. For Category B2 sub-programs, ESIAs will be reviewed by the Competent Agency or by MoWE environmental unit as follows:

    - Review of the scope of work (Terms of Reference),
    - Review of the draft ESIA,
    - Clearance of the final ESIA.

89. For these sub-programs, ESIAs will be reviewed by the World Bank as follows:

    - No-objection on the scope of work (TOR) and consultant contract,
    - Review of the final ESIA after it has been reviewed and cleared by the Competent Agency.

6.8. GUIDELINES FOR CONSTRUCTION CONTRACTORS

90. Environmental guideline for construction contractors is presented in Appendix 5. It will apply to all sub-programs under the WSS Program, including Category "C" sub-programs. This guideline will be appended to all Requests for Proposals for construction works and resulting contracts passed under the WSS Program.

6.9. TYPICAL MITIGATIONS AND ESMP

91. Table 9 below provides typical environmental management and monitoring measures associated with impacts identified above. It forms the basis for the ESMP applicable to construction and operation phases of all Category "B" sub-programs.

Table 9: Environmental and Social Management Plan

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
Design/ Planning	For springs in mountainous areas (Wurch/High Dega and Dega areas), potential for impacts to fragile ecosystems and wetlands	• Identification at EBA stage of ecosystems that may be affected by spring catchment • Assessment of their vulnerability to the spring catchment and the resulting reduction in the flow downstream • If needed, changes to catchment location or design	• Flow observations downstream • Flora indicator to be determined according to the specificities of the location	Woreda/town consultants in charge of EBAs and sub-program design	Program appraisers	Cost of mitigations: Included in construction contract(s) Cost of rehabilitation: USD 5,000 per year during operations	Construction and Operations phases
Operation	Potential bacteriological contamination downstream of pastoral surface water points	Identification at EBA stage of downstream users, with focus on drinking water usages Consultation with them before water point is constructed If needed, changes to catchment design accordingly	Number of downstream users Consultation minutes Total coliforms in flow downstream of catchment	Woreda/town consultants in charge of EBAs and sub-program design Water quality monitoring at construction phase: Contractor	Program appraisers Construction supervisors	Cost of monitoring (water quality testing): USD 4,000 per year during operations	Construction and Operations phases
Design/ Planning & Operation	Potential for increased animal concentration in the surroundings of the water point, with resulting overgrazing, ecosystem and grazing resources degradation	Consultation at EBA stage with pastoralist communities on water point siting issues Assessment of impact of increased livestock concentration on grass resources If needed, changes to water point location accordingly	Consultation minutes Number of livestock in the neighboring communities Number of nomadic livestock in the area Vegetation observations in the	Woreda/town consultants in charge of EBAs and sub-program design	Program appraisers	Cost of mitigations: Included in construction contract(s) Cost	Operations phases

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
			areas surrounding the water point				
Design/ Planning & Operation	Potential for permanent human settlement of pastoralists or others	Consultation at EBA stage with pastoralist communities on water point siting issues Assessment of impact of water point on potential settlement/in-migration If needed, changes to water point location accordingly	Consultation minutes Number of people in the neighboring communities Number of nomadic people in the area	Woreda/town consultants in charge of EBAs and sub-program design	Program appraisers	Cost of mitigations: Included at the design stage	Construction and
Design/ Planning & Operation	Potential for social conflicts between traditional users of the area and settlers or pastoralists coming from other areas to water their livestock	Consultation at EBA stage with pastoralist communities on water point siting issues Assessment of impact of water point on potential settlement/in-migration If needed, changes to water point location accordingly	Consultation minutes Number of people in the neighboring communities Number of nomadic people in the area	Woreda/town consultants in charge of EBAs and sub-program design	Program appraisers	Same to above	Construction phase
Design/ Planning & Construction	Potential risks to aquatic ecosystems caused by works in river bed	Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream Changes in program design or siting if needed Limitation of works in river bed (example: no mechanical excavation), proper phasing according to flow fluctuations (dry/wet season)	Description of fragile ecosystems downstream, vegetation indicators on Number of downstream users Consultation minutes Flow observations TSS in flow downstream of catchment	Woreda/town consultants in charge of EBAs and sub-program design Contractors	Program appraisers Construction supervisors	Cost of mitigations: Included in construction contract(s) Cost of	Construction phase
Design/ Planning, Construction & Operation	Potential risks to aquatic ecosystems caused by dam construction and operation (reduced flow of water downstream, siltation in the	Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream Changes in program design or siting if needed Limitation of works in river bed and proper	Description of fragile ecosystems downstream, vegetation indicators on Number of	Woreda/town consultants in charge of EBAs and sub-program design	Program appraisers	Cost of erosion control measures: USD 8,000	Construction and Operations phases

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
	reservoir, modifications to the river banks and morphology, etc…)	phasing according to flow fluctuations (dry/wet season) Erosion control measures in the dam catchment area	downstream users Consultation minutes Flow observations TSS in flow downstream of catchment	Contractors	Construction supervisors	per year during construction and operations	
Design/ Planning & Operation	The town or community is made dependent on a more sophisticated system that will require maintenance, organization, and finance	Town or community to set up an organization (water board or water users committee) to take care of the system Rules of accountability of board/committee towards the users to be determined Promotion and awareness in the town and community at large Technical training of board/committee members on operation and maintenance of the system Training of board/committee members on organizational and financial aspects Monitoring and technical assistance to board/committee	Existence and effectiveness of Town Water Boards and Water Users Committees Rules of accountability determined by the TWB/WUC and their application Water supply functioning as designed: Number of days per year where system is not functioning Town/community with facilities and management plan.	Towns and communities and their technical assistance	Regional Water Bureaus /Woreda with town and community participation	Cost of awareness creation and training: USD 5,000 during operations	Operation phase
Construction & Operation	Water-borne diseases (malaria, skin diseases…) caused by standing water, ie. lack of drainage in the immediate surroundings of	Proper siting of water wells and distribution points, ie. review of site drainage conditions at EBA stage, avoidance of low points, avoidance of sites with poor drainage, or prone to water	frequency of prevalence of malaria cases, skin diseases etc	Health sectors in collaboration with the water sector	Health sectors in collaboration with the water sector	Cost of construction of drainage facilities USD 3,000 per year during	Construction and Operation phases

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
	the well or distribution point	retention or floods Drainage of water wells, troughs, water taps (infiltration pit or other)				construction and operations	
Construction and operation of new drilled wells	• Groundwater contamination by the drilling works • Groundwater contamination at operation phase by infiltration from the surface	• Application of Environmental Guidelines for Construction Contractors (Appendix 5) Proper sitting of the well to avoid infiltration of waste water, avoidance of low points, avoidance of sites with poor drainage, or prone to water retention or floods; location of the well at a safe distance from: (i) latrines, cattle pens, refuse pits (50 m); (ii) soak pits, trenches and sub-surface sewage disposal (100 m); and (iii) cesspools; sanitary land fill areas, and graves (150 m); Use of biodegradable drilling fluids and mud additives During the drilling, recycling of drilling muds in a pit near the drilling site as per usual drilling practice After completion of drilling, disposal of the drilling fluids in an agreed landfill • Fencing of the surroundings of the well to avoid undesirable activities around the well Drainage of the immediate surroundings of the water well to avoid infiltration of contaminated water Construction of properly designed and water tight well head and proper sealing of pump to well head	Distance between wells and closest latrine Contractor compliance with guidelines on drilling fluids and mud - see App. 5 Absence of stagnant water E. Coli lower than WHO guideline Absence of leaks at well head Report of chlorination Site inspection checking absence of stagnant water and general housekeeping at well site	Implementing agencies for each sub-program	Implementing agencies for each sub-program Water testing by the Federal Ministry of Water and Energy	Cost of mitigations: Included in construction contract(s) Cost of monitoring (water testing): USD 5,000 per year during operations	Construction and Operations phases

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
		The pump and other equipment submerged into the well need to be disinfected, initially then at each extraction Avoidance of any leak above-ground at the well-head Initial chlorination of the well, after pumping test and pump installation, then periodic chlorination Well-head and its surroundings to be cleaned and cleared during operation. Infiltration pits to be maintained and replaced if needed Ensure reliable operation and maintenance of the well Periodic monitoring of human activities near/at the well to ensure they do not contribute to contamination Plant shrubs and grasses to prevent contamination of well water If necessary, coordinate anti-malaria measures with the regional offices of the Ministry of Health					
Construction and operation of new drilled wells (continued)	Waste material extracted from the well or waste drilling cuttings and drilling mud (boreholes)	Waste drilling cuttings (innocuous rock cuttings extracted from drilled wells) to be dried, spread on site, and recontoured if needed Drilling mud to be recycled in the hole during drilling from a mud pit per usual drilling practice, After completion of drilling, drilling mud	- Visual inspection of well site - Drilling works supervision - Visual inspection of well site	Contractors under supervision by implementing agency	Implementing agencies for each sub-program	Cost of mitigations included in construction contract(s)	Construction phase

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
		to be disposed of in authorized landfills, or dried and properly mixed with earth and spread in the site vicinity if proved to be innocuous (see details on the related procedure in Appendix 5) - Topsoil to be separately stored and spread on site on top of other materials					
Rehabilitation and increase in storage capacity of Dam, implementation of the recommendations of the dam safety assessment, and upgrades at the water treatment plant	Increased traffic on access roads Limited topsoil erosion where earthmoving - Loss of flora and fauna in the footprint of staging areas Temporary increase in Suspended Solids content downstream the dam	- Application of Environmental Guidelines for Construction Contractors (Appendix 5) - Identification at screening stage of any endangered or threatened species, specific ESIA required if any is identified, and mitigation as per specific ESIA - Storage of stripped topsoil away from drainage paths - No earthmoving works during rains	Compliance with speed limits - chance checks Numbers of traffic incidents involving third parties or not reported monthly Measurement of TSS content 200 m and 1km downstream the works on a monthly basis	Implementing agency and construction contractor	Implementing agency	Cost of mitigations: Included in construction contract(s) Cost of monitoring: USD 10,000	Construction phase
Operation of raw water treatment plants	Impact of improper disposal of used reagents and treatment sludge	Prior to disposal, used reagents to be stored safely on site in fenced and covered structures away from third parties' potential intrusion and away from drainage paths Used reagents to be disposed of in an	- Compliance check through periodic site inspection	Implementing agency Water system operator if operation is privatized	Federal Ministry of Water and Energy Regional EPA and Federal	USD 20,000 per year for disposal of used reagents and treatment sludge	Operation phase

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
		approved elimination site after approval by the Competent Agency (Regional or Federal EPA) - No discharge of any used reagent in a water body Raw water treatment sludge to be recycled, disposed of in an approved landfill, or dried and spread at the vicinity of the site if no alternative exists			EPA		
Construction of latrines	Impact of latrines and other individual sanitation systems on groundwater in situations where water table is shallow	Avoidance of latrines where highest groundwater level is less than 2 meters under the bottom of latrine pits or infiltration pits Sitting of latrines at more than 50 meters distance of any groundwater well, public or private - Identification of water usages at screening stage where latrines are considered and application of distance rules mentioned above under drilled wells	- Compliance with distances	Implementing agencies for each sub-program	Implementing agencies for each sub-program	Included in normal program supervision	Construction phase
Operation of latrines	Poor operation of the emptying services, with associated health hazards	- Use of competing private operators with trained personnel charging an affordable price for adequate quality service - Control of discharges by emptying operators with fines according to Ethiopian law for any violation	- Monitoring of latrines constructed by WSS on a yearly basis and check that emptying services are adequately operating	Program implementers	EPA and Ministry of Water and Energy	Recurrent cost not to be covered by program	Operation phase
Construction of new	- Increased traffic on access roads	- Application of the general Environmental Guidelines for	- Contractor compliance	Program implementers	EPA and Ministry of	To be	Construction phase

