Federal Democratic Republic of Ethiopia
Ministry of Water Resources

The World Bank

Water Supply and Sanitation Project

Environmental and Social Management Framework

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EXECUTIVE SUMMARY

The Document
This report is the Environmental and Social Management Framework (ESMF) for the Water Supply and Sanitation (WSS) Project, being considered for a World Bank loan (IDA) to the Government of the Federal Democratic Republic of Ethiopia. It has been prepared in accordance with World Bank safeguard policies by independent consultant Frédéric Giovannetti in December 2003 and January 2004. Another document has been developed simultaneously to provide the Resettlement Policy Framework (RPF) for this same WSS Project.

The scope and contents of the document are presented in Section 0.

The Project
The objective of the Water Supply and Sanitation Project would be increased access to sustainable water supply and sanitation services, for rural and urban users, through improved capacity of stakeholders in the sector and better management of water resources. Accordingly, the project is designed to build the capacity of all stakeholders, both public and private, to plan, construct, and maintain water and sanitation facilities. In the process:

- Several thousand rural water supply schemes and more than 100 town water supplies will be improved.
- Improved institutional arrangements and capacity for planning, implementation and management of water supply and sanitation services in a decentralized environment will be obtained;
- As well as increased water supply and sanitation coverage with improved efficiency, quality and sustainability of services in urban and rural communities.

The WSS Project will mainly include (in terms of those components that may entail potential environmental impacts):

- A Rural Water Supply and Sanitation component, to increase the capacity of participating woredas to effectively manage their rural water supply and sanitation programs, to increase the capacity of communities to manage their water supply and sanitation facilities, and to create well functioning water supply schemes.
- An Urban Water Supply and Sanitation component, to increase the capacity of participating water boards/committees and operators to effectively manage their water supply and sanitation facilities, and to ensure that well functioning and properly utilized urban water supply systems and improved sanitation are in place in participating towns and cities. This component may be expanded to include works in federal cities (Addis Ababa and Dire Dawa).

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.

The investment in the National WSS Program would be about US$120m, of which about US$100m would be financed by IDA, and up to $20m by regional governments. Approximately 4000 hand dug wells, 2500 boreholes and 225 small rural piped systems would be constructed in rural communities and 75 town water supply systems would be improved.

Two main principles of the WSS Project are that it will be demand-responsive, and with as much involvement as possible of the beneficiary town or community in the planning, financing and implementation of their water and sanitation systems. As a result, the WSS Project will consist of multiple town/community sub-projects, which are not known in details at the current stage, because they
will be developed following the initial stages of regional team establishment and capacity building, and following a request by the town or community.

The Project has been categorized as Category B as per World Bank OD 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. Potential adverse impacts are detailed below.

The Project is presented in Section 1 of this document.

Policy, Administrative and Legal Framework

Further to the 1995 Constitution, which proclaims the right of every Ethiopian citizen to a clean and healthy environment, three proclamations were enacted in 2002 to establish:

- The organizational background of environmental management, based on a Federal Environmental Protection Agency (EPA) and regional agencies in charge of environmental protection,
- The need for Environmental Impact Assessments (EIA) detailing impacts of larger projects, and resulting in Environmental Management Plans (EMP);
- The general pollution control framework.

Relevant policies (environment, health, water) are presented in the ESMF. In 2000, the federal EPA prepared detailed guidelines applicable to EIAs. These categorize projects into three schedules from 1 (those projects with the most significant potential impacts) to 3. Most, if not all, sub-projects likely to be considered under the WSS Project will fall under Schedule 2, for which EIA and EMP requirements are established on a case-by-case basis.

As World Bank (WB) funding is being considered, the Project will also comply with applicable WB safeguard policies, namely OD 4.01 (Environmental Assessment), OP 4.12 (Involuntary Resettlement), OP 7.50 (International Waterways) and OPN 11.03 (Management of Cultural Property).

The Legal Background is presented in Section 2 of this document.

The Proposed Environmental Management Process

In the unlikely event where some sub-projects would fall under Schedule 1, these would then undergo a full EIA process, as per Ethiopian EIA guideline and WB OD 4.01.

Most sub-projects will however fall under Schedule 2. The proposed environmental management process for schedule 2 projects is summarized by this graph:

The process starts with the establishment for every single sub-project of an Environmental Baseline Assessment (EBA), a rapid field investigation to screen on-site whether any environmental issue may require specific attention.

The EBA is designed to meet the following criteria:

- To be as simple as possible;
Water Supply and Sanitation Project – Environmental and Social Management Framework

- To be undertaken by field staff with basic training only;
- To be completed within a few hours at the most, and probably within less than one hour for the most simple sub-projects.

Field personnel in charge of the EBAs at woreda or town level will propose a conclusion according to the following three EBA categories):

2A One or more major adverse impacts likely, significant changes to the project design are required (changes in design, site or route);
2B Potential environmental issue identified, specific mitigation required;
2C No significant environmental issue identified, no specific mitigation required.

These conclusions will be reviewed a posteriori (checked and confirmed or reinvestigated) and filed at the level of the Regional EPA. Projects categorized as 2C will have to comply with the Generic EMP (proposed in section 9 of this document). Projects categorized as 2B will have to comply with a Site-Specific EMP, to be developed on a case-by-case basis as part of the detailed project design. Projects categorized as 2A will be redesigned, to minimize environmental impacts through a better design or the relocation of some or all of their components.

Given the current lack of capacity at woreda or town level to carry out these assessments, EBAs will be undertaken by consultants in charge of the design of the sub-projects on behalf of the towns for urban sub-projects, and on behalf of the woredas for rural sub-projects.

Details on the Environmental Management Process are presented in Section 6 of this document.

Potential Project Impacts and Associated Mitigations

The WSS Project will essentially have beneficial impacts on the biophysical and social environment and on the community at large, such as the following:

- Positive health impacts resulting from more reliable and better quality water supplies, and related gains in time and economic productivity;
- Capacity enhancement in regions, towns and communities, in the fields of water, utility and environmental management;
- Positive impact on women of the reduction in time and energy spent on fetching water and of training/capacity building activities specifically targeting women.

Adverse impacts (see Section 5) will require mitigation measures, presented in the Impact/Mitigation matrix in tables 7 and 8 at Section 6.

Environmental and Social Management Plan, Implementation Responsibilities

In line with the concept for the whole Project and the overall decentralization policy in Ethiopia, responsibilities for the implementation of environmental management will be assigned to the lowest possible levels, recognizing that current capacity limitations will need to be addressed through consultants hired at town or woreda level for project design and EBAs. Capacity will be built at community and town levels for Water Users Committees and Town Water Boards to take charge of environmental mitigation measures at operation phase. The private sector (handpump artisans, construction contractors, operation contractors, consultants) will also play its 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 monitor and assist in the process through the Water Bureaus and Regional Environmental Protection Agencies. This will require capacity building at these levels, as capacity in the environmental field remains limited at all levels.

Details on capacity building and training are presented in Section 7 of this document. A generic EMP, including implementation responsibilities for mitigation and monitoring measures, is presented in Section 9 of this ESMF.

F.GIOVANNETTI CONSULTANT February 2004
0. SCOPE OF THE ASSIGNMENT – INTRODUCTION

0.1 By contract with the Ministry of Water Resources of the Federal Democratic Republic of Ethiopia and under World Bank financing, independent consultant Frederic Giovannetti has been assigned to develop:

- An Environmental and Social Management Framework (ESMF) with the following objectives:
  (i) screen for potential environmental and social impacts due to the implementation and management of investments in this regard;
  (ii) identify and apply appropriate mitigation measures; and
  (iii) monitor the implementation of these measures;
- A Resettlement Policy Framework, that describes the procedures for assessing compensation for losses of property and income as a result of the construction of water supply facilities in villages and towns;
- An assessment of the institutional capacity for mitigating as well as implementing these measures;
- An appropriately costed Environmental Management Plan (EMP) for the entire project to facilitate its implementation.

0.2 This report is the draft Environmental and Social Management Framework, which is to be submitted to the Ministry of Water Resources for comments and observations before a final version can be issued.
1. DESCRIPTION OF THE PROJECT

GENERAL DESCRIPTION OF THE WSS PROJECT

Project Objectives

1.1 The development objective of the Water and Sanitation Project would be increased access to sustainable water supply and sanitation services, for rural and urban users, through improved capacity of stakeholders in the sector and better management of water resources. Accordingly, the project is designed to build the capacity of all stakeholders, both public and private, to plan, construct, and maintain water and sanitation facilities. In the process:

- Several thousand rural water supply schemes and more than 100 town water supplies will be improved.
- Improved institutional arrangements and capacity for planning, implementation and management of water supply and sanitation services in a decentralized environment will be obtained;
- As well as increased water supply and sanitation coverage with improved efficiency, quality and sustainability of services in urban and rural communities.

Project Components

Rural Water Supply and Sanitation

1.2 Funding would be provided (i) to increase the capacity of participating woredas to effectively manage their rural water supply and sanitation programs, (ii) to increase the capacity of participating communities to effectively manage their water supply and sanitation facilities, and (iii) to ensure that well functioning water supply schemes are in place in participating communities.

Urban Water Supply and Sanitation

1.3 Funding would be provided (ii) to increase the capacity of participating water boards/committees and operators to effectively manage their water supply and sanitation facilities, and (ii) to ensure that well functioning and properly utilized urban water supply systems and improved sanitation are in place in participating towns and cities. Cities with established water boards would be supported to develop financial management systems, business plans and establish creditworthiness for their entities before they could qualify to borrow for their expansion and further development.

Water Resources Development Fund (WRDF)

1.4 Works in larger urban centers with existing water supply and sanitation systems that need to be expanded or improved would be financed under the project on an on-lending basis, consistent with the Government’s policy on cost recovery for urban water supply and sanitation. WRDF would be the implementing agency for these projects, responsible for appraisal of proposed projects and monitoring and evaluation.

Ministry of Water Resources component

1.5 The MWR will be responsible for overseeing the National WSS Program. The project will support program management, monitoring and evaluation, equipment for water quality testing and training centers, web site development, applied research, facilitation of a practitioners network, and job specific capacity building.
Project Approach

1.6 Each Region will have its own Water Supply and Sanitation Program, which will outline the current state of water supply and sanitation in the region, the objectives and principles of the program, the strategies for improving rural and urban water supply and sanitation and water resources management and a detailed implementation plan.

1.7 For urban water supply in towns and cities a three-step approach will be followed:

- **Step 1: Capacity Building:** This will entail technical assistance to regions to facilitate the transformation process, and to urban water utilities to build capacity by training board members and operators, implementing financial systems, improving operations, preparing business plans, rehabilitating essential equipment, and preparing expansion designs.

- **Step 2: Implementation:** This will entail technical assistance to urban water utilities to implement business plans and rehabilitate and expand facilities in towns that have not previously benefited from grant financing for rehabilitation and expansion.

- **Step 3: Investment:** This will entail investment financing to financially viable utilities for longer-term expansion, through cash revenues and commercial lending institutions.

1.8 The regional water bureaus will be responsible for managing the regional programs, and in collaboration with local government officials will be responsible for reviewing facilities and management plans including designs, tender documents, social/environmental assessments and resettlement action plans.

1.9 For rural water supply, implementation will be through local government water and sanitation programs. It is expected that (i) local governments will manage the program – planning infrastructure, allocating resources between communities, and contracting with local contractors and service providers; (ii) communities will plan and manage their own facilities, while (iii) the private sector will provide goods and services needed to plan, construct and maintain facilities. The regional water bureaus will work with local government officials to review community facilities and management plans, including social/environmental assessments and resettlement action plans as needed.

1.10 Overriding Project principles are the following:

- Access to water is a right, however it is also recognized as an economic good, and its service has to be paid for;
- A demand-responsive approach is promoted rather than a supply-driven approach; urban and rural communities that demonstrate willingness to put in place appropriate institutional arrangements and cost recovery mechanisms are prioritized in the program;
- Ownership and management autonomy are devolved to the lowest possible local level, in line with the decentralization policy adopted by the Government of Ethiopia;
- Involvement of all stakeholders, including the private sector, is promoted so as to improve efficiency in service provision;
- Full cost recovery for urban schemes, and recovery of operation and maintenance cost for rural schemes, are required to ensure their sustainability;
- Planning for sanitation and hygiene is integrated with water supply;
- Cost effective design – ongoing initiatives to prevent over-design and provision of service level that is unaffordable to the community and, therefore, not sustainable;
- Equity – design of the program to improve service throughout the Region on a systematic basis over time so that all towns and communities are eventually served, though each cannot receive an equal allocation of investment funds every year;
- Transparency – promotional activities to ensure that the rules of engagement are well understood by all stakeholders;
- Participatory monitoring and evaluation - monitoring and evaluation carried out in a participatory manner with capacity building approach, with dissemination of results so that the program can be improved by feedback;
- Gender – inclusion of activities and rules of engagement that ensure participation by women in decision making and project implementation;
- Refocusing government institutions to facilitate and conduct monitoring and evaluation rather than implement;
- Coordination across Regional Bureaus and Woreda departments to plan and implement the program.

Institutional Arrangements for Safeguards

1.11 The institutional arrangements for the safeguard activities are as follows:

- **Ministry of Water Resources (MWR)** - The Ministry of Water Resources 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 and monitoring and evaluation.

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

- **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, and woreda 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).

- **Regional EPA** – Regional EPA will oversee the safeguard component of the WSSP. They will carry out spot checks of town and village projects to confirm that baseline assessments and environmental management plans are properly done. They will also advise the RWBs sub-projects involving impacts beyond the generic issues, determining if the mitigation measures are acceptable or project redesign is required.

- **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.

- **Town Water Boards (TWBs)** – Town Water Boards 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.

- **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 phase mitigation measures are carried out.

- **Town Water and Sanitation Consultants** – Local consultants will be contracted to assist Town Water Boards to plan and manage their water supply facilities. Consultants will assist Water Boards to prepare business plans, design rehabilitation/expansion works, supervise construction, and help improve operations. In so doing they will carry out environmental baseline assessments and prepare environmental management plans including compensation plans as part of normal facilities planning and design.

- **Woreda Consultants** – Regionally-based consultant teams will assist individual Woredas to plan and establish their own RWSS Programs and train woreda staff to implement their programs through workshops and on-the-job support. They will also train and support local service providers to help communities to plan and learn to manage their own water and sanitation programs. Local service providers, with support from woreda staff and consultants, will assist communities to prepare a facilities and management plan that include an environmental baseline assessment and prepare environmental management plan including a compensation plan for lost property and income resulting from construction.

**Scope of Project**

1.12 For planning purposes, the initial investment in the National WSS Program is assumed to be about US$120m, of which about US$100m would be financed by IDA, and up to $20m by the regional governments. Approximately 4000 hand dug wells, 2500 boreholes and 225 small rural piped systems would be constructed in rural communities and 75 town water supply systems would be improved.

**POTENTIAL PROJECT ENVIRONMENTAL AND SOCIAL IMPACTS**

**Demand-Responsive Approach and Community Involvement**

1.13 Two main principles of the WSS Project are that it will be demand-responsive, and with as much involvement as possible of the beneficiary town or community in the planning, financing and implementation of their water and sanitation systems. This has the following implications on potential environmental and social impacts and on the development of this ESMF document:

- The WSS Project will consist of multiple town/community sub-projects, which are not known in details at the current stage, because they will be developed following the initial stages of regional team establishment and capacity building, and following a request by the town or community;
- The technical components of these projects are not known either at this stage, as each town/community will be able to select their choice option among several technical possibilities, depending on the level of service they can afford, on the local availability of water resources, and on their financial, technical and institutional capacities.

1.14 As a result, this ESMF must accommodate the various sub-project technical designs that may be considered by each town or community.

**WSS Project Activities with Potential Environmental or Social Impacts**

1.15 The WSS Project will essentially have beneficial impacts on the biophysical and social environment and on the community at large, such as the following:

- Positive health impacts resulting from more reliable and better quality water supplies, and related gains in time and economic productivity;
- Capacity enhancement in regions, towns and communities, in the fields of water, utility and environmental management;
- Positive impact on women of the reduction in time and energy spent on fetching water and of training/capacity building activities specifically targeting women.
1.16 Details on potential adverse environmental and social impacts are provided in Section 4 of this report. WSS Project activities that may entail such impacts are as follows:

- Construction activities:
  - Construction of wells, whether hand-dug or drilled,
  - Construction of raw or waste water treatment plants,
  - Construction of water distribution storage facilities and distribution works,
- Operation:
  - Water abstraction, from ground or surface water,
  - Waste water discharge into water bodies,
  - Disposal of waste generated by raw or waste water treatment

**PROJECT CATEGORIZATION AS PER WORLD BANK SAFEGUARDS**

1.17 The Project has been categorized as Category B as per World Bank classification (see OP 4.01 paragraph 8). No issue of significant potential for adverse environmental or social impacts has been identified. Other issues that may cause limited environmental or social impacts have been initially identified as follows (Project Information Document):

- Protection and regulation of raw water source;
- Proper disposal of waste water,
- Compensation for loss of property or income to individuals due to minor land requirements for water facilities and construction activities.
2. DESCRIPTION OF POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

OVERVIEW

2.1 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 1997\(^1\) together with the Environmental Policy\(^2\), 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.

2.2 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.

2.3 Whereas these three proclamations provide the overall framework, the details of environmental management regulations are however undeveloped yet, and implementation texts, such as guidelines and standards, remain to be enacted.

RELEVANT PROVISIONS OF THE ETHIOPIAN LEGISLATION

The Constitution, 1995

2.4 Under Article 44 “Right to the Protection of the Environment”, the Constitution of Ethiopia, 1995, states that “Everyone has the right to a clean and healthy environment.”

2.5 Under Article 92 “Objectives for Environmental Protection”, the Constitution also states that:
- the State is responsible to ensure a clean and healthy environment for all Ethiopians,
- no development activity shall be disruptive to the ecological balance,
- people concerned shall be made to give their opinions in the preparation and implementation of policies and programs concerning environmental protection.

Environmental Protection Organs Proclamation No 295/2002

2.6 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 project EIAs where these projects are submitted to federal licensing, or where they are likely to entail inter-regional or international impacts;

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\(^1\) Conservation Strategy of Ethiopia, 1997 (5 volumes), Environmental Protection Authority

\(^2\) Environmental Policy, April 2, 1997, Environmental Protection Authority

\(^3\) Initially established by Proclamation No 9/1995 in response to the requirements of the then newly passed Constitution.
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.

**Environmental Impact Assessment Proclamation No 299/2002**

2.7 This Proclamation, published in the Federal Negarit Gazeta dated December 3rd, 2002, establishes the requirement of an Environmental Impact Assessment (EIA) procedure for all projects, and provides the processes and procedures to be followed by project proponents with respect to EIAs.

2.8 The EIA process described in the proclamation includes consultation requirements: reports are to be made public, and the public’s comments are to be solicited and taken into consideration in the review process undertaken by the federal or regional environmental agency in charge of the project.

**Environmental Pollution Control Proclamation No 300/2002**

2.9 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.

**RELEVANT ETHIOPIAN SECTORAL POLICIES**

**Environmental Policy (1997)**

2.10 This document was developed together with the CSE (see § 2.1) with assistance from IUCN. Its legal standing is not fully clear, as it is not a law but was nevertheless enacted by the Council of Ministers. 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).

2.11 The main purpose of this policy is to serve as a guide for considering environmental issue in all development activities. The overall policy goal, as stated in the policy document, is “to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.” (EPA,1997, p.3)

2.12 It contains 9 specific objectives that can be generalized as sustainable management and utilization of natural, historical, and man made resources; resource valuation, enhancing participation and property ownership; achieving the satisfaction of human needs and welfare; cost effectiveness of resource management practices; and adjusting and adopting new technologies maximizing the use of appropriate local techniques and knowledge.


2.13 The goal of this policy is to enhance and promote all national efforts towards the efficient, equitable and optimum utilization of the available water resources for significant socioeconomic

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4 “The Authority or the relevant regional environmental agency shall make any environmental impact study report accessible to the public and solicit comments on it.”, and “The Authority or the relevant regional environmental agency shall ensure that the comments made by the public and in particular by the communities likely to be affected by the implementation of a project are incorporated into the environmental impact study report as well as in its evaluation.”

5 IUCN: The World Conservation Union
development on sustainable basis. This policy also contains five specific objectives that details short-term and area specific goals.

Health Policy

2.14 The health policy sets out 10 general policy elements and 10 priority areas. Two of the ten priority areas are related to water supply and sanitation:
- Accelerating the provision of safe and clean water for Urban and Rural population; and
- The development of environmental health.

2.15 In general, the policy aims to safeguard human health so as to establish well being as well as creating healthy human resources to enhance the country's social and economic development. It also underlines the prevention of environmental pollution with hazardous wastes. The control of communicable diseases, epidemic and disease related to malnutrition and poor living conditions are the main focus areas of the policy.

EIA Guideline (2000)

Objectives of the EIA Process

2.16 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

2.17 The guidelines define the Competent Agency as the agency that 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.

2.18 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 (RECC) 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 projects 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

2.19 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,
Pre-Screening

2.20 At pre-screening, the project proponent should establish contact with the Competent Agency, establish an official contact person, and provide an initial description of the proposed activity. The Competent Agency will register the application.

Screening

2.21 From screening into the further stages of the process, the proponent is recommended to appoint an independent consultant to assist in the process. The screening phase should decide the following, amongst others:

- The need for and level of assessment;
- The level of Government to be responsible (federal or regional);
- The acceptability of the proposed consultant;
- The public participation process.

2.22 At this phase, the proponent is to submit a screening report to the Competent Agency. The Agency may require the proponent to advertise its application.

Scoping

2.23 The scoping process is intended at ensuring that the EIA focuses on the right issues. It will be sanctioned by a scoping report, which is basically meant to be the Terms of Reference for carrying out the EIA. Although not clearly a requirement as per the guideline, it is also recommended that public consultation be undertaken at this stage, to make sure that relevant stakeholders have a say in identifying the issues and impacts that will further be assessed during the EIA.

EIA and EIS

2.24 The guideline provides a template structure for the EIA report (or EIS, Environmental Impact Statement), as follows:

- Executive summary;
- List of consultants;
- Description of the proposed development project;
- Outline of the main alternatives;
- Description of the baseline environmental, socio-economic and health conditions;
- Prediction and assessment of each impact at all stages of the project cycle for each alternative;
- Description of residual impacts that cannot be mitigated;
- Monitoring schemes;
- Potential uses of the environment that will be affected by potential impacts;
- Description of standards and guidelines used;
- Statement on the extent of involvement;
- Identification of information gaps and uncertainties;
- Budgetary implications and measures to be taken to ensure that mitigation can effectively be carried out.