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
sewerage lines and/or expansion of existing ones	- Limited topsoil erosion where earthmoving - Loss of flora and fauna in the footprint of trenches and staging areas - Land acquisition - Impact on physical cultural resources	Construction Contractors - If screening reveals that endangered or threatened flora is present in the sub-program footprint, an ESIA will be carried out - Land to be compensated according to provisions of the Resettlement Policy Framework - Avoid disturbance to cultural or religious sites. Advice should be sought from leaders of churches, mosques and community on availability of physical cultural resources before implementation.	- Monitoring indicators as per RPF for land acquisition - Monitoring tools as per the ESMF		Water and Energy	determined after screening	
Operation of sewerage lines	- Spillage of waste water into the environment with associated health hazards for workers and third parties	- Use of reliable contractors with trained personnel for any operation on operational sewer lines - Personnel must use PPE - Third parties kept away from work site by proper signposting - Vacuum trucks kept available for any major intervention on operational sewer lines	- Absence of spillage of waste water into the environment	Sewerage system operator	Regional or Federal EPA Implementing agencies for each sub-program	Included in cost of intervention	Operation phase
Construction of waste water treatment plant	Impact of effluent discharge on water bodies	- Application of the general Environmental Guidelines for Construction Contractors - Sensitivity analysis of the receiving water body, and ESIA if warranted after screening - treatment level design based on World Bank effluent discharge guidelines and on the ESIA results	- Measures of water quality parameters in the discharged effluent as per Appendix 4 on a six-monthly basis - Ecological monitoring of the	Sewerage system operator	Regional or Federal EPA Implementing agencies for each sub-program	USD 4,000 per year	Construction phase

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
			receiving water body				
Operation of waste water treatment plant	Impact of effluent discharge on water bodies	- Compliance with maximum effluent discharge values as stated in Appendix 4	Effluent analysis on a six-monthly basis with analysis of those parameters addressed in Appendix 4	Sewerage system operator	Regional or Federal EPA Implementing agencies for each sub-program	USD 4,000 per year	Operation phase
Construction of water points in general	Conflicts between users in the case of a reduction of flow related with a water intake or catchment	- Identification of water users ahead of sub-program design Consultation with groups of water users during subprogram design In the most difficult situations, involvement of local authorities at an adequate level and mediation in view of reaching a formal agreement, that may include compensation of the impact at community level (see below) Community-level compensation of adverse impacts where these are unavoidable (for instance, if a river that was used by a rural community for water supply is affected by an intake for an urban settlement, the UWSS should consider building an alternative water point for this rural community)	- List of communities using water downstream - Records of consultation with neighboring users - Records of consultation with local authorities - Records of compensation payment or of community compensation effected	Implementing agencies for each sub-program	Implementing agencies for each sub-program	To be determined at screening stage	Construction and operation phases
Operation of water systems in general	Water will have to be paid for, which may be detrimental to the poorest in the town or community	- Town water board to decide on water tariffs, including (if needed) specific rules applying to the poorest Town water board or community water	- Access of vulnerable people to water (survey of water users)	Water boards	World Bank	Included in operation cost	Operation phase

Component /Activity/	Potential Issues/Impacts	Mitigations	Monitoring Tools and/or Indicators	Responsibility for Mitigation	Responsibility for Monitoring	Cost Estimate (USD)	Time Horizon
		users committee to be provided guidance on how to determine water tariffs	- Records of awareness and/or training sessions				
Construction of water systems in general	Land needs Physical cultural resources	Avoidance through resisting/rerouting of any impact on inhabited dwellings or structures used for commercial activities or other businesses Cash compensation of developments or crops affected by program land requirements Land replacement if land take by program is significant enough to affected users' livelihood Monitoring of how PAPs restore their livelihood after being compensated See RPF for further details - Avoid disturbance to cultural or religious sites. Advice should be sought from leaders of churches, mosques and community on availability of physical cultural resources before implementation.	Number of dwellings affected, number of dwellings avoided Cash compensation actually paid Land replacement actually effected Livelihood monitoring through income survey	Implementing agencies for each sub-program	Implementing agencies for each sub-program	To be determined at screening stage	Construction phase

7. LESSONS LEARNED AND MAJOR GAPS OBSERVED DURING IMPLMENTATION OF WSSP

92. WSSP can be considered as a very good opportunity in taking the environmental and social aspects in to account through the course of implementation of WSSP sub projects. This is the most important lesson that is introduced to the water sector and to the community at different levels. This scenario is a very good experience which can give the opportunity to replicate it on the different projects financed either by the government or other donors.

7.1. MAJOR GAPS OBSERVED

93. On the other hand, however, because of limited capacities especially at the regional levels, ESIA and the RAP studies were not carried out at the right time. In addition, as per the comments forwarded by the ESIA study consultants, it was challenging to propose and opt project alternatives: like rerouting, redesigning, relocating and others of sub project sites. This is because most ESIA studies were used to conduct after the completion of the design study and commencement of some physical works of the sub projects. Hence, all this things will be taken as a very important lesson, and shall be considered and appropriately addressed (in accordance to the updated ESMF and RPF documents) in WaSH-II program ESIA study processes. The visit made in the different regions also revealed that mitigation measures suggested in the general ESMP, ESS, ESIA and ESM reports were not adequately addressed.

7.2. THE WAY FORWARD / RECOMMENDATION

94. Each RWBs shall have at least one staff member (environmental / social specialist) dedicated in managing social and environmental safeguards. The MoWE has full time environmental and social specialists for safeguards. Their primary job is to assist regions to train regional staffs, town/woreda experts and town water boards, so that they are capable of managing and monitoring environmental and social related issues in their respective regions. MoWE environmental and social specialists are also responsible to review and give clearance for ESS, TOR, ESIA and RAP documents and ensure that environmental management and resettlement plans are appraised properly. Through periodic workshops and training of trainers the safeguard specialists are also supposed to refine materials and implementation procedures.

95. Hence, during the start-up phase, before the commencement of WaSH-II program, MoWE, RWBs, and federal and Regional EPA personnel will participate in a training of trainers (ToTs) workshop to ensure that they have fully understood the safeguard issues and policies involved in the program, and would able to impart the knowledge, skills and experiences they have gained from the workshop to expertise of the program implementing agencies. Woreda and town experts, construction supervision consultants and construction contractors will, therefore, get the training by the ToT members in which they can properly manage environmental and social issues and will able to apply the guideline for construction contractors. In this case, the approach to capacity building will mainly be “learning by doing” through project implementation.

7.3. SUMMERY

96. It was clearly observed that water supply schemes resulted in positive outcomes by providing safe drinking water to enormous rural and urban populations. The contribution of the project in the reduction of water borne diseases is huge. It also greatly contributed in minimizing the suffering of rural women in fetching water from long distances.

97. On the implementation processes of WSSP, experiences have shown that, most WaSH sub projects' impact arise as a result of construction phases of schemes. All impacts are local and mitigable / manageable. Despite there were capacity and budget limitations in mainstreaming environmental and social concerns in the water supply schemes, no adverse environmental impacts were observed in all schemes constructed in the entire regions.

98. Experiences have also shown that there were two major gaps in implementing the ESMF and RPF during phase I of the WaSH project. These were limited technical capacity at all levels and absence of budget for the implementation of the ESMP and mitigation measures. In order to address this; trainings on environmental management, safeguard policies, project screening, monitoring and evaluation skills, participatory planning, and environmental and social audit are proposed to be provided to environmental and social expertise and other implementing agency staff members. In addition, monitoring of the ESMF implementation and backstopping support on technical issues would be provided by the PMU environmental and social specialists.

Table 10: Major Gaps, Reasons & Recommendation on Environmental and Social Aspects of WSSP

Major Gaps	Main Reasons	Recommendation
Shortage of trained manpower and lack of awareness at different levels, specially at regional level	• Lack of budget earmarked for the recruitment or assignment of trained manpower	• Budget earmarked for the recruitment or assignment of safeguard experts at least at regional levels • Provide training and technical support to environmental and social experts
- Shortcomings in sub-project screening at Regional and Town level - Gaps in conducting ESIA and RAP studies	• Lack of safeguard experts at regional level • Lack of capacity and experience (technical skills and knowledge on ESS, ESIA and RAP studies)	• Assign safeguard experts at least at Regional level • Capacity building for Water Bureau environmental and social experts on ESS, ESIA and RAP studies
- Ill-time schedule in conducting ESS, ESIA, ARAP /RAP studies. - Poor project alternative designs	• About 10% of ESS and more than 80% of ESIA, ARAP /RAP studies were conducted after the commencement of the physical works of the sub projects	• Conduct ESS, ESIA, ARAP/RAP studies before the commencement of any physical works of the sub projects.
Gaps in implementing recommended mitigation measures	• Lack of resources (financial) to implement the ESMP and mitigation measures • Lack of skills for implementing mitigation measures	• Earmark budget for the ESMP implementation, including implementation of mitigation measures • Provide training at all levels
Gaps in monitoring or	• Lack of budget earmarked for	• Earmark budget for monitoring

Major Gaps	Main Reasons	Recommendation
follow-up of implementing mitigation measures	monitoring of ESMP activities • Lack of expertise	• Assign the right personnel
Lack of capacity at the different levels (Kebele, Woreda and Region)	• Lack of trained expertise at the different levels (Woreda, Towns and Regions)	• Create awareness at the different levels (Woreda, Towns and Regions)
Poor implementation scenario on ESMF and RPF	• Lack of capacity at the different levels	• Awareness creation at the different levels • Use the ESMF, RPF and all other safeguard tools for all B2, B1 and C sub project categories to ensure WSSP sustainability
- Poor synergy among the different stakeholders ex. among PAPs, utility managers, water bureaus, Woreda water sectors, consultants, contractors etc… - Poor public consultation	• Lack of awareness at different levels, especially on WSSP ESMF and RPF documents	• Awareness creation and application of WaSH II ESMF and RPF documents at all levels
Poor documentation	• Lack of awareness at different levels,	• Awareness creation at different levels on documentation

8. CAPACITY BUILDING AND TRAINING

8.1. OVERVIEW

99. In the course of implementation of WSSP, financed by different donors, including the World Bank; Regional Water Bureaus (RWBs), Town utilities and many woredas have gained some experience and progressively developed capacity. However, capacities in the regions are still low with regard to environmental and social management practices. Therefore, a special initiative is needed to develop the capacity of the RWBs, woredas, towns, and communities to support implementation of the Rural and Urban WSS Programs including social and environmental aspects.

100. In the whole, to effectively deliver their responsibilities, implementing agencies at each level will need to be further strengthened. Accordingly, WaSH-II will: (i) conduct capacity assessment of each region and implementing agencies at each level to take inventory of existing capacity and identify gaps, and (ii) based on the findings of the assessments tailored capacity building packages will be provided. The implementing agencies are the WaSH Ministries (Education, Health and Water) and their respective bureaus and offices at the regional and woreda/town levels.

8.2. TRAINING WORKSHOP FOR MOWE, RWBS AND FEDERAL & REGIONAL EPAS

- **Developing Capacity on the ESMF Process**

101. The following institutions will need environmental training to ensure effective implementation of the ESMF:

- The main implementing agencies, about 22 individuals (2 staff members from each 9 Water Bureaus and from the 2 Water Supply and Sewerage Authorities, directly involved in the implementation of the WSS program),
- Professionals involved in the WSS program at the Ministry of Water and Energy, about5staff members (directly involved in the implementation of the WSS program),
- The Ethiopian Environmental Protection Authority (about 3 individuals),
- Regional Environmental Protection Authority, about 11 individuals (one individual for each regional and the two city administrations'),

102. It is recommended to organize, prior to the WaSH-II kick-off, a three-day workshop where the updated ESMF will be presented and discussed.

- **Developing Capacity in the RPF and Environmental Screening**

103. Resettlement Policy Framework is an area where capacity needs to be enhanced. Environmental screening is also clearly a domain where capacity of future program implementers remains low and also needs to be built. In this particular training engineers and technicians (about 5 individuals at the MoWE) will also taking part.

104. Thus, environmental training to ensure effective implementation of the ESMF and RPF will be addressed in a proposed 6-day workshop targeting the above training of trainers and engineers/ technicians. This workshop will be facilitated by MoWE. The training will be delivered by the MoWE and federal EPA environmental and social specialists, with the support from the World Bank environmental and social specialists. The training will try to address the following topics:

- Review of the Ethiopian environmental policies, laws, regulatory and administrative frameworks,
- Review of the World Bank's safeguard policies,
- ESMP and environmental guidelines applicable to construction contractors,
- Environmental and social screening process (with one practical exercise on a real site),
- Assignment of environmental categories,
- Carrying out of the environmental work as discussed in the ESMF,
- Review and clearance of the screening results and separate ESIA reports,
- Preparation of terms of reference for carrying out ESIA/ESMPs
- How to monitor safeguard implementation
- Water quality management
- Waste management issues (safe disposal of domestic wastes, construction wastes etc.)
- Impacts and monitoring of groundwater and surface water
- Malaria measures with support from the Ministry of Health
- Social impacts as per the updated RPF,
- Resettlement (compensation for minor income/property loses),

- The benefits of public consultation,
- World Bank requirements related with public consultation,
- Areas of the WSS sub programs where public consultation is required,
- Public consultation process in view of the ESMF and RPF requirements,
- Public consultations during sub-program design
- Requirements and procedures for RAP
- Case studies based on categorization of common cases (wells and groups of wells, pipelines, waste water treatment ponds, rehabilitation works),
- Discussion of, and amendments to, the environmental screening form.

105. This workshop should also aim at reviewing and refining some aspects of the process, particularly the forms, toolkits and guidelines proposed in this updated ESMF, in view of their smooth implementation by the different parties involved in the process of implementing the WSS sub programs.

106. The workshop will be organized in Addis Ababa and its cost is estimated as follows:

- Participants' per-diem, including accommodation and meals:
  - USD 80 per day x 6 days x 46 participants
  - Sub-total: USD 22,080.00
- Trainers' fees:
  - 16 days (including preparation) x 4 x USD 100.00 per day
  - Sub-total: USD 6,400.00
- Logistics of the workshop, including participants' transport from water bureaus and woredas, meeting room and transport to site for practical exercise: USD 16,000
- Contingencies: USD 5,196.00
- Total: USD 50,000.00

8.3. TRAINING AND TECHNICAL ASSISTANCE TO PROGRAM IMPLEMENTERS

- **Developing Awareness of the ESMF Process**
  - Representatives of town water boards (at least 1 from each program implementing utilities),
  - Professionals involved with water supply and sanitation at the municipal levels (at least 1 technical staff member for each WaSH-II towns),
  - Environmental focal persons at the woreda or community level (at least 1 for each of the WaSH-II woredas),
- **Developing Capacity on the RPF and Environmental Screening**
  - Technical staffs (engineers and technicians) and environmental specialists from the WaSH-II woredas (at least 1 from each implementing WaSH-II woredas),
  - Engineers and technicians and environmental specialists in municipal authorities with potential involvement in water and sanitation issues (at least 1 individual from each WaSH-II towns),
  - Staff from construction supervision consultants and contractors, 1 from each (for each sub programs).

107. It is recommended to organize, prior to the WaSH-II kick-off, a four-day workshop where the updated ESMF will be presented and discussed.

108. This workshop should also aim at reviewing and refining some aspects of the process, particularly the forms, toolkits and guidelines proposed in this updated ESMF, in view of their smooth implementation by the different parties involved in the process of implementing the WSS sub programs.

109. This workshop will be facilitated by the respective water bureaus, MoWE and each regional EPAs. The training will be conveyed by the ToT members and will address the topics indicated in section 6.2.1. The workshop will be organized in each respective regional capital cities. Its cost (excluding the cost of consultants and contractors) is estimated as follows, to be refined after WaSH-II participating woredas and Towns are identified:

- Participants' per-diem, including accommodation and meals:
  - USD 80 per day x 4 days x3000 participants (estimate)
  - Sub-total: USD 960,000.00
- Consultants' fees:
  - 10 days (including preparation) x 3 ToT members x 60 (batches of trainees) USD 100.00 per day
  - Sub-total: USD 180,000.00
- Estimated logistics of the workshop, including participants' transport from water utilities and woredas, meeting room and transport to site for practical exercise: USD 100,000
- Contingencies: USD 100,000.00
- Total: USD 1,340,000.00

Table 11:**Budget Estimate for Capacity Building & implementation of ESMF**

Types of Activities	**Budget for the period 2014 – 2019 (USD)**					**Total (USD)**
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Training for MoWE, RWBs and Federal and Regional EPA	50,000	-	25,000	-	-	**75,000**
Training for Towns, Woredas, Communities and other regional experts	1,340,000	-	60,000	-	-	**1,940,000**
Conducting ESS	150,000					**150,000**
Conducting ESIA	400,000					**400,000**
Conducting RPF	175,000					**175,000**
Review processes	4500					**4500**

Implementation of mitigation measures -General ESMP -Others (ESS, ESIA, RPF, ESMP…)	500,000 2,000,000	10,000 200,000	100,000 100,000	5,000 100,000	5,000 100,000	**530,000** **2,500,000**
Monitoring and auditing	25,000	50,000	50,000	50,000	50,000	**225,000**
Total	**3,644,500**	**260,000**	**335,000**	**155,000**	**155,000**	**5,999,500**

9. INSTITUTIONAL ARRANGEMENTS AND IMPLEMENTATION RESPONSIBILITIES

110. Ethiopia is divided into 9 regional states; namely: Afar, Amhara, Benshangul-Gumuz, Oromya, Gambella, Southern Nations, Nationalities and Peoples (SNNP), Somali, Tigray, and Harari. In addition to these 9 regions, two cities are governed by autonomous councils, Dire Dawa and Addis Ababa.

111. The proposed project implementation arrangements follow what has been indicated under the WIF. Accordingly, the program will be implemented by Ministries of Water and Energy, Health and Education at federal level and their respective bureaus and offices at the regional and woreda levels. These latter institutions have been strengthened to deliver services at decentralized level. More decentralized decision making authority has been granted for regions, woredas and communities, upon demonstration of adequate capacity. The approach of providing more decision making authority to decentralized level will be adopted by the program.

112. Federal and Regional WaSH Program Management Units will be established within an appropriate Directorate in each of the 3 sector Ministries and MOFED as well as within an appropriate Department/process owner in each of the 3 sector Bureaus (Water, Health and Education) and Finance and Economic Development Bureau (BoFED), The WaSH-II structures established at each level will be responsible for oversight and guidance of the program while the WaSH-II coordination office at federal and regional level will be responsible for coordination among WaSH ministries, bureaus and offices at each level.

The Institutional Arrangements for the Environmental and Social Activities

113. At federal level, the Environmental Protection Authority is in charge of issuing policies, directives and standards, and of enforcing the laws and policies, including on EIAs and environmental monitoring, for all programs or activities that fall under the control of the

Federal Government.

114. Each of the main federal agencies active in infrastructures or economic development is required by law to have its own environmental unit. The MoWE is one of few federal agencies to indeed have an Environment Unit with a full mandate to review and approve environmental and social screening and ESIA study documents. According to the Environmental Protection Organs Proclamation, the Regional States are to create their own Regional Environmental Agencies. These are to deal, amongst others, with EIAs for regionally managed infrastructure or development activities.

115. **Ministry of Water and Energy (MoWE):** The MoWE would be responsible for overall coordination and monitoring and evaluation of the program, facilitation of capacity building, and policy formulation. Capacity building will include full time specialists in social and environmental assessments review and monitoring and evaluation.

116. **Water Resources Development Fund :** The Water Resources Development Fund will be responsible for managing and monitoring the Federal Government's on-lending program for urban WSS sub-programs. Fund personnel will appraise all water supply facilities for which it arranges financing, including a review of baseline surveys and environmental management plans.

117. **Regional Water Bureaus (RWBs)**: Regional Water Bureaus will be primarily responsible for program planning, management and overall coordination within each region. Qualified managers and staff will be responsible for management of their urban and rural programs, financial management, internal audit, procurement and contracting, capacity building, social/environmental assessment, and monitoring and evaluation. Regions would assign point persons for each of these specialist areas to participate in facilitated discussions, share experiences in the region, raise issues and discuss possible solutions, and ensure lessons learned are incorporated into regional programs. The Regional Water Bureaus play a crucial role in the tripartite arrangement between government, consultants, woredas and towns, in pre-qualifying and training regionally based consultants, assisting the woreda and town water boards to secure and supervise the work of the consultants including environmental assessments, and in appraising woreda programs and village/town facilities and management plans (including related designs and environmental management and resettlement plans). The assigned/recruited environmental and social personnel will also be responsible in conducting environmental and social screening, monitoring and following up of the implementation of the proposed mitigation measures for each sub programs found in their respective regions.

118. **Regional EPA**: Regional EPA is also expected to review and approve ESS and ESIA documents, and oversee the safeguard component of the WaSH-II sub programs. They will carry out spot checks of town and village programs to confirm that environmental and social screening and environmental management plans are properly done. They will also advise the RWBs sub-programs involving impacts beyond the generic issues, determining if the mitigation measures are acceptable or program redesign is required.

119. **Woreda**: Woreda will be responsible for planning and managing their own RWSS Programs, including financial and procurement management, appraisal of community facilities and management plans including related designs and environmental management and resettlement plans, and monitoring and evaluation. They are also responsible to earmark budget and properly implement mitigation measures proposed by the general ESMP, ESS, ESIA and ESM study documents.

120. **Town Water Boards and Utilities (TWBUs)**: will be responsible for planning and managing their water supply systems. The Water Board would contract and supervise a local operator to handle routine operations and maintenance and secure professional services to assist them to improve efficiency and expand their system over time. With the same token to Woredas, TWBUs are also responsible to allocate budget and properly address mitigation measures proposed by the general ESMP, ESS, ESIA and ESM study documents for their respective subprograms.