Categorization of Projects

2.25 The guideline categorizes projects into three “schedules” according to their potential impacts:

- Schedule 1 includes “projects which may adverse and significant environmental impacts, and may therefore require a full EIA”, as well as “projects in environmentally sensitive areas irrespective of their nature”;

Schedule 2 includes “projects 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 “projects which would have no impact and do not require an environmental impact assessment”.

2.26 Projects related with water and sanitation are 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 4,000 m³/day;
  - Canalization and flood-relief work (large scale)⁶;
  - Drainage plans in towns close to water bodies;
  - Projects that cause the resettlement of more than 100 families.
- Categorized in schedule 2:
  - Rural water supply and sanitation;
  - Sewerage system;
  - Electricity transmission lines.

INSTITUTIONAL ARRANGEMENTS RELATED WITH ENVIRONMENT

General Government Organization

2.27 The form of government in Ethiopia is federal. The constitution of the country puts in place the basic principles of human rights as spelt out in the UN conventions. It also ensures democratic rights such as self-determination.

2.28 Administratively, the country is subdivided into 9 National Regional States, 2 City Administrations, 60 Zones, 2 Special Zones, 524 Woredas, and 8 special Woredas. The Regional Governments consist of Regional states, Regional Bureaus, Zonal and Woreda local government and sectoral offices. Currently, Woreda level local governments have been given the greatest portion of power to decide on rural development and resource management including facilitation of programs and projects implementation and communities participation in implementing their respective regions policies. The responsibilities of the federal government focus on drawing up of general policies pertaining to common interests and benefits, whereas regional governments prepare their respective region policies within the framework of the federal policies.

Government Organization in Relation with Environment Issues

2.29 At federal level, the Environmental Protection Agency is in charge of policies, directives and standards, and of enforcing the laws and policies, including on EIAs and environmental monitoring, for all projects or activities that fall under the control of the Federal Government. Details on the EPA are provided in Section 3.

2.30 Each of the main federal agencies active in infrastructures or economic development is required by law to have its own environment unit. The Ministry of Water Resources is one of few federal agencies to indeed have an Environment Unit. Most of its activities are focused on irrigation projects and related environmental issues, assessments and monitoring.

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⁶ The document does not provide details on how “large scale” is to be understood.
2.31 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 (see above).

WORLD BANK SAFEGUARD POLICIES

Relevant World Bank Safeguard Policies

2.32 The list of World Bank safeguard policies follows:

- OP 4.01: Environmental Assessment;
- OP 4.04: Natural Habitats;
- OP 4.09: Pest Management;
- OP 4.12: Involuntary Resettlement;
- OP 4.36: Forestry;
- OP 4.37: Safety of Dams;
- OP 7.50: Projects on International Waterways;
- OPN 11.03: Management of Cultural Property;
- OD 4.20: Indigenous People.

2.33 OP 4.01 (Environmental Assessment), OP 4.12 (Involuntary Resettlement), OP 7.50 (International Waterways) and OPN 11.03 (Management of Cultural Property) apply to the WSS Project:

- **OP 4.01** requires an Environmental Assessment (EA) to be carried out for any project proposed for Bank financing; different EA instruments can be used, including amongst others Environmental Impact Assessment (EIA) or Environmental Management Plan (EMP); the selection of instruments to be used for a particular project is made through the Environmental Screening process (see § 2.35 and following paragraphs);

- **OP 4.12** is to be complied with where involuntary resettlement may take place as a result of the project; it includes requirements that:
  
  (a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.

  (b) 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 project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.

  (c) 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 project implementation, whichever is higher.

- **OP 7.50** (Projects on International Waterways) may apply to water or sewerage projects on those Ethiopian water basins where the river flows downstream through other states. The policy essentially introduces a notification requirement, whereby Ethiopia should notify the downstream riparian states (for instance Sudan and Egypt for the Abbay basin) of any projects "that involve the use or potential pollution of international waterways".

- **OPN 11.03** (Management of Cultural Property) aims at preserving and avoiding elimination of cultural properties. It requires to identify in advance what is known about the cultural property aspects of the proposed project site, and that if there is any question of cultural property in the area, a brief reconnaissance survey should be undertaken in the field by a specialist.

2.34 Other policies are deemed not to be applicable to the WSS Project for the following reasons:
Water Supply and Sanitation Project – Environmental and Social Management Framework

- OP 4.04 (Natural Habitats), OP 4.09 (Pest Management), OP 4.36 (Forestry) address environmental aspects that have no relevance to the WSS Project;
- OP 4.37 (Safety of Dams) introduces specific safety requirements applicable only to dams more than 15 meters in height. The WSS Project will not construct any such dam, and the policy is therefore not applicable.
- It is not anticipated that the WSS Project may have any adverse impact on people identified as indigenous, and therefore OD 4.20 is not applicable.

World Bank Screening Process

2.35 The screening process used by the World Bank classifies proposed projects into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

- **Category A:** A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.
- **Category B:** A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects.
- **Category C:** A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.
- **Category FI:** A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

2.36 The WSS Project has been classified as environmental category B. As requested by the Bank, the Government of Ethiopia is preparing an Environmental and Social Management Framework (ESMF) to address the environmental and social concerns related to the subprojects, and a Resettlement Policy Framework (RPF) to address potential issues of displacement and resettlement.

GAPS BETWEEN ETHIOPIAN LEGISLATION AND BANK POLICIES

Overview

2.37 Ethiopia has now a comprehensive framework for assessing and managing environmental impacts of development projects. However, when compared to World Bank Safeguard Policies, the Ethiopian framework falls short of providing clear requirements or guidance on the following main aspects:

- Public consultation and disclosure,
- Social impacts,
- Standards applying to water quality for natural water courses, or effluent discharges.

2.38 Another issue is that while most of the responsibility for assessing, mitigating and monitoring environmental impacts falls under regional environmental agencies, these either do not exist or lack the capability to carry out the tasks assigned to them by Law.

2.39 Otherwise, Ethiopian requirements are generally consistent with World Bank policies.

Consultation and Disclosure Requirements

2.40 OP 4.01 requires that for “all Category A and B projects, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible.
For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared.”

2.41 OP 4.01 further requires that “For meaningful consultations between the borrower and project-affected groups and local NGOs on all Category A and B projects proposed for IBRD or IDA financing, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted”.

2.42 Category B reports for a project proposed for IDA financing are to be made available to project-affected groups and local NGOs, and public availability in the borrowing country of any Category B EA report for projects proposed for IDA funding are prerequisites to Bank appraisal.

2.43 While public consultation and disclosure are indeed addressed by various pieces of Ethiopian legislation and guidelines, including the Constitution itself, they include no clear requirements nor arrangements, but rather recommendations. Ethiopian legislation is less stringent than Bank policies in this respect, however there is no limitation in the Ethiopian legislation as to the extent and scope of consultation and disclosure, nor as to who should be consulted. Therefore, there is no real contradiction between Ethiopian legislation and Bank policies, which can be applied in their public consultation and disclosure aspects without violating Ethiopian law.

Social Impacts

2.44 The Constitution takes a human rights approach to the environment (“a clean and healthy environment is a right of every Ethiopian”), which may be understood as encompassing both biophysical and human/social aspects in the “environment”. However, beyond these general principles, the application laws (Proclamations) and the technical guidelines available provide little guidance on the measure of social impacts and their assessment within the EIA process.

Standards and Guidelines

2.45 In spite of a thorough research, the consultant for this assignment could not find any Ethiopian standards or guidelines applicable to matters such as the following:

- Quality standards and classification of inland waters,
- Standards for effluent discharge into inland waters.

2.46 The EIA guideline reviewed in paragraphs 2.16 and following, states that in the absence of applicable Ethiopian standards, the EIA proponent or consultant has to propose their own standards and justify them.

Mitigation of Gaps

2.47 In the course of Project implementation, where gaps or inconsistencies between the Ethiopian regulations and World Bank policies are identified, World Bank policies will be applied.

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7 Article 92: “The people concerned shall be made to give their opinions in the preparation and implementation of policies and programs concerning environmental protection.”

8 Ethiopia has drinking water standards (September 1990). However, these appear to apply only to piped supplies. They are currently being revised, but the revised version was circulated in draft but not enacted yet.
3. DESCRIPTION AND ASSESSMENT OF CAPACITY

ENVIRONMENTAL INSTITUTIONS

3.1 The responsibilities for the Environmental Management are shared between the federal and regional governments.

Federal Institutions - EPA

3.2 The responsible body for the coordination of the environmental management at federal level is the Environmental Protection Authority (EPA) which was formed in 1995 by proclamation No 9/1995 and re-established by proclamation 295/2002.

3.3 The proclamations appointed a General Manager and Deputy General Manager to head the institute and to establish an environmental council to consult and approve directives and standards issued by the EPA. Some of the main responsibilities of the EPA as set out in the proclamations include:

- Prepare/propose amendments on environmental policy and laws and ensure their implementation;
- Prepare directives and implement systems necessary for evaluating the impact of social and economic development projects/programs on the environment;
- Prepare environmental protection standards and implementation directives for water, soil and air;
- Conduct studies on natural calamities and other man made environmental problems and coordinate efforts to combat the problems;
- Make recommendations on measures needed to encourage the protection of the environment;
- Enhance environmental awareness programs;
- Implement international treaties which Ethiopia is signatory to; and
- Provide advice and technical support to regions on environmental matters.

3.4 The EPA is organized into nine technical departments and four service units with a total manpower of 167 of which 68 are technical departments (technical personnel’s). The technical departments are:

- Environmental Impact Assessment 5 staff
- Ecosystem 13 staff
- Environmental economics and social affairs 6 staff
- Pollution control 7 staff
- Environmental policy and legislation 3 staff
- Environmental education 7 staff
- Environmental information 6 staff
- Women affairs 3 staff
- Environmental laboratory 6 staff
- Regional affairs coordination 4 staff
- Professionals at top management and project management 8 staff

3.5 Overall, the EPA is meant to have the prime role of setting environmental policy, standards, regulatory directives and implementation strategies, whereas ministries develop their own environmental sections for implementation and regulation of the federal laws and strategies as related to their sectors responsibilities.

3.6 Within the EPA the Environmental Impact Assessment Department is responsible for coordinating and overall over looking the environmental impact assessment processes while different professionals in different technical departments are made array to assess their area specific impacts.
3.7 The EPA has already developed and released some sector specific EIA procedures and guidelines. The sector guidelines include agriculture, industry, transport and irrigation sectors together with an accompanying volume of overall procedural guidelines. The organization has also prepared laws on EIAs and pollution control in addition to environmental policy and conservation strategy (issued).

**Regional Environmental Bureaus**

3.8 Regional governments are establishing environmental bureaus in their respective regions. At present only Gambella, Harrari and Tigray do not have an environmental bureau yet. However, most of the other regions’ environmental bureaus have just been established, and have little field presence. They often use agricultural bureaus to reach woredas and farmers’ associations, but are expected to gradually build their own organizational structures down to the lowest levels of government.

3.9 Regions which do not have an environmental bureau yet are usually in the process of finalizing conservation strategies, immediately after which they are supposed to establish environmental bureaus.