121. **Community Water and Sanitation Committees**: Water and Sanitation Committees will act on behalf of the community in planning and managing its water and sanitation facilities. Each Community Water and Sanitation Committee will be responsible for facilitating participatory planning and ensuring that implementation of mitigation measures are carried out.

122. The following table shows the proposed share of responsibilities between the different organizations involved in the implementation of the WaSH-II program in the implementation of the environmental management process.

Table 12: Environmental Management Process - Implementation Responsibilities

Level	Responsibilities
Implementing Agencies (Regions, city administrations, Towns/utilities and Woredas or Kebeles):	- Contract consultants for ESIAs study of Category B2 sub Programs based on ToRs prepared for each programs and reviewed by the relevant institutions. - Designate focal staffs (at least 2 in each region and in the two city administrations) that will take responsibility for environmental screening and generally for environmental management and get trained accordingly- this staff will ultimately conduct Environmental and Social Screening and supervise the implementation of mitigation measures proposed by ESS, ESIAs, ESM and by the Guidelines for Construction Contractors - Designate technical supervisor of works, who, in the absence of the environmental focal staff mentioned above, will supervise the implementation of mitigation measures - Take responsibility for and supervise the implementation of environmental mitigation measures at construction and operation phases, including those related to land occupation and compensation - Take responsibility for and supervise the implementation of monitoring measures - Provide an annual environmental monitoring report to the review of the Ministry of Water and Energy
Construction contractors	- Implement Environmental Guidelines for Construction Contractors
Construction supervision consultants	Take responsibility for and supervise the implementation of Environmental Guidelines for Construction Contractors
ESIA Consultants	- Develop ESIAs where required (Category B2 sub-programs)
Regional EPAs	- Participate in the provisions of training for regional, woreda and community experts - Participate in the finalization of the screening forms based on this ESMF - Supervise the development of ESIAs by consultants where required, review Terms of Reference, draft ESIAs and participate in public consultations - Supervise the monitoring of environmental mitigations implemented by construction contractors - Supervise the implementation of this ESMF in the entire regions
Ministry of Water and Energy	- Supervise and monitor the overall implementation of ESMF and RPF - As required, update the ESMF and RPF - Review and clear TORs and ESIAs for category B2 sub-programs - Facilitate and provide training for regional water bureaus' and other institutions' environmental and social specialists. - Provide assistance during environmental and social screening and monitoring processes

Level	Responsibilities
World Bank and or other donors	- Review the draft ESMF and RPF - Review ESIAs for category B2 sub-programs - Monitor the overall implementation of ESMF and RPF, including the review of annual environmental reports provided by the MoWE

Table 13: Structural arrangements of the National WaSH Program

Level	Governance & Guidance	Oversight & Management	Program Implementation	Program Coordination
Federal	Federal WaSH **Steering Committee**	Federal WaSH **Technical Team**	Federal Sectors' WaSH Management Units (WMUs)	Federal WaSH **Coordination Office**
Regional	Regional WaSH **Steering Committee**	Regional WaSH **Technical Team**	Regional WaSH Management Units (WMUs)	Regional WaSH **Coordination Office**
Special Zones (or others Zones where applicable)	Zonal WaSH **Management Team**		Zonal WaSH Management Units – (Water, Health, Education, and	Zonal WaSH **Coordination Office**
Woreda	Woreda WaSH Steering Committee (Woreda Cabinet)		Woreda WASH Team	
Town/City	Town/City WaSH Steering Committee (Town Cabinet)		Town/City WaSH Technical Team Municipality Health Desk Education Desk Town Water Board Town Water Utility	

10. MONITORING AND REPORTING

10.1. MONITORING

123. Environmental monitoring of sub-programs will take place on a "spot check" bases as it would be impossible to monitor all sub-programs. These checks will aim at controlling the actual implementation of mitigation measures, at both construction and operation phases. Environmental monitoring needs to be mainstreamed in the overall Monitoring and Evaluation (M&E) system of the WSS Program.

124. Table 10 above presents monitoring indicators that will be used throughout construction and operation phases, together with an estimate of the cost and the proposed allocation of responsibilities for monitoring.

10.2. REPORTING

10.2.1. Screening Forms

125. Screening forms will be submitted by implementing agencies consistent with the draft form proposed in Appendix 3.

10.2.2. Annual Reports

126. Regional expertise will develop a brief annual environmental monitoring report to the review of the Ministry of Water and Energy. The report contents will be the following:

- A summary of Environmental and Social Screening reports, with a table summarizing which subprograms have been assigned each of the screening categories,
- A summary of ESIAs developed during the year;
- A summary of environmental monitoring carried out on systems at both construction and operation phases.

127. These regional reports will be consolidated and summarized into a federal level annual report to be prepared by the Ministry of Water and Energy.

ANNEXES

ANNEX 1: TYPICAL SCOPE OF WORK FOR AN ESIA

Typical ESIA Scope of Work

1. The Consultant will develop an ESIA for the following sub-program within the Water Supply and Sanitation (include description of the sub-program).
2. In preparing the ESIA, the Consultant will conform with the following set of regulations and policies:

- Ethiopian environmental regulations,
- The World Bank's OP 4.01 and other applicable safeguard policies,
- The WSS Environmental and Social Management Framework (ESMF).

3. The Consultant's scope of work will include:

- Initial consultation:
  - with the implementing agency (identify the implementing agency),
  - with the EPA at federal level,
  - with the regional EPA,
  - with the World Bank's country office,
- Review of the regulatory and policy background:

❖ Based on Ethiopian pieces of legislation and regulation identified in the ESMF, the Consultant will identify any relevant changes occurred since the time the ESMF was prepared, and identify the practical implications thereof in preparing the ESIA,

❖ Based on World Bank policies identified as applicable in the ESMF, the Consultant will review any relevant changes and identify practical implications thereof,

❖ The Consultant will summarize in the ESIA report the applicable regulatory and policy background with a focus on practical implications in terms of:

- ESIA process, including public consultation and disclosure,
- ESIA scope of work,
- Contents of the ESIA report
- Sub-program description:

❖ Based on documentation prepared by the implementing agency, the Consultant will prepare a brief sub-program description, with a focus on those physical components of the sub-program that may entail environmental and/or social impacts,

❖ The Consultant will prepare a brief summary of the program description for purpose of presenting the sub-program to identified interested parties;

- Public consultation:

❖ The Consultant will implement the following phases of public consultation, in coordination

with the implementing agency, which may be willing to participate in this public consultation process:

- ❖ Identification of interested parties (beneficiary neighboring communities, communities potentially affected by the sub-program, downstream water users, local authorities, regional authorities);
- ❖ Initial step of consultation, before further environmental assessment work is undertaken: one initial meeting with each of the identified parties, presenting the sub-program and seeking input on the scope of work for further environmental assessment work;
- ❖ Second step of consultation, after further environmental assessment work is complete: presentation of the results of the environmental assessment, including presentation of identified impacts and proposed mitigations, seeking input on these proposed environmental management measures; this second step will include dissemination to identified interested parties of a brief summary of the environmental assessment in local language (generally Amharic and/or Oromigna);
- ❖ Any public consultation meeting undertaken by the Consultant will be documented using the form appended to these Terms of Reference (see Appendix 6);
- ❖ Main issues raised during consultation meetings will be summarized in the ESIA report, with a description of the manner in which these issues were addressed in the ESIA process;

- Baseline assessment:

- ❖ The baseline assessment will address:

- ▪ Physical and bio-physical environment (climate, topography at the sub-program site(s), geology, hydrogeology, surface water, soils, erosion sensitivity, flora, fauna, including the identification of any protected or endangered species),
- ▪ Land use at the sub-program site(s) and in its (their) vicinity,
- ▪ Human environment: description of neighboring communities (population size, population structure and demography, socio-political organization, livelihoods, access to public services),
- ❖ The baseline assessment will be summarized using the format presented in the "typical ESIA report structure" hereunder;

- ▪ Reports of field observations and bibliography used will be presented as appendices;
- Impact assessment:
- ❖ The methodology for impact assessment shall be briefly presented;

- ❖ Typically, impacts will be assessed along the following lines:

- ▪ Extension in space,
- ▪ Duration in time,
- ▪ Probability of occurrence,

- Magnitude
- The combination of these parameters will be summarized in an all-encompassing measure of "significance", which will be the basis for impact assessment and prioritization of mitigations;

- Where changes in the program design (such as the re-siting or re-routing of a sub-program facility) may allow to eliminate one or several identified impacts, these changes (and generally any program alternative) will be discussed;

- Mitigations and ESMP:

- Based on the typical Environmental and Social Management Plan (ESMP) presented in the WSS Environmental and Social Management Framework, the Consultant will develop a sub-program ESMP, which will include as a minimum for each identified impact:

- A description of the mitigation measures,

- A description of monitoring measures,

- Implementation responsibilities,

- Cost,

- Assessment of residual impact after implementation of the mitigation;

- If any changes to the Environmental Guidelines for Construction Contractors presented as an appendix to the ESMF are warranted, the Consultant will propose such changes.

- Deliverables:

- The Consultant will produce:

- A summary program description in local language for purposes of public consultation (see above),
- A draft 1 ESIA report for submission to the Client,
- After initial Client's comments have been included in a revised version, a draft 2 ESIA report, including a brief summary in local language for purposes of public consultation,
- After public consultation results have been included, a final ESIA report for public disclosure according to arrangements presented in the ESMF.

Typical Structure of an ESIA Report

1. Executive summary
2. Introduction

- Scope of the ESIA
- Team in charge of the EIA, with list of consultants involved and task of each
- Summary of requirements applying to the EIA:

- General Ethiopian legal requirements
- ESMF requirements
- RPF requirements
- Other World Bank requirements if applicable
- Time frame for implementation of the EIA

3. Description of the Proposed Development Sub-Program

- Technical components, including description of the methods used for construction and operation
- Outline of the main alternatives
- Sub-Program decommissioning at the end of the operation period
- Implementation arrangements
- Implementation schedule and cost

4. EIA Methods

- Terms of Reference of the EIA, and process through which they were arrived at
- Description of the methods used for the EIA, including description of field investigations, mathematical models, social investigations, available literature
- Description of standards and guidelines used
- Statement on the extent of involvement
- Identification of information gaps and uncertainties

5. Consultation

- Identification of interested parties
- Description of consultation with affected parties (timeframe, methods)
- Main issues arising from consultation and how they were addressed in the ESIA process

6. Description of the baseline environmental, socio-economic and health conditions

- Focus of the baseline assessment depending on the nature of the sub-program and on its likely impacts
- Description of the physical environment (climate, topography, geology, hydrogeology, surface water, soils in the sub-program area)
- Flora and fauna - brief description of the baseline situation at the program site, with a specific focus on endangered species if any, and assessment of the general biodiversity situation in the program area
- Description of the human environment:

o Identification of neighboring communities, description thereof
- demography, sociopolitical conditions),
o Land use pattern, land tenure, and related social organization,
o Livelihoods
o Water usages
o Noise

- Health situation

7. Program Impacts

- Generally, prediction and assessment of each impact at all stages of the program cycle for each alternative, including, but not limited to;
- Construction phase
- Employment
- Impact on land use
- Impact on flora and fauna, with a specific focus on endangered species if any
- Noise, Dust and Vibration
- Impact on ground water quality
- Impact on surface water quality (related with erosion at the vicinity of the work site for example)
- Impact on surface water usage
- Impact on ground water usage
- Impact on soils (compaction by drilling equipment, removal of top soil)
- Potential uses of the environment that will be affected
- Operation phase
- Impact on ground water levels, flow and quality
- Impact on surface water (quantity - flow, quality)
- Impact on surface water usage with a focus on potential conflicts between upstream and downstream users if relevant
- Impact on ground water usage
- Impact of changes in water regimes on flora and fauna, and bio-diversity in general, with a specific focus on wet zones if any
- Potential uses of the environment that will be affected
- Decommissioning phase
- Summary table assessing the significance of each identified impact in terms of magnitude, extension, duration or frequency of occurrence and probability of occurrence

8. Consultation Process

- Description of the consultation process (who was consulted, how, when)
- Results: main issues raised and how they are addressed in the program design and in the EIA in general

9. Mitigation Measures

- Table showing for each identified impact at each of the main three phases of the program the proposed mitigation measures, with narrative justifying them
- Table showing the residual impacts once the mitigation measures are implemented

10. Monitoring & Evaluation

- Table showing for each identified impact the monitoring measures that will be taken, with indication of indicators used, frequency of measurement, frequency of reporting and any relevant details on the methods to be used for collecting and treating monitoring data

11. Environmental and Social Management Plan (ESMP)

- Table showing for each identified impact both the mitigation and the monitoring measures proposed in the EIA, with for each the implementation arrangements, including responsibilities for implementation, the timeframe, and the budgetary implications

Annex 2: Proposed Environmental and Social Screening Form

The Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of sub-programs of the Water Supply and Sanitation Program in Ethiopia. The form is designed to place information in the hands of implementers and reviewers so that impacts and their mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined.

The ESSF contains information that will allow reviewers to determine the characterization of the prevailing local bio-physical and social environment with the aim to assess the potential sub-program impacts on it. The ESSF will also identify potential socio-economic impacts that will require mitigation measures and/or resettlement and compensation.

Name of sub-program.....

Sector.....

Name of the Woreda/Town/Municipality in which the sub-program is to be implemented

Name of Implementing Agency.....

Name of the Approving Authority.....

Name, job title, and contact details of the person responsible for filling out this ESSF:

Name:.....

Job title: .....

Telephone numbers:.....

E-mail address :……

Date:

Signature:.....

Part A: Brief Description of the Sub - Program

Please provide information on the type and scale of the sub-program (area, required land, approximate size of total building floor area).

Provide information about actions needed during the construction/rehabilitation of facilities including support/ancillary structures and activities required to build it, e.g. need to quarry or excavate borrow materials, laying pipes/lines to connect to energy or water source, access road etc.

Describe how the sub-program will operate including support/activities and resources required to operate it e.g. roads, disposal site, water supply, energy requirement, human resource etc.

Part B: Brief Description of the Environmental Situation and Identification of Environmental and Social Impacts

Environmentally sensitive areas or threatened species

Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the program?

i. Intact natural forests: Yes_____No_____

ii. Riverine forest: Yes _____No_____

iii. Surface water courses, natural springs: Yes _____No_____

iv. Wetlands (lakes, rivers, swamp, seasonally inundated areas): Yes ____No_____

v. How far is the nearest wetland (lakes, rivers, seasonally inundated areas)? ----------

vi. Area of high biodiversity: Yes _____No_____

vii. Habitats of endangered/threatened, or rare species for which protection is required under Ethiopian national law/local law and/or international agreements: yes_____No__

viii. Others (describe). Yes _____No_____

Rivers and Lakes Ecology

Is there a possibility that, due to construction and operation of the sub-program, the rivers and lake ecology will be adversely affected? Attention should be paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these over time**.**

Yes _____No_____

Comments:

Site Hydrogeology (according to available information)

Type of aquifer (continuous, fracture)

Depth of aquifer

Seasonal fluctuations

Known quality problems

Surface Water

What is the water course in the surrounding of the site?

Nature (river, stream, spring, lake)

Distance to site

Downstream/upstream the site

Give an assessment of potential water course sensitivity to water point construction and

operation

Drainage conditions on-site

Description of present drainage conditions on site (site topography, infiltration capacity of soil):

Risks of water retention (site in a low point):

Feasibility of simple drainage improvements to eliminate water retention problems:

Water Use and Water Users

Describe the water use in the vicinity of the site:

Is there potential for conflict between users; if so, how should this conflict be solved? _____

Protected areas

Does the sub-program area (or components of the sub-program) occur within/adjacent to any protected areas designated by government (national park, national reserve, world heritage site etc.)? Yes_____No_____

If the program is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area areas` (e.g. interference with the migration routes of mammals or birds). Yes_____No_____

Contamination and pollution Hazards

Is there a possibility that the sub-program will be at risk of contamination and pollution hazards (from latrines, dumpsite, industrial discharge, drilling oils etc)? Yes _____No_____

Landscape/aesthetics

Is there a possibility that the program will adversely affect the aesthetic attractiveness of the local landscape? Yes _____No_____

Historical, archaeological or cultural heritage site

Could the sub- program alter any historical, archaeological, cultural heritage traditional (sacred, ritual area) site, cemetery, graves, or require excavation? Yes _____No_____

Resettlement and/or Land Acquisition

Will involuntary resettlement, land acquisition, relocation of property, or loss, denial or restriction of access to land and other economic resources be caused by program implementation?

Yes _____No_____

Loss of Crops, Fruit Trees and Household Infrastructures

Will the program result in the permanent or temporary loss of crops, fruit trees and household infra-structure (such as granaries, outside toilets and kitchens, livestock shed etc)?

Yes _____No _____

Block of access and routes or disrupt normal operations in the general area

Will the program interfere or block access, routes etc (for people, livestock and wildlife) or traffic routing and flows? Yes _____No_____

Degradation and/or depletion of resources during construction and operation

Will the operation involve use of considerable amounts of natural resources (construction material, water spillage, land, energy from biomass etc.) or may lead to their depletion or degradation at points of source? Yes _____No_____

Will the quarries have to be rehabilitated?

Solid or Liquid Wastes

Will the program generate solid or liquid wastes? (Including human excreta/sewage, hospital waste,) Yes _____No_____

If "yes", does the sub-program include a plan for their adequate collection and disposal?

Yes _____No_____

Public Health

Will the sub-program contribute to increase in malaria due to an increase in water supply?

Yes _____No_____

Comments:_____

Part C: Social Safeguards Screening Form:

	Social safeguards screening information	Yes	No
1	Will the sub project activities reduce other people's access to their economic resources, like land, pasture, water, public services or other resources that they depend on?		
2	Will the project result in resettlement of individuals or families or require the acquisition of land (public or private, temporarily or permanently) for its development?		
3	Will the project result in the temporary or permanent loss of crops, fruit trees and Household infra-structure (such as granaries, outside toilets and kitchens, etc)?		
4	Will the project require excavation near any historical, archaeological or cultural heritage site?		
5	Might the project adversely affect vulnerable people (e.g., elderly poor pensioners, physically challenged, women, particularly head of Households or widows etc) living in		

	the area?		
For all issues indicated by "Yes", the applicant is expected to explain how he/she intends to mitigate them. Implementation of the mitigation measures will require using the RPF			

Public Consultation

Has public consultation and participation been sought? Yes _____No_____

Document meetings in the Meeting Form and attach to this ESSF (Annex 3)

Part D: Mitigation Measures

For all "Yes" responses above, describe briefly the measures taken to this effect.

Identified Impacts	Mitigation

Sub-Program Categorization (tick applicable box)

A

- **Category A**: This sub-program has been categorized as A (Schedule 1) due to one or more major adverse impacts, and therefore cannot be funded under the WASH II Program. It will be either re-designed and re-submitted to the environmental screening process after re-design, or abandoned.

B

- **Category B**: This sub-program has been categorized as B (Schedule 2) due to potential environmental issue identified which can be mitigated as follows:

B1

- **Category B1**: No further Environmental Assessment work required; application of mitigation measures as outlined in the ESMF

B2

- **Category B2**: Further Environmental Assessment work required: Preparation of a separate ESIA to get a better understanding of the potential environmental and social issues that have been

identified in the screening process and develop a specific Environmental and Social Management Plan

C

- **Category** C: No significant environmental issue identified, no specific mitigation required; sub-program implementation can proceed. Environmental Guidelines for Construction Contractors shall be appended to construction contract and applied.

ARAP

- Based on the recommendations applicable in the Resettlement Policy Framework (see RPF in a separate document).

RAP

- Based on the recommendations applicable in the Resettlement Policy Framework (see RPF in a separate document).

Prepared by (name, position, signature): Date: ----------

Reviewed by (name, position, signature): Date: ----------

Cleared by (name, position, signature): Date: ----------

ANNEX 3. WSS SUB PROJECTS ENVIRONMENTAL AND SOCIAL CHECKLIST

Table 2: Environmental Checklist for Water Supply Sub-Projects

S/No.	Potential Negative Environmental Impact	Tick if relevant	Possible Mitigation Measures	Tick if relevant	Responsible Person
1.0	Hand dug wells, protected springs				
1.1	Overexploitation of aquifers		Consult with regional hydro-geologist or regional EPA		
1.2	Spillage of water and creation of stagnant pools of water at well head which will be a breeding ground for vectors of water-borne diseases		Select well site where water drains away from well; do not construct well in a depression or on low-lying, poorly drained site; construct drainage ditches to divert run-off water around well site; construct concrete pad around the base of the well head (see modular design); and build soak away pit Coordinate activities with ongoing Rural Water Supply and Sanitation Project as appropriate		
1.3	Contamination of well water by users		Install hand pump on the well and do not allow users to draw water by lowering containers into the well; ensure well head is properly sealed		
1.4	Contamination of well water by seepage from pit latrines		Do not construct latrines within a minimum of 30 m of the hand dug well, 60 m is preferable		

Table 3: Environmental & Social Checklist for Sanitation Sub-Projects

S/N	Potential Negative Environmental and Social Impacts	Tick if relevant	Possible Mitigation Measures	Tick if relevant	Responsible Person
1.0	**Septic tanks**				
1.1	Soil and water pollution due to seepage from tanks		Ensure regular emptying; conduct hygiene education campaign to raise awareness of the health risks of exposed sewage; establish and support affordable pump out services		
2.0	**Sewers**				
2.1	Soil and water pollution		Ensure regular maintenance		
2.2	Construction impacts		Refer to Table 1		
3.0	**Sewerage maturation ponds**				
3.1	Construction impacts		Refer to Table 1		
3.2	Possible land acquisition		Refer to OP 4.12		
3.3	Sludge disposed of indiscriminately and causing health risks		Ensure that sludge is properly dried and disposed of in a manner that poses no risk to human health		
3.4	Animals accessing sewage ponds and transmitting diseases to people		Install and maintain proper fencing to prevent animals from entering the area		
3.5	Incompletely treated waste water contaminating surface water streams		Operate ponds in a manner that only allows waste water meeting prescribed quality standards leaving the treatment site; ensure that ponds are		