**ENVIRONMENTAL HEALTH INSTITUTIONS**

3.10 Two ministries take care of the provision of potable drinking water and the solid and liquid waste disposal on the one hand, and disease prevention and control on the other, the Ministry of Water Resources and the Ministry of Health respectively.

3.11 The Ministry of Water Resources is responsible for the overall planning and management of the country’s water resources for supply and irrigation use. It also prepares, amongst others, water standards with the collaboration of the EPA.

3.12 The Ministry of Health supervises, amongst others, disease control and prevention teams established at regional and woreda levels.

3.13 As for environment, federal and regional governments share responsibilities in implementing environmental health activities, with regional governments conducting the practical implementation while the federal level is involved in overall planning and funding.

**REVIEW OF CAPACITY IN THE EXAMPLES OF OROMIA AND SNNPR**

3.14 During the course of the development of this ESMF, two regions have been investigated in terms of their capacity to deal with environmental issues, especially with respect to the review of environmental assessments and environmental baseline. Appendix 2 provides the description of the existing capacities in these two regions, namely Oromia and the SNNPR.

3.15 This review indicates that, in these two regions, the capacity related with environmental assessment and monitoring and EIA review remains weak at the regional level, and is virtually non-existent at the woreda level. Regionally-posted staff is limited both in number and practical experience, although the academic level of most staff is adequate. Equipment is also a serious limitation as there is a shortage of vehicles, scientific equipment, and computers. Lack of operating budget seriously limits the ability of the staff to visit woredas and to have any sort of field presence. In the two regions visited, the Environment Bureau has to rely on wealthier and more decentralized institutions, like the Bureau of Agriculture, to provide information from the woredas and the field.

3.16 Whereas the applicable EIA proclamation and guidelines provide that EIAs are to be reviewed at regional level, except in a few specific cases where the review belongs in the federal EPA, neither Oromia nor SNNPR have ever reviewed an EIA at regional level.
4. GENERAL ENVIRONMENTAL AND SOCIAL BACKGROUND

GEOGRAPHICAL OVERVIEW

4.1 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 km².

4.2 Altitudes range from 4,260 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.

4.3 The country 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.

4.4 The total population of the country is about 65 million. The urban population is still relatively small (17.6% of the total population). The country wide population growth rate is about 3% per year, with the urban population increasing faster (about 5% per year).

ECO-CLIMATIC ZONING OF THE COUNTRY

Overview

4.5 Ethiopia has a wide variety of climatic zones, that mainly reflect the contrasts in altitude. In the last few years, several institutions have been using eco-climatic zones as a framework for planning activities in various fields, including environmental management⁹. The zoning is based mainly on altitudinal delineations, and was initially developed by the University of Bern (Switzerland). It includes 6 zones, as follows: Wurch, High Dega, Dega, Weyna Dega, Kolla, Berha.

4.6 The two zones highest in elevation are usually grouped into one single zone (Wurch/High Dega). Figure 1 hereunder shows the limits of the zones as they will be used in this report:

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⁹ For instance, this zoning is used by the strategic EIA developed by DHV Consultants in the framework of the National Water Supply and Sanitation Master Plan. Extensive use has been made of this latter document for the development of this ESMF.
Wurch – High Dega

4.7 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 raising. They include protected natural areas.

Dega

4.8 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 Harrerге, 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 is typically comprising 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 raising.
Weyna Dega

4.9 This zone is found between altitudes of 1,500 and 2,400 m asl, 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 surface 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.

Kolla

4.10 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 density of population is low (about 10% of the country population on 20% of the surface).

Berha

4.11 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 country population on 40% of the surface). 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.

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

Wurch – High Dega

4.12 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 addressed in the event of these high altitude areas being used for water catchment are the following:

- Vulnerability of local high altitude eco-systems,
- Presence of protected areas, and risks implied by induced access into these protected areas,
- Potential for bacteriologic pollution of water streams and springs due to the presence of cattle and people;
- Erosion that may be caused by construction activities on steep slopes.

Dega

4.13 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. Care needs to be taken of the following:

- 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.

4.14 Otherwise, no environmental issue of significance appears to be related with water supply and sanitation in the Dega areas

**Weyna Dega**

4.15 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 water supply and sanitation are the following:

- 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, potential for over-abstraction from ground water or surface water for urban water supply;
- Potential for water borne diseases developing from inadequate drainage around water points;
- High solid content of surface water resulting from erosion in the water shed;
- Erosion caused by construction activities, in addition to the general tendency to erosion.

**Kolla and Berha Areas**

4.16 The main risks in these zones are in relation with the influx of nomadic and semi-nomadic population (and their livestock), or sedentary farmers from other areas, that may result from the development of permanent water points. Such water points have been observed in the past (deep boreholes or livestock watering ponds) to 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 PROJECT IMPACTS

WATER AND SANITATION SYSTEMS CONSIDERED UNDER THE WSS PROJECT

Water Supply Systems

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

Table 1: Physical Components of Rural and Urban Water Supply Sub-Projects

<table>
<thead>
<tr>
<th>CATCHMENT</th>
<th>TREATMENT AND STORAGE</th>
<th>DISTRIBUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Hand-dug well</td>
<td>None</td>
</tr>
<tr>
<td>R2</td>
<td>Drilled well</td>
<td>None</td>
</tr>
<tr>
<td>R3</td>
<td>Drilled well with</td>
<td>Small capacity, on-site storage and treatment</td>
</tr>
<tr>
<td></td>
<td>submersible pump</td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>Spring catchment</td>
<td>On-site storage</td>
</tr>
<tr>
<td>R5</td>
<td>Spring catchment</td>
<td>On-site storage</td>
</tr>
<tr>
<td>R7</td>
<td>Surface water catchment (run-off catchment, pond, small dam)</td>
<td>None</td>
</tr>
<tr>
<td>R8</td>
<td>Pastoral open well</td>
<td>None</td>
</tr>
<tr>
<td>R9</td>
<td>Pastoral drilled well with submersible pump (with generator or solar)</td>
<td>None</td>
</tr>
<tr>
<td>U1</td>
<td>Spring catchment</td>
<td>Raw water treatment plant and treated water storage</td>
</tr>
<tr>
<td>U2</td>
<td>River intake (run of the river)</td>
<td>Raw water treatment plant and treated water storage</td>
</tr>
<tr>
<td>U3</td>
<td>River intake with dam</td>
<td>Raw water treatment plant and treated water storage</td>
</tr>
<tr>
<td>U4</td>
<td>Drilled well(s) with submersible pump(s)</td>
<td>Raw water treatment plant and treated water storage</td>
</tr>
<tr>
<td>U5</td>
<td>Combination of the above</td>
<td>Raw water treatment plant and treated water storage</td>
</tr>
<tr>
<td>U6</td>
<td>Rehabilitation and/or expansion of an existing system</td>
<td></td>
</tr>
</tbody>
</table>
**Sanitation Systems**

*Rural Systems*

5.2 The WSS Project will promote the integration of sanitation with improvements to water supply. For rural sanitation, pit latrines will be the choice option in the vast majority of communities. However, the Project 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*

5.3 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.

**POTENTIAL IMPACTS OF RURAL WATER SUPPLY SYSTEMS**

**Beneficial Impacts**

5.4 Potential beneficial impacts of rural water supply systems are the following:

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

**Adverse Impacts**

5.5 Table 2 hereunder shows potential adverse impacts that different rural water systems may cause to the biophysical or human environment.

**Table 2: Potential Environmental and Social Impacts of Rural Water Supply Systems**

<table>
<thead>
<tr>
<th>System</th>
<th>Potential Adverse Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 - Rural Hand-Dug Well</td>
<td>- The community is made dependent on a more sophisticated system that will require maintenance, organization, and finance</td>
</tr>
<tr>
<td>Well with Hand-Pump</td>
<td>- Water-related diseases (malaria, skin diseases ...) (skin diseases?) caused by lack of drainage in the immediate surroundings of the well</td>
</tr>
<tr>
<td>and</td>
<td>- Ground water contamination through the well during construction or operation</td>
</tr>
<tr>
<td>R2 - Rural Drilled Well</td>
<td>- Waste material extracted from the well (hand-dug wells) or waste drilling cuttings and drilling mud (boreholes), if not disposed of or reclaimed properly</td>
</tr>
<tr>
<td>with Hand-Pump</td>
<td>- Water will have to be paid for, which may be detrimental to the poorest in the community</td>
</tr>
<tr>
<td>R3 - Rural Drilled Well</td>
<td>- Land requirements for the well pad</td>
</tr>
<tr>
<td>with Submersible Pump and</td>
<td>- Same as above, plus:</td>
</tr>
<tr>
<td>small distribution system</td>
<td>- Land requirements for taps and pipelines</td>
</tr>
</tbody>
</table>
Table 2 (continued): Potential Environmental and Social Impacts of Rural Water Supply Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Potential Adverse Impacts</th>
</tr>
</thead>
</table>
| R4 – Spring catchment with on-site storage and distribution | • Water-borne diseases (malaria, skin diseases...) caused by lack of drainage in the immediate surroundings of the spring  
• Water will have to be paid for, which may be detrimental to the poorest in the community  
• Reduced water flow downstream, potential for conflict between upstream and downstream users  
• Temporary increase during construction in the suspended solids content of water and impact on users downstream accordingly  
• 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 |

Discussion of Potential Impacts of Rural Systems on Groundwater

5.6 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 $\text{m}^3$/day, and will usually be between 3 and 10 $\text{m}^3$/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.

POTENTIAL IMPACTS OF PASTORAL WATER SUPPLY SYSTEMS

Beneficial Impacts

5.7 Potential beneficial impacts of pastoral water supply systems are the following:

• 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,

• Capacity building in the community.

Adverse Impacts

5.8 Table 3 hereunder shows potential adverse impacts that different pastoral water systems may cause to the biophysical or human environment.
### Table 3: Potential Environmental and Social Impacts of Pastoral Water Supply Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Potential Adverse Impacts</th>
</tr>
</thead>
</table>
| 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 |
| R8 – Pastoral Well with Submersible Pump (with Generator or Solar) | - 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 be detrimental to the poorest in the community |

### POTENTIAL IMPACTS OF URBAN WATER SUPPLY SYSTEMS

#### Beneficial Impacts

5.9 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 and domestic hygiene,
- Reduction in water-borne diseases such as dysenteria,
- Capacity building and training in the town, and resulting enhancement of organizational, financial and technical capacities of town. 

---

10 In Ethiopian towns like elsewhere in the developing world, the water supply system often happens to be the first town infrastructure managed by the town, and provides town representatives their first opportunity to obtain training and experience in such fields as technical and financial management of a public service, cost recovery, private sector participation, etc...
### Adverse Impacts

5.10 Table 4 hereunder shows potential adverse impacts that urban water systems may cause to the biophysical or human environment.