S/N	Potential Negative Environmental and Social Impacts	Tick if relevant	Possible Mitigation Measures	Tick if relevant	Responsible Person
			sized and operated to retain waste water for an adequate period to complete the treatment process		
4.0	**Storm water drainage**				
4.1	Construction impacts		Refer to Table 1		
4.2	Possible land acquisition		Refer to RPF or OP 4.12, as appropriate		
4.3	Erosion along banks of drainage channel causing siltation of channel and loss of land		Stabilize sections of bank susceptible to erosion; plant shrubs and trees on uphill side of ditch to slow water runoff		
5.0	**Public toilets**				
5.1	Contamination of water supply sources		Ensure latrines are located at least 30 m from hand dug wells and springs, and 60 m from boreholes		
5.2	Latrines overflowing and creating health risks through people and animals coming in contact with human wastes		Conduct hygiene education campaign to raise awareness of the health risks of exposed human waste and promote the support and use of municipal or private sector cleaning services		
5.3	Flies and rodents carrying diseases from the latrines		Block pathways for flies, i.e. by putting a screen over the vent and installing lid on the hole; ensure latrines are constructed with a suitable superstructure to prevent entry of rodents into vault		

S/N	Potential Negative Environmental and Social Impacts	Tick if relevant	Possible Mitigation Measures	Tick if relevant	Responsible Person
5.4	Open defecation		Conduct hygiene education campaign to raise awareness of the health risks of open defecation, and promote the use of latrines		

ANNEX 4. ENVIRONMENTAL AND SOCIAL GUIDELINES FOR RURAL-WSS SUB-PROGRAMS

Checklist

To facilitate the screening process for environmental and social impacts as required by OP 4.01, as well as good environmental project design, the following points should be considered by the teams:

Water allocation:

- It is important that the community or the water utility has the right to abstract the required amount of water, which should be recognized in the overall planning and management of water resources. The amount may be small, but it is a priority and must be protected[4].

Water quantity:

- To prevent water-washed diseases (scabies, body lice, tropical ulcers) and several eye infections (trachoma, conjunctivitis) which tend to spread due to poor hygiene, water supply systems for a minimum level of service should be designed to deliver at least 20 liters per person per day (plus wastage) without excessive queuing[5].

Water quality:

- Protection of ground water and surface water;
- Determine applicability of water quality standards: if national drinking water quality policy is not available, use WHO drinking water quality standards;
- Ensure testing and treatment for parasites, hazardous chemicals, bacteria, viruses;
- Frequency and responsibility for water quality testing;
- Frequency and responsibility for treatment of water sources;
- Responsibility for monitoring and water quality control at the household level (beneficiaries, water user associations)
- Responsibility for monitoring and water quality control at the district level/project level (official authorities);
- Technical adequacy, quality and safety of bulk storage facilities;
- Technical adequacy, safety and protection of pumping facilities.

Source protection:

- Look at the natural and human activities that take place around the well or spring box;

[4] Department for International Development, Guidance Manual on Water Supply and Sanitation Programs, 1998

[5] Department for international development, guidance manual on water supply and sanitation programs 1998

- If a surface water source is used, there needs to be an understanding how these activities affect the water quality at the point of withdrawal;
- Take steps to minimize the negative impacts of these activities, i.e. standing water that could become a breeding site for vector (malaria);
- Consider Methods such as pollution prevention or conservation and land use management to prevent source contamination;
- Consider source protection activities such as waste reduction and recycling;
- Distance of a water supply system intake from potential sources of contamination should be: (i) 50 m from latrines, cattle pens, refuse pits; (ii) 100 m from soak pits, trenches and sub-surface sewage disposal; (iii) 150 from cesspools, sanitary land fill areas, and graves;
- Use of water has to take place downstream and at a distance from the water source;
- Effective design and construction of abstraction facilities.

Sanitation:

- Choice of appropriate facilities (latrines, septic tanks, pour-flush toilets) in cooperation with communities;
- Ensure good design and construction of facilities;
- Consider availability of open space at the end of the latrines' design life;
- Consider long-term capacity of latrines to dispose of all household liquid wastes;
- Consider safe ground infiltration rates;
- Consider reliability of latrine emptying service;
- Consider the availability of fresh water and toilets in schools;
- Consider the availability of fresh water and toilets at public facilities such as markets, community centers, centers of worship;
- Consider potential wastewater issues and incorporate appropriate wastewater disposal systems to prevent mosquito breeding and bad odors;
- Consider appropriate waste water collection/removal MSThods (i.e. the use of trucks, carts);
- Identification of waste disposal sites (existing or new ones);
- Appropriate waste water management Method (i.e. use of wetlands, ponds, treatment facilities, out falls);
- Monitoring responsibility and control over waste water quality disposal standards;
- Keeping drainage channels free of weeds to avoid cracking of the channel walls;
- Keeping drainage channels free of debris and wastewater from households, particularly detergents, and local industries.

Hygiene education programs to address:

- Health and hygiene measures for the protection of water supplies;
- Selection and design of sanitation facilities;
- Proper sitting of facilities with respect to water supplies;
- Design of sanitation facilities with respect to operation and maintenance;
- Operation and maintenance of the water supply systems;

- Awareness raising concerning the connection between standing water pools and health impacts due to associated mosquito breeding.

Water reuse:

- As appropriate, consider technologies and management strategies designed to reuse waste water in rural agriculture which in turn can reduce environmental pollution;
- Adopt standards for waste water reuse;
- As appropriate, consult EPA guidelines for reclaimed water treatment processes and water quality limits for both, non-potable water and indirect potable reuse applications.

Environmental and social monitoring indicators:

- Microbiological indicators such as E. coli, the single most important indicator of faecal contamination of water by humans or animals. It can be tested in the field (using field test kits with portable incubators) or in the laboratory[6];
- Physical-chemical indicators such as fluoride, nitrate/nitrite, pH, turbidity, chlorine residual;
- If necessary, identify sources of secondary information that allows for the monitoring of health impacts (i.e. decline in the number of cases of diarrhea; increase in the number of latrines used);

- Consult the publication "Environmental Performance Indicators" for guidance in the development of environmental monitoring indicators.

Community participation:

Factors that seem to favor community management across organizational types include[7]:

- Timely educational and training inputs;
- Building on the country's social and cultural traditions;
- Continuity of staffing;
- Giving more attention to training in administration for projects that depend upon community management;
- Systematic encouragement of inter-visitation between villages;
- The use of project champions;
- Providing organizations with computers;
- Associate local ownership of infrastructure with the stronger local organizations.

Safeguard policies:

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6 U.S. Agency for International Development, "Water and Food Aid in Environmentally Sustainable Development", An Environmental Study of Potable Water and Sanitation Activities within the Title II Program in Ethiopia, March 14, 2000

To identify the applicable safeguard policies, the following environmental and social aspects need to be considered:

- Magnitude of construction;
- Location of the project: i.e. near protected areas, sensitive areas, etc.;
- Effects of water withdrawals on water availability (i.e. ground water);
- Effects on downstream activities;
- Effects on quality of water sources and need for land acquisition.

ANNEX 5: PROPOSED EFFLUENT DISCHARGE REQUIREMENTS

Source: World Bank

Parameter	Maximum Value	Unit
pH	6-9	pH
BOD	50	mg/l
COD	250	mg/l
Oil and Grease	10	mg/l
Total Suspended Solids	50	mg/l
Ammonium	10	mg/l
Phosphorus	2	mg/l
Sulfate	1	mg/l
Coliforms	400	Most probable number per 100 ml
Temperature increase	3	°C

ANNEX 6: ENVIRONMENTAL GUIDELINES FOR CONSTRUCTION CONTRACTORS

General: Applicability of These Environmental Guidelines and ESMP

These general environmental guidelines apply to any work to be undertaken under the UWSS Program. For certain work sites entailing specific environmental and/or social issues, a specific Environmental and Social Impact Assessment, including an Environmental and Social Management Plan (ESMP), has been prepared to address the above-mentioned specific issues in addition to these general environmental guidelines. In addition to these general Environmental Guidelines, the Contractor shall therefore comply with any specific ESMP for the works he is responsible for. The Contractor shall be informed by the Client about such an ESMP for certain work sites, and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP after written instruction by the works supervisor to fulfill his obligation within the requested time, the Client reserves the right to arrange for execution of the missing action by a third party on account of the Contractor.

Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an ESMP where such an ESMP applies.

These Environmental Guidelines, as well as any specific ESMP, apply to the Contractor. They also apply to any sub-contractors present on Program work sites at the request of the Contractor with permission from the Client.

General Environmental Protection Measures

In general, environmental protection measures to be taken at any work site shall include but not be limited to:

(a) Minimize the effect of dust on the environment resulting from earth mixing sites, vibrating equipment, construction related traffic on temporary or existing access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity of work sites and access roads.

(b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) comply with Ethiopian standards and are generally kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

(c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels are maintained and/or re-established where they are disrupted due to works being carried out.

(d) Prevent any construction-generated substance, including bitumen, oils, lubricants and waste water used or produced during the execution of works, from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs.

(e) Avoid or minimize the occurrence of standing water in holes, trenches, borrow areas, etc...

(f) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. Restore/rehabilitate all sites to acceptable standards.

(g) Upon discovery of graves, cemeteries, cultural sites of any kind, including ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Client so that the Ministry in charge of Culture may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

(h) Prohibit construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities. Prohibit explicitly the transport of any bush meat in Contractor's vehicles.

(i) Prohibit the transport of firearms in Program-related vehicles.

(j) Prohibit the transport of third parties in Program-related vehicles.

(k) Implement soil erosion control measures in order to avoid surface run off and prevent siltation, etc.

(l) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

(m) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(n) Ensure public safety, and meet Ethiopian traffic safety requirements for the operation of work to avoid accidents.

(o) Ensure that any trench, pit, excavation, hole or other hazardous feature is appropriately demarcated and signposted to prevent third-party intrusion and any safety hazard to third parties.

(p) Comply with Ethiopian speed limits, and for any traffic related with construction at UWSS Program sites, comply with the following speed limits unless Ethiopian speed limits are

lower:

- Inhabited areas: 50 km/h
- Open road: 90 km/h.

(q) Ensure that, where unskilled daily-hired workforce is necessary, such workers are hired from neighboring communities.

(r) Generally comply with any requirements of Ethiopian law and regulations.

Besides the regular inspection of the sites by the supervisor appointed by the Client for adherence to the Contract conditions and specifications, the Client may appoint an environmental inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State or Regional Environmental Authorities may carry out similar inspection duties. In all cases, as directed by the Client's supervisor, the Contractor shall comply with directives from such inspectors.

Drilling

The Contractor will make sure that any drilling fluid, drilling mud, mud additives, and any other chemicals used for drilling at any UWSS Program construction site complies with Ethiopian health and safety requirements. In general, only bio-degradable materials will be used. The Contractor may be required to provide the detailed description of the materials he intends to use for review and approval by the Client. Where chemicals are used, general prescriptions of the World Bank's safeguard policy OP 4.09 "Pest Management" shall be complied with.

Drilling fluids will be recycled or disposed of in compliance with Ethiopian regulations in an authorized disposal site. If drilling fluids cannot be disposed of in a practical manner, and if land is available near the drilling site that is free of any usage rights, the Contractor may be authorized to dispose of drilling fluids near the drilling site. In this occurrence, the Contractor will be required to provide to the Client due evidence of their total absence of potential environmental impacts, such as leachate tests certified by an agreed laboratory. In this case, drilling fluids will be dried at site, mixed with earth and spread at site.