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

<table>
<thead>
<tr>
<th>System</th>
<th>Potential Adverse Impacts</th>
</tr>
</thead>
</table>
| U1 – Spring catchment, treatment and gravity distribution system | - Reduced water flow downstream, potential for conflict between upstream and downstream users  
- For springs in mountainous areas (Wurch/High Dega and Dega areas), potential for impacts to fragile ecosystems and wetlands  
- Land requirements for pipelines, water works and public taps  
- Water will have to be paid for, 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 |
| U2 – River intake (run of river), treatment works and pressure distribution system | - Reduced water flow downstream, potential for conflict between upstream and downstream users  
- Potential risks to aquatic ecosystems caused by works in the river bed  
- Impact of improper disposal of used reagents  
- Land requirements for pipelines, water works and public taps  
- Water will have to be paid for, 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 |
| U3 – River intake (with dam), treatment works and pressure distribution system | - Same as above [U2], plus:  
- Potential risks to the river ecosystem (fauna and flora) caused by: reduced flow of water downstream, siltation in the reservoir, modifications to the river banks and morphology, etc... |
| U4 – Well(s) with submersible pumps, treatment and pressure distribution system | - Impact of ground water abstraction on ground water table level and its availability to other users  
- Land requirements for pipelines, water works and public taps  
- Water will have to be paid for, 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 |
| U5 – Combination of the above | - As above |
| U6 – Rehabilitation or expansion of existing system | - Variable depending on the technical scope of the rehabilitation or expansion project  
- Potential impact of the technical upgrade and the resulting increase in water cost and price on poor people's ability to be served by the system |
POTENTIAL IMPACTS OF SANITATION SYSTEMS

Beneficial Impacts
5.11 Potential beneficial impacts of sanitation systems are the following:
- Reduction in water-borne diseases such as dysenteria,
- 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 or community.

Adverse Impacts
5.12 Table 5 hereunder shows potential adverse impacts of sanitation systems:

Table 5: Potential Environmental and Social Impacts of Sanitation Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Potential Adverse Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latrines and other individual sanitation systems</td>
<td>• Impact on groundwater in situations where water table is shallow</td>
</tr>
<tr>
<td></td>
<td>• Impact of potential improper sludge disposal</td>
</tr>
<tr>
<td>Piped sewerage system and waste water treatment works</td>
<td>• Potential impact of effluent discharge on water bodies</td>
</tr>
<tr>
<td></td>
<td>• Land requirements for pipes, treatment works and other structures</td>
</tr>
<tr>
<td></td>
<td>• Collection, treatment and disposal will have to be paid for, which may be detrimental to the poorest in the community</td>
</tr>
<tr>
<td></td>
<td>• The town is made dependent on a more sophisticated system that will require maintenance, organization, and finance</td>
</tr>
</tbody>
</table>
6. PROPOSED ENVIRONMENTAL MANAGEMENT PROCESS AND TYPICAL MITIGATION MEASURES

PROPOSED ENVIRONMENTAL MANAGEMENT PROCESS

General

6.1 As mentioned above (see paragraph 2.25), the Ethiopian EIA guideline categorizes projects into three “schedules” according to their potential impacts: Schedule 1 (projects with adverse and significant environmental impacts, requiring a full EIA), Schedule 2 (projects which may cause some significant environmental impacts, not likely to warrant an environmental impact study), and Schedule 3 (projects with no impact).

6.2 The Water Supply and Sanitation Project will include multiple sub-projects, resulting from the demand of towns and communities. As discussed in Section 5 (see Table 1), these sub-projects will vary in magnitude and technical scope, from the rural hand-dug well to full urban water and sewerage systems.

6.3 The categorization of sub-projects that may be considered is shown in Table 6.

Table 6: Categorization of Sub-Projects to be Considered under the WSS Project

<table>
<thead>
<tr>
<th>System</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1 - Rural Hand-Dug Well with Hand-Pump</td>
<td>2</td>
</tr>
<tr>
<td>R2 - Rural Drilled Well with Hand-Pump</td>
<td>2</td>
</tr>
<tr>
<td>R3 - Rural Drilled Well with Submersible Pump and small distribution system</td>
<td>2</td>
</tr>
<tr>
<td>R4 – Spring catchment with on-site storage and distribution</td>
<td>2</td>
</tr>
<tr>
<td>R5 – Spring catchment with on-site storage and distribution</td>
<td>2</td>
</tr>
<tr>
<td>R6 – Surface Water Catchment (Pond, Dam, Run-Off…)</td>
<td>2</td>
</tr>
<tr>
<td>R7 – Pastoral Open Well</td>
<td>2</td>
</tr>
<tr>
<td>R8 – Pastoral Well with Submersible Pump (Generator or Solar)</td>
<td>2, unless groundwater withdrawal is more than 4,000 m³/day</td>
</tr>
<tr>
<td>U1 – Spring catchment, treatment and gravity distribution system</td>
<td>2</td>
</tr>
<tr>
<td>U2 – River intake (run of river), treatment works and pressure distribution system</td>
<td>2</td>
</tr>
<tr>
<td>U3 – River intake (with dam), treatment works and pressure distribution system</td>
<td>2, unless reservoir is more than 100 ha in surface, or causes the resettlement of more than 100 families</td>
</tr>
<tr>
<td>U4 – Well(s) with submersible pumps, treatment and pressure distribution system</td>
<td>2, unless groundwater withdrawal is more than 4,000 m³/day</td>
</tr>
<tr>
<td>U5 – Combination of the above</td>
<td>Case by case</td>
</tr>
<tr>
<td>U6 – Rehabilitation or expansion of existing system</td>
<td>Case by case</td>
</tr>
<tr>
<td>Latrines and other individual sanitation systems</td>
<td>2</td>
</tr>
<tr>
<td>Piped sewerage system and waste water treatment works</td>
<td>2, unless “large scale” or close to a water body</td>
</tr>
</tbody>
</table>
Schedule 1 Sub-Projects

6.4 Schedule 1 Sub-Projects will undergo a full Environmental Impact Assessment, carried out in accordance with Ethiopian EIA guideline (see paragraphs 2.16 to 2.26) and the World Bank Group OP 4.01. Main requirements applicable to these EIAs follow:

- To be carried out by independent, experienced consultants;
- To include meaningful public consultation in accordance with OD 4.01;
- To include public disclosure of relevant documents in a culturally-adequate form (terms of reference, draft EIA report, draft EMP), and to demonstrate that public’s comments and observations have been taken into consideration;
- To result in a full Environmental Management Plan, that will have to be detailed, priced and phased.

6.5 EIAs for Schedule 1 sub-projects will be based upon specific Terms of Reference to be developed on a case by case basis by the EPA at federal or regional level.

Schedule 2 Sub-Projects

Overview of the Proposed Process

6.6 Figure 2 hereunder shows the proposed process for Schedule 2 Sub-Projects:

**Figure 2: Environmental Management Process Proposed for Schedule 2 Sub-Projects**
Environmental Baseline Assessment

6.7 The Environmental Baseline Assessment (EBA) is a rapid field investigation to screen on-site whether any environmental issue may require specific attention.

6.8 It is proposed that all Schedule 2 sub-projects (including the simplest ones) undergo the EBA process in order to avoid any miss in screening potential environmental issues. The EBA is designed to meet the following criteria:

- To be as simple as possible;
- To be undertaken by field staff with basic training only;
- To be completed within a few hours at the most, and probably within less than one hour for the most simple sub-projects.

6.9 Appendix 3 proposes a draft framework for the work to carry out at the stage of the EBA. Field personnel in charge of the EBAs at woreda level will propose a conclusion according to the following three possibilities:

2A. One or more major adverse impacts are likely, significant changes to the project design are required (changes in design, site or route);
2B. Potential environmental issue identified, specific mitigation required;
2C. No significant environmental issue identified, no specific mitigation required.

6.10 Category 2A sub-projects are those for which the Environmental Baseline Assessment concludes that changes to the design or the siting/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,
- Impact on land use and/or users.

6.11 Changes in the sub-project design may include:

- Re-siting of the water point or of another project 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.

6.12 Given the current lack of capacity at woreda or town level to carry out these assessments (see Section 3 and Appendix 2), EBAs will be developed by consultants in charge of sub-project design on behalf of towns for urban sub-projects, or on behalf of woredas for rural sub-projects.

6.13 EBAs once completed will be forwarded to the Environmental Protection Agency (ie. Environment Bureau) at regional level for review *a posteriori* and filing.

Site-Specific EMP

6.14 Site-specific EMPs as additions to the generic EMP presented in Section 9 will be developed for the following types of sub-projects:

- Schedule 1 sub-projects: Site-specific EMPs will be derived from the full EIA developed for such sub-projects;
- Schedule 2 / Category 2B sub-projects: Site-specific EMPs will be developed on a case-by-case basis.
6.15 Due to limitations of capacity described in Section 3, Site-Specific EMPs will be developed by consultants in charge of sub-project design on behalf of towns for urban sub-projects, or on behalf of woredas for rural sub-projects.

**MITIGATION MEASURES**

6.16 The following tables (Table 7: Impacts on the Biophysical Environment, and Table 8: Impacts on the Social Environment) provide typical mitigation measures associated with impacts identified in Section 4.

### Table 7: Impacts on the Biophysical Environment and Associated Mitigations

<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| Water-borne diseases (malaria, skin diseases...) caused by standing water, ie. lack of drainage in the immediate surroundings of the well or distribution point | - 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 retention or floods  
- Drainage of water wells, troughs, water taps (infiltration pit or other) |
| Ground water contamination through the well during construction or operation | - Proper siting of the well to avoid infiltration of waste water (avoidance of latrines and other sources of contamination)  
- Use of biodegradable drilling fluids and mud additives  
- 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  
- The pump and other equipment submerged into the well need to be disinfected, initially then at each extraction  
- 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 |
| Waste material extracted from the well (hand-dug wells) or waste drilling cuttings and drilling mud (boreholes) | - Waste material extracted from dug or drilled wells to be dried, spread on site, and recontoured if needed  
- Drilling mud to be recycled, disposed of in authorized landfills, or dried and properly mixed with earth and spread in the site vicinity  
- Topsoil to be separately stored and spread on site on top of other materials |
| Reduced water flow downstream of a spring catchment, temporary increase in suspended solids content, potential for conflict between upstream and downstream users | - Identification at EBA stage of downstream users  
- Consultation with them before water point is constructed  
- If needed, changes to catchment location or design accordingly |
<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| 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 accordingly |
| 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 |
| 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 |
| 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 |
| Potential for social conflicts between traditional users of the area and settlers or pastoralists coming from other areas to water their livestock | - Ditto above |
| Potential risks to aquatic ecosystems caused by works in river bed | - Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream  
- Changes in project design or siting if needed  
- Limitation of works in river bed (example: no mechanical excavation), proper phasing according to flow fluctuations (dry/wet season) |
| Potential risks to aquatic ecosystems caused by dam construction and operation (reduced flow of water downstream, siltation in the reservoir, modifications to the river banks and morphology, etc…) | - Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream  
- Changes in project design or siting if needed  
- Limitation of works in river bed and proper phasing according to flow fluctuations (dry/wet season)  
- Erosion control measures in the dam catchment area |
| Impact of improper disposal of used reagents | - Used reagents to be stored and disposed of in a appropriate site (landfill or other) |
| 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 |
### Table 7 (continued): Impacts on the Biophysical Environment and Associated Mitigations

<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of sludge disposal</td>
<td>- Sludge from waste water treatment to be dried on-site, mixed with earth and used as a fertilizer</td>
</tr>
<tr>
<td>Impact of effluent discharge on water bodies</td>
<td>- Compliance with maximum effluent discharge values as stated in Appendix 4</td>
</tr>
</tbody>
</table>

### Table 8: Impacts on the Social Environment and Associated Mitigations

<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| 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 toward 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 |
| Water will have to be paid for, which may be detrimental to the poorest in the town or community | - Town water board or community water users committee to decide themselves on water tariffs, including (if needed) specific rules applying to the poorest  
- Town water board or community water users committee to be provided guidance on how to determine water tariffs |
| Land needs                                                                 | - Avoidance through resiting/rerouting of any impact on inhabited dwellings or structures used for commercial activities or other businesses  
- Cash compensation of developments or crops affected by project land requirements  
- Land replacement if land take by project is significant enough to affected users’ livelihood  
- Monitoring of how affected people restore their livelihood after being compensated  
- See Resettlement Framework Policy for further details |
7. CAPACITY-BUILDING AND TRAINING

PROPOSED ACTIVITIES

7.1 As mentioned above, capacities in the regions are usually low with regard to environment management. This is all the more true in the 4 emerging regions (Afar, Somali, Benshangul-Gumuz and Gambella). Some of the regional EPAs do not exist yet (Gambella, Harrari and Tigray), and most others have very limited resources in terms of staff, means of transportation and physical equipment (see section 3 and Appendix 2).

7.2 A special initiative is needed to develop the capacity of the woredas, towns, and communities to support implementation of the Urban and Rural WSS Programs including social/environmental aspects. Both components of the project will be carried out as a partnership between government, communities and the local private sector. The tripartite arrangements between town water boards, RWBs, and consultants for urban water supply, and between woreda, RWBs and consultants at the woreda level and between communities, woreda and local service providers at the community level for rural water supply and sanitation is shown in Figure 3 (see Section 9).

7.3 The approach to capacity building will be “learning by doing” through project implementation. During the start-up phase, before water supply facilities are constructed, MWR, RWB, and Regional EPA personnel will participate in a workshop to ensure they understand the safeguard issues and policies involved in the project, and the arrangements for integrating them into project implementation. Town and woreda consultants will also be required to attend training workshop in which they can become safeguard certified. Each RWB will have at least one staff member dedicated to monitoring and evaluation, including social and environmental safeguards. The MWR will have full time staff and/or consultants for M&E and safeguards. Their primary job will be to assist regions to train regional staff and town/woreda consultants, to monitor implementation procedures in each region, and ensure that environmental management and resettlement plans are appraised properly. Through periodic workshops with practitioners the safeguard and M&E trainers will refine materials and implementation procedures.

7.4 Training Curricula for Safeguards:

Training Workshop for MWR, Regional WB and EPA

➤ Environmental policies, procedures and sectoral guidelines 2 days
  o Review and discussion of Ethiopia’s environmental policies, procedures, and legislation
  o Review and discussion of the Bank’s safeguard policies
  o Review and discussion of Ethiopia’s existing sectoral guidelines
  o Collaboration with institutions at the local, regional, federal levels

➤ Environmental assessment process 3 days
  o Screening process
  o Assignment of environmental categories
  o Rationale for using Environmental Checklists
  o Preparation of terms of reference for carrying out EIA/EMPs
  o How to review and clear EIA/EMPs
  o The importance of public consultations in the EIA process
  o How to monitor safeguard implementation
  o Case studies
Water Supply and Sanitation Project – Environmental and Social Management Framework

- **Selected topics on water and sanitation** 2 days
  - Borehole and dug well siting and construction
  - Impacts and monitoring of groundwater and surface water
  - Erosion control during construction
  - Resettlement (compensation for minor income/property loses)
  - Latrine design and siting

Regional Training Workshops for Town, Woreda and Community Consultants

- **Environmental policies, procedures and sectoral guidelines** 2 days
  - Review and discussion of Ethiopia’s environmental policies, procedures, and legislation
  - Review and discussion of the Bank’s safeguard policies

- **Environmental assessment** 3 days
  - Screening process
  - Assignment of environmental categories
  - Rationale for using Environmental Baseline Assessments
  - How to prepare Environmental Baseline Assessments and EMPs
  - The importance of public consultations in the EIA process
  - Case studies

- **Selected topics on water supply and sanitation** 2 days
  - Borehole and dug well siting and construction
  - Impacts and monitoring of groundwater and surface water
  - Erosion control during construction
  - Resettlement (compensation for minor income/property loses)
  - Latrine design and siting

BUDGET FOR SAFEGUARD TRAINING AND IMPLEMENTATION

**Overall Budget for management support and capacity building**

- Management Support for MWR and RWB $1.0m
- Capacity Building of regional staff and consultants (through MWR) $4.5m
- Capacity Building of regional staff and consultants (through RWBs) $1.6m
- Capacity building of woreda and community level consultants $5.6m

**Cost of start-up workshops and MWR trainers**

- Start-up workshop for MWR, Regional WB and EPA personnel
  - 40 participants and four resource persons $50,000

- Regional workshops for town and woreda consultants
  - 8 workshops with 25 participants each at $10,000 each
    - (consultant participation built into contract) $80,000

- Full time safeguard and M&E specialists at MWR $260,000

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8. MONITORING AND REPORTING

MONITORING

8.1 Environmental monitoring of sub-projects will take place on a "spot check" basis at it would be impossible to monitor all sub-projects. 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 Project.

8.2 The following indicators can be used for monitoring of the implementation of mitigation measures:

- Biophysical indicators:
  - Water quality - chemical content, sediment load and bacterial counts, fish and other aquatic species diversity and abundance,
  - Soil and erosion,
  - Vegetation changes,
  - Wildlife changes;

- Social Indicators
  - Income of beneficiary people,
  - Nutritional status of children and food security situation,
  - Malaria and other water-borne diseases,
  - Water use and availability of safe drinking water,
  - Efficiency of town/community management,
  - Number of local people trained, hired for construction, hired for operation.

8.3 Table 9 of Section 9 hereunder provides details on monitoring indicators for each of the identified adverse impacts, together with the proposed responsibilities for monitoring.

REPORTING

Environmental Baseline Assessments

8.4 Environmental Baseline Assessments will be prepared by woredas (where possible) for rural sub-projects, or by those consultants hired to carry out technical design and construction supervision, consistent with the draft form proposed in Appendix 3. All EBAs will be categorized (A, B, C), then submitted to the Regional EPA for review.

Environmental Reviews

8.5 Regional EPAs will provide a quarterly summary of Environmental Reviews, consistent with the draft sheet presented in Appendix 5.

Annual Reports

8.6 Regional Water Bureaus will develop an annual environmental monitoring report to the review of the Ministry of Water Resources and EPA. The report contents will be the following:

- A summary of Environmental Reviews (based on the quarterly summaries prepared by the regional EPA);
- A summary of EIAs and Site-Specific EMPs developed during the year;
- A summary of environmental monitoring carried out on systems at both construction and operation phases.

8.7 These regional reports will be consolidated and summarized into a federal level annual report to be prepared by the Ministry of Water Resources.
9. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN – IMPLEMENTATION RESPONSIBILITIES

9.1 Table 9 hereunder presents for the different phases of the Project (design, construction, operation):
   - The potential environmental and social adverse impacts of the Project,
   - The associated mitigation measures,
   - The relevant monitoring indicators,
   - The implementation responsibilities,
   - The associated costs.

9.2 Figure 3 also presents the general allocation of responsibilities for both Rural and Urban sub-projects.
Figure 3: Contracting Arrangements

Rural Water Supply

- MWR
- National and International Consultants
- Local Service Providers
- Communities
- Woreda
- Regional Water Bureaus
- Goods and Works
- Small Works Contractors
- Woreda Supervision
- Woreda Consultants
- Handpump Supply
- BH Siting/Supervision
- BH Construction
- Large works
- Town Water Boars and Water Committees
- Town WB Consultants
- BH Site Supervision
- BH Construction
- Civil Works Contracts
- Legend: Support, Contract, Arrange contract

Urban Water Supply

- MWR
- National and International Consultants
- Local Service Providers
- Communities
- WATSAN Committees
- Local Service Providers
- Goods and Works
- Small Works Contractors
- Woreda Supervision
- Woreda Consultants
- Handpump Supply
- BH Siting/Supervision
- BH Construction
- Large works
- Town Water Boars and Water Committees
- Town WB Consultants
- BH Site Supervision
- BH Construction
- Civil Works Contracts
- Legend: Support, Contract, Arrange contract
## Table 9: Environmental and Social Management Plan – Impacts, Mitigations and Responsibilities