Any site affected by drilling work will be restored to its initial condition. This applies to drilling pads, access roads, staging areas, etc... Topsoil will be stripped ahead of any earthmoving, stored near the construction site, and replaced in its original location after the re-contouring of the area affected by the works.

Where successive aquifers are intersected by the drilling works, and upon order by the work supervisor, the Contractor may be required to take measures to isolate aquifers from contamination by each other.

The Contractor will take all measures to avoid bacteriological or chemical contamination of the intersected aquifers by the drilling equipment. Similarly, the Contractor will take all measures to avoid bacteriological or chemical contamination of the intersected aquifers from the surface by providing an adequately sealed well-head.

When greasing drilling equipment, the Contractor will avoid any soil contamination.

In the event of a limited hydrocarbon spill, the Contractor will recover spilled hydrocarbons and contaminated soils in sealed drums and dispose of them in an authorized waste management facility.

Unless duly requested by the Contractor and authorized by the supervisor, no servicing of drilling equipment or vehicles is permitted at the drilling site.

Pipelines

No trench shall be left open for more than 7 days, unless duly authorized by the supervisor upon Contractor's request. Trenches and other excavation works shall be demarcated and/or signposted to avoid third party intrusion.

General conditions related with topsoil stripping, storage and restoration apply.

The Contractor will take measures to dispose of water used for pressure tests in a manner that does not affect neighboring settlements.

Waste Management

All drums, containers, bags, etc. containing oil/fuel/surfacing materials and other hazardous chemicals shall be stored at construction sites on a sealed and/or bonded area in order to contain potential spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable Ethiopian government waste management regulations.

All drainage and effluent from storage areas, workshops, housing quarters and generally from camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

Used oil from maintenance shall be collected, properly stored in sealed containers, and either disposed of appropriately at designated sites or be re-cycled.

Entry of runoff into construction sites, staging areas, camp sites, shall be restricted by constructing diversion channels or holding structures such as berms, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

Construction waste shall not be left in stockpiles along the road, but removed and reused or

disposed of on a daily basis.

Where temporary dump sites for clean excavated material are necessary, they shall be located in areas, approved by the Client's supervisor, where they will not result in supplemental erosion. Any compensation related with the use of such sites shall be settled prior to their use.

Areas for temporary storage of hazardous materials such as contaminated liquid and solid materials shall be approved by the supervisor and appropriate local and/or relevant national or local authorities before the commencement of work. Disposal of such waste shall be in existing, approved sites.

Quarries and Borrow Areas

The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas. The location of quarries and borrow areas shall be subject to review and approval by relevant local and national authorities.

New extraction sites:

a) Shall not be located less than 1km from settlement areas, archaeological areas, cultural sites - including churches and cemeteries, wetlands or any other valued ecosystem component, or on high or steep ground.

b) Shall not be located in water bodies, or adjacent to them, as well as to springs, wells, well fields.

c) Shall not be located in or near forest reserves, natural habitats or national parks.

d) Shall be designed and operated in the perspective of an easy and effective rehabilitation. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

e) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing and safety hazards for third parties.

Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

Stockpile areas shall be located in areas where trees or other natural obstacles can act as buffers to prevent dust pollution, and generally at a distance from human settlements. Wind shall be taken into consideration when siting stockpile areas. Perimeter drains shall be built around stockpile areas.

The Contractor shall deposit any excess material in accordance with the principles of these guidelines, and any applicable ESMP, in areas approved by local authorities and/or the

supervisor.

Rehabilitation of Work and Camp Sites

Topsoil shall be stripped, removed and stored for subsequent rehabilitation. Soils shall not be stripped when they are wet. Topsoil shall not be stored in large or high heaps. Low mounds of no more than 1 to 2m high are recommended.

Generally, rehabilitation of work and camp sites shall follow the following principles:

- To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
- Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
- Ensure reshaped land is formed so as to be stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
- Minimize erosion by wind and water both during and after the process of reinstatement.
- Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

Management of Water Needed for Construction Purposes

The Contractor shall at all costs avoid conflicting with water needs of local communities. To this effect, any temporary water abstraction for construction needs from either ground or surface water shall be submitted to the following community consultation process:

- Identification of water uses that may be affected by the planned water abstraction,
- Consultation with all identified groups of users about the planned water abstraction,
- In the event that a potential conflict is identified, report to the supervising authority.

This consultation process shall be documented by the Contractor (minutes of meeting) for review and eventual authorization of the water withdrawal by the Client's supervisor.

Abstraction of both surface and underground water shall only be done with the consultation of the local community as mentioned and after obtaining a permit from the relevant authority.

Abstraction of water from wetlands is prohibited.

Temporary damming of streams and rivers is submitted to approval by the supervisor. It shall be done in such a way as to avoid disrupting water supplies to communities downstream, and to maintain the ecological balance of the river system.

No construction water containing spoils or site effluent, especially cement and oil, shall be

allowed to flow into natural water drainage courses. Similarly, wash water from washing out of equipment shall not be discharged into water courses or road drains. Washing bays shall be sited accordingly. Unless site conditions are not favorable, it will generally be infiltrated through soak pits or similar.

Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management and Community Safety

Location of temporary access roads shall be done in consultation with the local community and based on the screening results, especially in important or sensitive environments. Temporary access roads shall not traverse wetland areas or other ecologically sensitive areas. The construction of any access roads shall be submitted to a prior consultation process with potentially affected communities that will have to be documented (minutes of meetings) for supervisor's review and approval.

Upon the completion of civil works, all temporary access roads shall be ripped and rehabilitated.

Measures shall be taken to suppress dust emissions generated by Program traffic.

Maximum speed limits for any traffic related with construction at UWSS Program sites shall be the following, unless Ethiopian speed limits are locally lower:

- Inhabited areas: 50 km/h
- Open road: 90 km/h.

Salvaging and Disposal of Obsolete Components Found by Rehabilitation Works

Obsolete materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures shall be salvaged and disposed of in a manner approved by the supervisor. The Contractor has to agree with the supervisor which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

Any asbestos cement material that might be uncovered when performing rehabilitation works will be considered as hazardous material and disposed of in an designated facility.

Compensation of Damage to Property

Compensation of land acquired permanently for Program purposes will be handled under Client responsibility based on the provisions of the RPF. However, in the event that the Contractor, deliberately or accidentally, damages property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner/user a certificate that the damage has been made good satisfactorily in order to indemnify the Client

from subsequent claims.

In any case where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the supervisor.

Contractor's Health, Safety and Environment Management Plan (HSE-Mp)

Within 6 weeks of signing the Contract, the Contractor shall prepare an HSE-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an ESMP for the works. The Contractor's EHS-MP will serve two main purposes:

The Contractor's HSE-MP shall provide at least:

- A description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an ESMP;
- A description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- A description of all planned monitoring activities and the reporting thereof; and
- The internal organizational, management and reporting mechanisms put in place for such**.**

The Contractor's HSE-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's HSE-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

HSE Reporting

The Contractor shall prepare bi-monthly progress reports to the Client on compliance with these general conditions, the sub-program ESMP if any, and his own HSE-MP. The Contractor's reports will include information on:

- HSE management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Non-compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and
- Observations, concerns raised and/or decisions taken with regard to HSE management duringsite meetings.

The reporting of any significant HSE incidents shall be done as soon as practicable. Such

incident reporting shall therefore be done individually. The Contractor should keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-monthly reports. Details of HSE performance will be reported to the Client.

Training of Contractor's Personnel

The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any program ESMP, and his own HSE-MP, and are able to fulfill their expected roles and functions. Specific training will be provided to those employees that have particular responsibilities associated with the implementation of the HSE-MP. Training activities will be documented for potential review by the Client.

Amongst other issues, training will include an awareness session for all employees on HIV-AIDS addressing the following topics:

- What is HIV/AIDS?
- How is HIV/AIDS contracted?
- HIV/AIDS prevention.

ANNEX 7: LIST OF STAKEHOLDER CONSULTATIONS PARTICIPANTS

SNNPR – Meska Woreda

N	Name	Sex	Age	Region	Woreda	Kebele	Telephone	Remark
1	Mohamed Aman	M	34	SNNPR	Meskan	D/Shershera	0913143206	Woreda water O/ Manager
2	Jemal Mohamed	M	27	,,	,,	,,	0916839015	Kebele head
3	Kemal Siraj	M		,,	,,	,,	0910480821	User community
4	Shewarega Tesfaye	M		,,	,,	,,	0926097955	Water committee
5	Nur Husien	M		,,	,,	,,		User community
6	Muhudin Husien	M		,,	,,	,,		,,
7	Uzbeyda Busha	F		,,	,,	,,		,,
8	Bedru Talegin	M		,,	,,	,,		,,
9	Tirunesh Kiraga	F		,,	,,	,,		,,
10	Sherifa Amza	M		,,	,,	,,		,,
11	Adanech Sirgota	F		,,	,,	,,		,,
12	Weliyu Husien	M		,,	,,	,,		,,
13	Siraj Mohamed	M		,,	,,	,,		,,
14	Melesech Sabir	F		,,	,,	,,		,,
15	Amane Musha	M		,,	,,	,,		,,
16	Awel Arga	M		,,	,,	,,		,,
17	Tesema Sime	M		,,	,,	,,		,,
18	Yibru Husien	M		,,	,,	,,		,,
19	Asefa Abebe	M		,,	,,	,,		,,
20	Aselefech Feyisa	F		,,	,,	,,		,,
21	Husien Kediro	M		,,	,,	,,		,,
22	Aman Tesfa	M		,,	,,	,,		,,
23	Tesfa Husien	M		,,	,,	,,		,,
24	Fantaye Feyisa	F		,,	,,	,,		,,
25	Sintayehu Kebede	m		,,	,,	,,		,,
26	Kebede Hulbala	M		,,	,,	,,		,,
27	Meymuna Hamin	F		,,	,,	,,		,,
28	Necho Beshir	M		,,	,,	,,		,,
29	SHerifo Beshir	M		,,	,,	,,		,,
30	Temesgen Shifa	M		,,	,,	,,		,,
31	Seman Bady	M		,,	,,	,,		,,
32	Kediro Usman	M		,,	,,	,,		,,
33	Elate delkere	F		,,	,,	,,		,,
34	Merdiya Boraw	F		,,	,,	,,		,,
35	Abanesh Haile	F		,,	,,	,,		,,
36	Yeshi T/Mariam	F		,,	,,	,,		,,
37	Sheweza Bodero	F		,,	,,	,,		,,
38	Lakech Tadese	F		,,	,,	,,		,,
39	Elfnesh Dibaba	F		,,	,,	,,		,,
40	Mulunesh Adem	F		,,	,,	,,		,,
41	Demekshin Temeze	F		,,	,,	,,		,,