<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Project Phase</th>
<th>Mitigation</th>
<th>Monitoring Indicators</th>
<th>Responsibilities for Implementation</th>
<th>Responsibilities for Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground water contamination through the well during construction or operation</td>
<td>Construction</td>
<td>- Proper siting of the well to avoid infiltration of waste water (avoidance of latrines and other sources of contamination)</td>
<td>- Distance to points of contamination.</td>
<td>Woreda/town consultants in charge of EBAs and sub-project design</td>
<td>Project appraisers</td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>- Use of biodegradable drilling fluids and mud additives</td>
<td>- Type of drilling fluid</td>
<td>Contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>- Drainage of the immediate surroundings of the water well to avoid infiltration of contaminated water</td>
<td>- Ground graded to drain</td>
<td>Contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>- Construction of properly designed and watertight well head and proper sealing of pump to well head</td>
<td>- Application of standard design and construction method</td>
<td>Contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction &amp; Operation</td>
<td>- The pump and other equipment submerged into the well need to be disinfected, initially then at each extraction</td>
<td>- Disinfect well and pump with proper chlorine concentration</td>
<td>Contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction &amp; Operation</td>
<td>- Initial chlorination of the well, after pumping test and pump installation, then periodic chlorination</td>
<td>- Disinfect well and pump with proper chlorine concentration</td>
<td>Operators</td>
<td>Town/community</td>
</tr>
<tr>
<td></td>
<td>Operation</td>
<td>- Well-head and its surroundings to be cleaned and cleared during operation. Infiltration pits to be maintained and replaced if needed</td>
<td>- Proper drainage of well head surroundings, no standing water, no mosquito larvae</td>
<td>Operators</td>
<td>Town/community</td>
</tr>
<tr>
<td>Waste material extracted from the well (hand-dug wells) or waste drilling cuttings and drilling mud (boreholes)</td>
<td>Construction</td>
<td>- Waste material extracted from dug or drilled wells to be dried, spread on site, and recontoured if needed</td>
<td>- Proper disposal of waste material</td>
<td>Contractors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Drilling mud to be recycled, disposed of in authorized landfills, or dried and properly mixed with earth and spread in the site vicinity</td>
<td>- Proper disposal of drilling mud</td>
<td>Construction supervisors (Woreda/town consultants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Topsoil to be separately stored and spread on site on top of other materials</td>
<td>- Adequate site restoration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Project Phase</th>
<th>Mitigation</th>
<th>Monitoring Indicators</th>
<th>Responsibilities for Implementation</th>
<th>Responsibilities for Monitoring</th>
</tr>
</thead>
</table>
| Reduced water flow downstream of a spring catchment, temporary increase in suspended solids content, potential for conflict between upstream and downstream users | Design/Planning & Construction | - Identification at EBA stage of downstream users  
- Consultation with them before water point is constructed  
- If needed, changes to catchment location or design | - Number of downstream users  
- Consultation minutes  
- TSS in flow downstream of catchment | Woreda/town consultants in charge of EBAs and sub-project design  
Water quality monitoring at construction phase: Contractor | Project appraisers  
Construction supervisors |
| For springs in mountainous areas (Wurch/High Dega and Dega areas), potential for impacts to fragile ecosystems and wetlands | Design/Planning | - 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-project design  
Water quality monitoring at construction phase: Contractor | Project appraisers |
| Potential bacteriological contamination downstream of pastoral surface water points | Operation | - 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 location or design | - Number of downstream users  
- Consultation minutes  
- Total coliforms in flow downstream of catchment | Woreda/town consultants in charge of EBAs and sub-project design  
Water quality monitoring at construction phase: Contractor | Project appraisers  
Construction supervisors |
| Potential for increased animal concentration in the surroundings of the water point, with resulting overgrazing, ecosystem and grazing resources degradation | Design/Planning & Operation | - 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 areas surrounding the water point | Woreda/town consultants in charge of EBAs and sub-project design  
Water quality monitoring at construction phase: Contractor | Project appraisers |
| Potential for permanent human settlement of pastoralists or others | Design/Planning & Operation | - 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-project design  
Water quality monitoring at construction phase: Contractor | Project appraisers |
<table>
<thead>
<tr>
<th>Issues/Impacts</th>
<th>Project Phase</th>
<th>Mitigation</th>
<th>Monitoring Indicators</th>
<th>Responsibilities for Implementation</th>
<th>Responsibilities for Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential for social conflicts between traditional users of the area and settlers or pastoralists coming from other areas to water their livestock</td>
<td>Design/Planning &amp; Operation</td>
<td>- Consultation at EBA stage with pastoralist communities on water point siting issues</td>
<td>- Consultation minutes</td>
<td>Woreda/town consultants in charge of EBAs and sub-project design</td>
<td>Project appraisers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Assessment of impact of water point on potential settlement/in-migration</td>
<td>- Number of people in the neighboring communities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If needed, changes to water point location accordingly</td>
<td>- Number of nomadic people in the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential risks to aquatic ecosystems caused by works in river bed</td>
<td>Design/Planning &amp; Construction</td>
<td>- Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream</td>
<td>- Description of fragile ecosystems downstream, vegetation indicators on Number of downstream users</td>
<td>Woreda/town consultants in charge of EBAs and sub-project design</td>
<td>Project appraisers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Changes in project design or siting if needed</td>
<td>- Consultation minutes</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>- Limitation of works in river bed (example: no mechanical excavation), proper phasing according to flow fluctuations (dry/wet season)</td>
<td>- Flow observations</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Limitation of works in river bed and proper phasing according to flow fluctuations (dry/wet season)</td>
<td>- TSS in flow downstream of catchment</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>- Erosion control measures in the dam catchment area</td>
<td></td>
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</tr>
<tr>
<td>Potential risks to aquatic ecosystems caused by dam construction and operation (reduced flow of water downstream, siltation in the reservoir, modifications to the river banks and morphology, etc...)</td>
<td>Design/Planning, Construction &amp; Operation</td>
<td>- Identification at EBA stage of potentially vulnerable aquatic ecosystems downstream</td>
<td>- Description of fragile ecosystems downstream, vegetation indicators on Number of downstream users</td>
<td>Woreda/town consultants in charge of EBAs and sub-project design</td>
<td>Project appraisers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Changes in project design or siting if needed</td>
<td>- Consultation minutes</td>
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<tr>
<td></td>
<td></td>
<td>- Limitation of works in river bed and proper phasing according to flow fluctuations (dry/wet season)</td>
<td>- Flow observations</td>
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<tr>
<td></td>
<td></td>
<td>- Erosion control measures in the dam catchment area</td>
<td>- TSS in flow downstream of catchment</td>
<td></td>
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</tr>
<tr>
<td>Impact of improper disposal of used reagents</td>
<td>Operation</td>
<td>- Used reagents to be stored and disposed of in a appropriate site (landfill or other)</td>
<td>- Tracing of reagents disposal</td>
<td>Operators</td>
<td>Town Water Boards / Regional Water Bureaus</td>
</tr>
<tr>
<td>Impact of sludge disposal</td>
<td>Operation</td>
<td>- Sludge from waste water treatment to be dried on-site, mixed with earth and used as a fertilizer</td>
<td>- Tracing of sludge disposal</td>
<td>Operators</td>
<td>Town Water Boards / Regional Water Bureaus</td>
</tr>
<tr>
<td>Impact of latrines and other individual sanitation systems on groundwater in situations where water table is shallow</td>
<td>Design/Planning</td>
<td>- Avoidance of latrines where highest groundwater level is less than 2 meters under the bottom of latrine pits or infiltration pits</td>
<td>- Ground Water level (EBA)</td>
<td>Woreda/town consultants in charge of EBAs and sub-project design</td>
<td>Project appraisers</td>
</tr>
</tbody>
</table>

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<table>
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<tr>
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<th>Responsibilities for Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of effluent discharge on water bodies</td>
<td>Operation</td>
<td>- Compliance with maximum effluent discharge values as stated in Appendix 4</td>
<td>- Yearly compliance tests</td>
<td>Operators</td>
<td>Town Water Boards / Regional Water Bureaus</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>The town or community is made dependent on a more sophisticated system that will require maintenance, organization, and finance</td>
<td>Design/ Planning &amp; Operation</td>
<td>- Town or community to set up an organization (water board or water users committee) to take care of the system</td>
<td>- Existence and effectiveness of Town Water Boards and Water Users Committees</td>
<td>Towns and communities and their technical assistance</td>
<td>Regional Water Bureaus / Woreda with town and community participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Rules of accountability of board/committee towards the users to be determined</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Promotion and awareness in the town and community at large</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Technical training of board/committee members on operation and maintenance of the system</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Training of board/committee members on organizational and financial aspects</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Monitoring and technical assistance to board/committee</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Water will have to be paid for, which may be detrimental to the poorest in the town or community</td>
<td>Operation</td>
<td>- Town water board or community water users committee to decide themselves on water tariffs, including (if needed) specific rules applying to the poorest</td>
<td>- Proportion within community with access to improved water supply</td>
<td>Towns and communities and their technical assistance</td>
<td>Regional Water Bureaus / Woreda with town and community participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Town water board or community water users committee to be provided guidance on how to determine water tariffs</td>
<td>- Absence of exclusion of any groups within community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues/Impacts</td>
<td>Project Phase</td>
<td>Mitigation</td>
<td>Monitoring Indicators</td>
<td>Responsibilities for Implementation</td>
<td>Responsibilities for Monitoring</td>
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<td>--------------------------------------------------------------------------------------</td>
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</tr>
</tbody>
</table>
| Land needs        | Design/Planning, Construction & Operation | - Avoidance through restitting/rerouting of any impact on inhabited dwellings or structures used for commercial activities or other businesses  
- Cash compensation of developments or crops affected by project land requirements  
- Land replacement if land take by project is significant enough to affected users' livelihood  
- Monitoring of how affected people restore their livelihood after being compensated  
- See Resettlement Framework Policy for further details | - Magnitude of impacts on dwellings or structures and minimization of those  
- Identification of people potentially loosing income sources  
- Agreement on resettlement plans  
- Confirmation during construction that all eligible beneficiaries are compensated.  
- Confirmation that affected people are as well or better off than they were before the project. | - Woreda/town consultants in charge of EBAs and project design  
- Woreda/town consultants in charge of EBAs and sub-project design  
- RWBs – MWR  
- Woredas and towns | Regional Water Bureaus /Woreda with town and community participation |
APPENDICES
## APPENDIX 1: BIBLIOGRAPHY

<table>
<thead>
<tr>
<th>Title of Document</th>
<th>Author</th>
<th>Date of Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>A geochemical survey of spring water from the main Ethiopian rift valley - Implications for well head protection</td>
<td>J.M. McKenzie et al., Hydrogeology Journal 2001-9</td>
<td>04 / 2001</td>
</tr>
<tr>
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<tr>
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<td>Environmental Protection Authority and MEDAC</td>
<td>04 / 1997</td>
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<tr>
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<td>British Geological Survey</td>
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</tr>
<tr>
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<tr>
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<td>New Designs for Water and Sanitation Transactions</td>
<td>PPIAF, Water and Sanitation Program</td>
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<tr>
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<td>Federal Negarit Gazeta, 9th year, n°12, 3rd December 2002</td>
<td>12 / 2002</td>
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<tr>
<td>Provisional Standards for Industrial Pollution Control in Ethiopia</td>
<td>Environmental Protection Authority with UNIDO</td>
<td>06 / 2003</td>
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<tr>
<td>The Constitution of the Federal Democratic Republic of Ethiopia</td>
<td>Unofficial English translation provided by the University of Pennsylvania, African Studies Center</td>
<td>06 / 1995</td>
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</tbody>
</table>
APPENDIX 2: CAPACITY ASSESSMENT – REGIONAL EXAMPLES

SNNPR

General Organization of the Region Government

10.1 The overall regional Government system of the Southern Nations, Nationalities and Peoples Region is structured into:
   • The Federation Council;
   • The Office of the President;
   • 16 regional institutions – i.e. bureaus, authorities, commissions etc;
   • 10 zonal administrations;
   • 104 Woredas with 8 having a special status.

10.2 At all three levels – region, zone, and woreda – support services including human resources, financial administration, procurement, etc are organized in “pools” placed under the respective administration offices. Heads of technical bureaus and offices are coordinating their sector-specific technical activities. Each institution has a budget, within which funds are disbursed up to the available monthly and yearly ceilings by the financial pool.

Environmental Protection, Land Administration and Use Authority (EPLAUA)

Human Resources

10.3 This authority was recently established and reports directly to the President of the regional Government. A General Manager currently heads the authority and there is a plan to support him by a deputy.

10.4 As shown in Table 1, the current workforce of EPLAUA is 5 staff, while requirements are estimated at 66, including 20 staff members posted at zone and woreda level, none of whom exists at the moment.

<table>
<thead>
<tr>
<th>Table 1: EPLAUA Current and Planned Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division</td>
</tr>
<tr>
<td>General Manager’s office</td>
</tr>
<tr>
<td>Deputy G/manager’s office</td>
</tr>
<tr>
<td>Environmental Department</td>
</tr>
<tr>
<td>EIA and Pollution Control Team</td>
</tr>
<tr>
<td>Ecology and Biodiversity Team</td>
</tr>
<tr>
<td>Land Administration and Use Department</td>
</tr>
<tr>
<td>Land resource survey Team</td>
</tr>
<tr>
<td>Land administration Team</td>
</tr>
<tr>
<td>Land Evaluation and Use Team</td>
</tr>
<tr>
<td>Policy and Legislation Department</td>
</tr>
<tr>
<td>Planning and Programming Department</td>
</tr>
<tr>
<td>Zone experts</td>
</tr>
<tr>
<td>Woreda experts</td>
</tr>
</tbody>
</table>

10.5 Qualification requirements for EPLAUA professional personnel are the following:
   • B.Sc plus 8 years of experience at the regional level,
- B.Sc plus four years at zone level,
- B.Sc with no requirement of experience at woreda level.

**Equipment**

10.6 EPLAU’s equipment is rather weak. It has currently five office rooms, two old computers, one old copy machine, no Internet access, one pick-up car and one currently being procured. The authority as yet has been involved in no Environmental Impact Assessment.