42	Delu Demeku	F		,,	,,	,,		,,
43	Shitaye Muzemil	F		,,	,,	,,		,,
44	Aberash Tesfaye	F		,,	,,	,,		,,
45	Gosay Assrat	M		,,	,,	,,		,,
46	Nuri Hussen	M		,,	,,	,,		,,
47	Alemenesh Fereje	F		,,	,,	,,		,,
48	Remila Nuri	F		,,	,,	,,		,,
49	Ali Tesfa	M		,,	,,	,,	0926921818	,,
50	Tegegn Baderga	M		,,	,,	,,		,,
51	Assefa Abebe	M		,,	,,	,,		,,
52	Alylea Asfaw	F		,,	,,	,,		,,
53	Genete Asefaw	F		,,	,,	,,		,,
54	Shashi Abebe	F		,,	,,	,,		,,

Oromia Regional State - Adami Tulu Jidu Kombolcha Woreda

No	Name	Sex	Age	Region	Woreda	Kebele	Telephone	Remark
1	Ana Mude	M	27	Oromia	ATJK	02	0913283546	Woreda water O/ Manager
2	Morkat Mamo	M	41	,,	,,	02	0911020542	Water supply expert
3	Shago Dekebo	M	24	,,	,,	02	0932320427	Water supply expert
4	Mohamed Duka	M	21	,,	,,	02	0910223135	Water supply expert
5	Mekida Sheto	F	22	,,	,,	02		Water supply expert
6	Shambe Xayibo	M	52	,,	,,	Abine Germama		Community representative
7	Helo Hiligo	F	38	,,	,,	,,		,,
8	Sabo Hanfaro	F	40	,,	,,	,,		,,
9	Himbine Gebawo	F	37	,,	,,	,,		,,
10	Jama Megersa	M	55	,,	,,	,,		,,
11	Megeso Boru	M	35	,,	,,	,,	0921678666	,,
12	Zamam Gemechu	F	38	,,	,,	,,		,,
13	Getaw Abie	M	28	,,	,,	,,		,,
14	Gebaru Hinseru	M	30	,,	,,	,,		,,
15	Amana Bakara	M	35	,,	,,	,,		,,
16	Hammu Abie	M	30	,,	,,	,,		,,
17	Abiyo Bantu	M	30	,,	,,	,,		,,
18	Gemechu Mashu	M	31	,,	,,	,,		,,
19	Beshir Bantu	M	23	,,	,,	,,		,,
20	Furu Hinsenu	M	40	,,	,,	,,		,,
21	Urgeso Hinsene	M	36	,,	,,	,,		,,
22	Gabure hinsene	M	40	,,	,,	,,		,,
23	Abuishe Hinsene	M	27	,,	,,	,,		,,
24	Bandashe Bona	F	24	,,	,,	,,		,,
25	Boru Bona	F	50	,,	,,	,,		,,
26	Kabiro Boru	M	42	,,	,,	,,		,,
27	Doroso Hinsene	M	47	,,	,,	,,		,,
28	Wakisho Hinsene	M	52	,,	,,	,,		,,
29	Amina Doraro	F	41	,,	,,	,,		,,
30	Cafo Hirigo	M	55	,,	,,	,,		,,

1	Badhana Tibeso	M	35	,,	,,	**Ananoshesho**		,,
2	Tigist Gemeda	F	20	,,	,,	,,		,,
3	Medina Umer	F	17	,,	,,	,,		,,
4	Alime Malaudin	F	22	,,	,,	,,		,,
5	Zeyineba Gamel	F	15	,,	,,	,,		,,
6	Lomi Genamo	F	18	,,	,,	,,		,,
7	Hinbine Dahi	F	30	,,	,,	,,		,,
8	Guracho Gabano	F	39	,,	,,	,,		,,
9	Nane Bantu	M	35	,,	,,	,,		,,
10	Bajela Hirkesa	M	31	,,	,,	,,		,,
11	Burtukan NEga	F	41	,,	,,	,,		,,
12	Feyisa Mitamo	M	32	,,	,,	,,		,,
13	Abiy Muramo	M	37	,,	,,	,,		,,
14	Gamada Muramo	M	35	,,	,,	,,		,,
15	Amina Miramo	F	28	,,	,,	,,		,,
16	Shuguta Edao	M	50	,,	,,	,,		,,
17	Bona Shuguta	M	22	,,	,,	,,		,,
18	Mohamod Edo	M	32	,,	,,	,,		,,
19	Sheka Edo	M	41	,,	,,	,,		,,
20	Mamudi Eda	M	31	,,	,,	,,		,,
21	Stagaye Dokabo	F	25	,,	,,	,,		,,
22	Bakele Ribiso	F	50	,,	,,	,,		,,
23	Fatuma Aluto	F	60	,,	,,	,,		,,
24	Adisse Gamada	F	38	,,	,,	,,		,,
25	Gutamutu Tuafari	F	29	,,	,,	,,		,,
26	Shashu Genemo	F	52	,,	,,	,,		,,

Afar Regional State – Amibara Woreda

No	Name	Sex	Age	Region	Woreda	Kebele	Telephone	Remark
1	Kemal Haji	m	36	Afar	Amibara	Andido	0913211185	Woreda water O/ Manager
2	Musa	M	24	,,	,,	,,	0915702018	Water supply expert
3	Workneh Abebe	M	20	,,	,,	,,	0920101676	Water supply expert
4	Seid Debus	M	22	,,	,,	,,	0913777239	Kebele head
5	Muka Mumad	M	28	,,	,,	,,		Community representatives
6	Gurata Yosa	M	26	,,	,,	,,	0910026798	Water committee
7	Hasan Kasa	M	35	,,	,,	,,		Community representatives
8	Mohamed Hasen	M	45	,,	,,	,,		,,
9	Ali Abdo	M	22	,,	,,	,,		,,
10	Ouraba Hosn	M	30	,,	,,	,,		,,
11	Fatuma Mohamed	F	22	,,	,,	,,		,,
12	Husen Mohamed	F	28	,,	,,	,,		,,
13	Amina Ali	F	36	,,	,,	,,		,,
14	Asia Mane	F	48	,,	,,	,,		,,
15	Zahra Abito	F	38	,,	,,	,,		,,
16	Abahina Gurata	F	50	,,	,,	,,		,,
17	Hasna Yoso	F	64	,,	,,	,,		,,
18	Mahe Arab	M	64	,,	,,	,,		,,

19	Erbahim Barie	M	50	,,	,,	,,		,,
20	Hasna Mohamed	F	50	,,	,,	,,		,,
21	Asia Umor	F	40	,,	,,	,,		,,
22	Guma Nori	F	60	,,	,,	,,		,,
23	Halima Haen	F	50	,,	,,	,,		,,
24	Zahra Hasen	F	35	,,	,,	,,		,,
25	Gadiga Uomer	F	20	,,	,,	,,		,,
26	Hagayo Datna	M	26	,,	,,	,,		,,
27	Akule Abaseal	M	20	,,	,,	,,		,,
28	Sule Hasen	M	40	,,	,,	,,		,,
29	Sederi Hamad	F	30	,,	,,	,,		,,
30	Arab Ali	M	20	,,	,,	,,		,,
31	Higil Musa	M	20	,,	,,	,,		,,
32	Adan Humad	M	20	,,	,,	,,		,,
33	Aebo Humad	M	20	,,	,,	,,		,,
34	Humad Mohamed	M	26	,,	,,	,,		,,
35	Umed Hasen	M	30	,,	,,	,,		,,
36	Gadiga Arab	F	30	,,	,,	,,		,,
37	Mayram Arab	F	32	,,	,,	,,		,,
38	Duba Arab	F	30	,,	,,	,,		,,
39	Gadiga Sanaso	F	50	,,	,,	,,		,,
40	Fatum Arab	F	36	,,	,,	,,		,,
41	Seid Ali	M	60	,,	,,	,,		,,
42	Adan Hamadu	M	25	,,	,,	,,		,,
43	Abahin DUla	F	30	,,	,,	,,		,,
44	Walo Humad	M	40	,,	,,	,,		,,
45	Fatuma Umad	F	80	,,	,,	,,		,,

Somali Regional State

No	Name	Sex	Age	Region	Woreda	Kebele	Telephone	Remark
1	Abdi Yousuf	M	36	Somali	K/ Beyah	Kebere Beyah-02	0915738849	Woreda water O/ Manager
2	Abdulaziz Ahmed	M	24	,,	,,	04	0913287904	Water supply expert
3	Hasen Jibril	M	20	,,	,,	02	0915101437	,,
4	Ablisamul Tahri	M	22	,,	,,	02	0913892425	,,
5	Abdulahi Abdraman	M	28	,,	,,	02	0910369175	,,
6	Mukear Mohamed	M	26	,,	,,	01	0915078508	,,
7	Ahmed Abdiumer	M	35	,,	-	-	0920470180	Water Bureau expert
8	Sabad Xasan	F	45	,,	,,	02	0928152590	Water committee
9	Hasan Mohamod	M	22	,,	,,	02	0915774428	Water committee
10	Khadra Abdi	F	30	,,	,,	02	0925152590	Community representative
11	Rodaw Abdi	F	22	,,	,,	02	-	,,
12	Abdihakim Hasen	M	28	,,	,,	02	0915460722	,,
13	Fatha Ahmed	M	36	,,	,,	02	0935287263	,,
14	Asha Abdi Ashi	F	48	,,	,,	02	0915378725	,,

1	Sabah Mohamed	M	38	,,	**Jigijiga**	**Carbikebek**	0915057811	,,
2	Abdiumer Bare	M	50	,,	,,	,,		,,
3	Mohamed Abdi	M	64	,,	,,	,,		,,
4	Mohamed Gudal	M	64	,,	,,	,,		,,
5	Ahmed Abdi	M	50	,,	,,	,,		,,
6	Amina Mohamed	F	50	,,	,,	,,		,,
7	Habsa Amer	F	40	,,	,,	,,		,,
8	Amina Mohamed	F	60	,,	,,	,,		,,
9	Adan Malin	F	50	,,	,,	,,		,,
10	Ahmed Abdi	M	35	,,	,,	,,		,,
1	Fadum Obare	F	20	,,	**K/Beyah**	**Hare**		,,
2	Ahmed Degomer	M	26	,,	,,	,,		,,
3	Mohamed Abdi	M	20	,,	,,	,,		,,
4	Nimo Abdi	F	40	,,	,,	,,		,,
5	Halu Ahmed	F	30	,,	,,	,,		,,
6	Gudoon Abdi	F	20	,,	,,	,,		,,
7	Ifrah Ahmed	F	20	,,	,,	,,		,,
8	Isir Arab	F	20	,,	,,	,,		,,
9	Fadu Mohamed	F	20	,,	,,	,,		,,
10	Mohamed Haji	M	26	,,	,,	,,		,,
11	Hirsi Mohamed	M	30	,,	,,	,,		,,
12	Guled Shunri	M	30	,,	,,	,,		,,
13	Safi ya Ahmed	F	32	,,	,,	,,		,,
14	Zeyneba Abdi	F	30	,,	,,	,,		,,
15	Amina Ahmed	F	50	,,	,,	,,		,,
16	Roda Hassen	F	36	,,	,,	,,		,,
17	Shra Muhamed	F	60	,,	,,	,,		,,
18	Ibrahim Ahmed	F	25	,,	,,	,,		,,
19	Hayba Ahmed	F	30	,,	,,	,,		,,
20	Maka Abdi	F	40	,,	,,	,,		,,
21	Farah Ahmed	F	80	,,	,,	,,		,,
22	Faduma Abdi	F	16	,,	,,	,,		,,