**Bureau of Water Resources Development (BWRD)**

**Human Resources**

10.7 The Bureau is headed by a Bureau Head and Deputy, both in place. The BWRD is organized into two departments – Water Resources and Water Supply and Sanitation. The two Department Heads are also in place. Details on available human resources are given in Table 2:

<table>
<thead>
<tr>
<th>Division</th>
<th>Current Workforce</th>
<th>Planned Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of bureau</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Deputy head</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Water Supply and Sanitation Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Study and Design Team</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Construction Control Team</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Water Resource Department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(details not available)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Zone experts</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Woreda experts</td>
<td>Details not available</td>
<td>18</td>
</tr>
</tbody>
</table>

**Equipment**

10.8 The Water Bureau exists since the establishment of the regional government and has comparatively better capacities than most other Bureaus in the Region. Computers and Internet access are available, as well as field and measurement equipment. The availability of field vehicles is also relatively good at regional level but there are reportedly serious transportation problems at woreda and zone level. Offices in Awassa are generally adequate. However, operating funds from the regional budget are limited, and only external funds have allowed the water bureau to accomplish its mission.

10.9 Major existing and potential partners of the bureau are UNDP, WB, UNICEF, ADB, and BSF from donors side; Water Aid, Water Action, and over 36 local NGOs, which are currently working in collaboration with the bureau; and all sector bureaus engaged in development activities.

**Bureau of Health**

**Human Resources at Regional Level**

10.10 The current and planned professional staff of the Bureau of Health is shown in Table 3:
Table 3: Bureau of Health Current and Planned Staff (Professionals only)

<table>
<thead>
<tr>
<th>Division</th>
<th>Current Workforce</th>
<th>Planned Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of bureau</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Deputy head</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Department Heads</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Senior Advisor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Experts</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>Woreda experts</td>
<td>Details not available</td>
<td>18</td>
</tr>
</tbody>
</table>

10.11 Most professionals have a PhD or M.Sc.

**Human Resources at Zone and Woreda Level**

10.12 At this level the planned manpower is 5 in each zone. This manpower is in place in most zones. The zonal staff is accountable to the regional bureau and links woredas with the bureau. All the rest of administrative systems are similar to other Sectoral institutions.

10.13 The technical manpower of this sector is planned to contain 16 professions with PhD to senior diploma in each woreda. The bureau at woreda level gives attention to disease prevention rather than to curative measures. Environmental health is also targeted as a priority in principle.

**Equipment**

10.14 This sector at regional level has good access to computers and the Internet. Field and measurement equipment including vehicles are also available.

10.15 At zone and woreda levels, however computers and Internet access are hardly available. There are vehicles (car and motor cycles), field and measurement equipment at zonal and woreda levels although insufficient.

**Bureau for Rural Development Coordination**

10.16 The mission of this bureau is coordination of sector bureaus that are engaged in rural development activities. Accordingly 10 bureaus including water resources development, agriculture, energy, irrigation... etc are coordinated by the Bureau for Rural Development.

10.17 The bureau has no functional departments. It is simply structured with heads and experts. These include one head of bureau, two deputy heads, one senior advisor and eight experts at regional level, only one coordinator at zonal level, and one coordinator at Woreda level. Currently the head, the two deputys and three experts exist at regional level and all zonal and woreda level coordinators are in place.

**Bureau of Agriculture and Natural Resources Conservation**

10.18 The current staff in the sector especially at woreda level is much greater than for other bureaus in the region. The organizational structure of the sector also descends below woreda level to development center. Currently one development center is established for 15 to 20 peasants associations: there are 3 to 5 development centers in each woreda with 5 to 10 agents of the Bureau of Agriculture to support them.

10.19 The sector at regional level also has good access to computers and Internet. The availability of field and measurement equipment is better than some bureaus. Motor cycles are available in all woredas and in all zones with a few cars at zones. And yet the available materials and equipment are not enough to meet the sector mission. The bureau head strongly expresses the need for on job training for existing staff at woreda and development centers especially on environmental management.
OROMIA

10.20 The current number of bureaus, zones and woredas is as follows:
- 42 regional organizations (bureaus, authorities, commissions etc),
- 14 zones (accountable to the regional Government) and 2 towns,
- 187 Woredas.

Environmental Protection Office (EPO)

10.21 The EPO was recently established. It reports directly to the Region President.

Staff

Table 4: Technical Staff of the EPO

<table>
<thead>
<tr>
<th>Division</th>
<th>Current Workforce</th>
<th>Planned Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of EPO</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Department of Ecology</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Department of Pollution Control</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Department of Planning</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

10.22 There is no staff posted at zone and woreda levels. The office uses experts from the Authority of Natural Resources, Land Administration and Use at zone and woreda levels, and experts from the Bureau of Agriculture at Development Centers level.

Equipment

10.23 The EPO has little equipment. It has currently two old computers, one old photocopier (donated from Ethiopia’s conservation Strategy Project), no Internet access to Internet, one pick-up car and one being currently procured, and four small size office rooms. The office has little operating budget. To date, this office has not conducted any Environmental Impact Assessment.

Bureau of Water Resources Development

Staff

10.24 BWRD is organized into four departments.

Table 5: Staff of the BWRD

<table>
<thead>
<tr>
<th>Division</th>
<th>Current Workforce</th>
<th>Planned Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of bureau</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Deputy head</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Water Supply and Sanitation Department</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Water Resource Department</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Contract Administration and Construction Supervision</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Zone experts</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Woreda experts</td>
<td>5</td>
<td>18</td>
</tr>
</tbody>
</table>
Equipment

10.25 This organization has existed since the establishment of the regional government. It has sufficient access to computers and Internet, and measurement equipment. Office space is sufficient and condition is good. Vehicles are reportedly sufficient and insufficient at woreda and zone level.

Bureau of Health

10.26 The Bureau is reasonably staffed at regional level, but woreda personnel is limited (15 woreda experts for 187 woredas).

10.27 Similarly, while the equipment of the regional level in vehicles, computers and offices is reasonable, at zonal and woreda levels however access to computers and internet is hardly available. There are vehicles (car and motor cycles), field and measurement materials and equipment at zonal and woreda levels but they are far from meeting the needs.

General Office for Rural Development

10.28 The mission of this bureau is to coordinate interventions of all 14 bureaus active in the field of rural development.

10.29 The bureau is structured with heads and experts. These include one head of bureau, two deputy heads, one senior advisor and 12 experts at regional level, one coordinator at zonal level, and one coordinator at woreda level.

Bureau of Agriculture (BoA)

10.30 The Bureau of Agriculture is decentralized to the woreda and development center levels. Currently one development center is established for 7 to 10 peasant association in predominantly agricultural woredas. In total the bureau of agriculture currently has 50 professional staff based at woreda level, 7 at zone level, and 68 at regional level.

10.31 Most professionals usually have M.Sc or B.Sc level with numerous years of experience at regional and zone levels and mainly senior diplomas at woreda level.

10.32 Zone Level staff is accountable to the regional bureau and links woredas with the bureau. The woreda staff is technically linked to the regional bureau through zonal staff but administratively accountable to the local/woreda Government.

10.33 The bureau at regional level has reasonable access to computers and Internet. The field and measurement equipment is better than in most bureaus. Motor cycles are available in all woredas and in all zones with a few cars at zones. Professionals of the Bureau at regional level express the need for on-the-job training on environmental management, including for woreda based staff.

Natural Resources, Rural Land Administration and Use Authority (NRLAUA)

10.34 This authority has been established since the establishment of the Regional Government. It is reasonably staffed as shown in the table hereunder:

<table>
<thead>
<tr>
<th>Division</th>
<th>Current Workforce</th>
<th>Planned Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest and Wildlife Department</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Soil and Water Conservation</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Land Administration and Regulation Department</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Planning Department</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Zone experts</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Woreda experts</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>
APPENDIX 3: PROPOSED FORMAT FOR THE ENVIRONMENTAL BASELINE ASSESSMENT

NB: For complex projects, it is advisable to use several forms (one for each of the main project sites, i.e. for example well or intake, treatment works, distribution).

1. **Site and Sub-Project**
   Site:
   Kebelle: Woreda: Zone: Region:
   Sub-Project (technical description):

2. **Geology, hydrogeology, soil**
   Site Geology (according to available geological map):
   Site Hydrogeology (according to available information):
   - Type of aquifer (continuous, fracture)
   - Depth of aquifer
   - Seasonal fluctuations
   - Known quality problems
   Soil
   - Type of soil
   - Sensitivity to erosion
   - Erosion already taking place on site

3. **Surface Water**
   Water course in the surroundings of the site:
   - Nature (river, stream, spring, lake)
   - Distance to site
   - Downstream/upstream the site
   - Assessment of potential water course sensitivity to water point construction and operation

4. **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:
5. **Flora - Fauna**

Description of vegetation on site:

Identification in the immediate vicinity of site of vegetation specimens with particular value according to local inhabitants (herbs, medicinal trees, sacred trees):

Fauna: specifics according to local inhabitants

Any indication of a potentially fragile ecosystem in the immediate surroundings of the site (wetland for instance)

For spring catchments in mountainous areas, is there any wetland downstream the spring (3 kilometers) that may be affected by the catchment? Location, description

6. **Cultural Resources**

Presence in the vicinity of the site (less than 200 meters) of:
- Isolated graves
- Graveyard
- Church, mosque or other religious edifice
- Site of cultural significance (sacred trees, other sacred natural feature, ...).

Assessment of the impact of the Project on these cultural resources:
- No impact
- Visual impact only and its extent
- Partial or complete relocation required

7. **Water Use and Water Users**

Water use in the vicinity of the site

Nature of water point
- Distance
- Downstream/upstream
- Type of usage

Assessment of potential water use sensitivity to water point construction and operation

8. **Sub-Project Categorization**

- **A** One or more major adverse impacts are likely, significant changes to the project design are required (changes in design, site or route);
- **B** Potential environmental issue identified, specific mitigation required;
- **C** No significant environmental issue identified, no specific mitigation required.
APPENDIX 4: PROPOSED EFFLUENT DISCHARGE REQUIREMENTS

Source: World Bank

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6-9</td>
<td>pH</td>
</tr>
<tr>
<td>BOD</td>
<td>50</td>
<td>mg/l</td>
</tr>
<tr>
<td>COD</td>
<td>250</td>
<td>mg/l</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>10</td>
<td>mg/l</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>50</td>
<td>mg/l</td>
</tr>
<tr>
<td>Ammonium</td>
<td>10</td>
<td>mg/l</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>2</td>
<td>mg/l</td>
</tr>
<tr>
<td>Sulfate</td>
<td>1</td>
<td>mg/l</td>
</tr>
<tr>
<td>Coliforms</td>
<td>400</td>
<td>Most probable number per 100 ml</td>
</tr>
<tr>
<td>Temperature increase</td>
<td>3</td>
<td>°C</td>
</tr>
</tbody>
</table>
APPENDIX 5: PROPOSED FORMAT FOR QUARTERLY SUMMARIES OF ENVIRONMENTAL REVIEWS

<table>
<thead>
<tr>
<th>Site</th>
<th>Kebelle</th>
<th>Woreda</th>
<th>Type of Project</th>
<th>Date of EBA submission</th>
<th>Author of EBA</th>
<th>Category as per EBA (A, B, C)</th>
<th>Date of Review</th>
<th>Site Visit (Yes/No)</th>
<th>Conclusion of Environmental Review (A, B, C)</th>
<th>Actions taken to develop a Site-Specific EMP (for A and B projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>