



THE GOVERNMENT OF KENYA

MINISTRY OF WATER AND IRRIGATION

**WATER & SANITATION SERVICE IMPROVEMENT PROJECT
ADDITIONAL FINANCING (WaSSIP AF).**

SECOND DRAFT

**ENVIRONMENTAL AND SOCIAL MANAGEMENT
FRAMEWORK (ESMF)**

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GLOSSARY OF TERMS

Cumulative impacts/effects: The total effects on the same aspect of the environment resulting from a number of activities or projects.

Developer/Proponent/Sponsor: the entity – person/ company/agency – proposing to develop/implement/install a new project/sub- project or expand an existing project under the WaSSIP Additional Financing.

Direct impacts: An effect on the environment brought about directly by the WaSSIP Additional Financing projects.

Disclosure: Information availability to all stakeholders at all stages of the development of projects.

Environment: physical, biological and social components and processes that define our surroundings.

Environmental Impact Assessment (EIA): A comprehensive analysis of the project and its effects (positive and negative) on the environment and a description of the mitigative actions that will be carried out in order to avoid or minimize these effects.

Environmental Monitoring: The process of examining a project on a regular basis to ensure that it is in compliance with an Environmental Management Plan (EMP), or the Government of Kenya (GoK) Environmental Impact Assessment (EIA) certification of approval conditions and / or environmental prescriptions.

Impact: A positive or negative effect that a project has on an aspect of the environment.

Indirect impact: A positive or negative effect that a project indirectly has on an aspect of the environment.

Involuntary resettlement: The forceful loss of land resources that requires individuals, families and / or groups to move and resettle elsewhere.

Lead Agency: The agency with primary responsibility for the protection of the environment. For instance, the lead agency for environment matters in Kenya is the National Environment Management Authority (NEMA).

Mitigation measures: The actions identified in an EIA to negate or minimize the negative environmental impact that a project may have on the environment.

Project and sub-project: a set of planned activities designed to achieve specific objectives within a given area and time frame.

Project Brief: The initial submitted document to NEMA to initiate the process that will lead to the issuance of the EIA certificate of approval.

Scoping: The initial stage in an environmental assessment that determines the likely major environmental parameters that will be affected and the aspects of the project that will bring upon these effects.

Screening: An initial step when a project is being considered for environmental assessment. The screening is the determination of the level of assessment that will be conducted. In the case of GoK, screening will place project into one of three environmental categories (I, II or III).

Significance: Importance.

Significant effect: An important impact on an aspect of the environment.

Stakeholder: Any person or group that has an interest in the project, and the environmental effects that the project may bring about.

ACRONYMS & ABBREVIATIONS

AFD	French Development Agency
AF	Additional Financing
AfDB	African Development Bank
AWSB	Athi Water Services Board
CAS	Country Assistance Strategy
CBO	Community Based Organisation
CWSB	Coast Water Services Board
DDO	District Development Office
DEO	District Environment Officer
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management Co-ordination Act
EMP	Environmental Management Plan
ERSWEC	Economic Recovery Strategy for Wealth and Employment Creation
ESMF	Environmental and Social Management Framework
GDP	Growth Domestic Product
GoK	Government of Kenya
HIV/AIDS	Human Immuno-Deficiency Virus
IBA	Important Bird Area
IDA	International Development Association
ITCZ	Inter Tropical Convergence Zone
IUCN	World Conservation Union
KFS	Kenya Forest Service
LVNWSB	Lake Victoria North Water Services Board
M&E	Monitoring & Evaluation
MDG	Millennium Development Goals
MoWI	Ministry of Water and Irrigation
MTR	Medium Term Review
MWI	Ministry of Water and Irrigation
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SEA	Strategic Environmental Assessment
USD	United States Dollars
WAB	Water Appeals Board
WaSSIP	Water and Sanitation Service Improvement Project
WB	World Bank
WRMA	Water Resources Management Authority
WSBs	Water Services Board
WSPs	Water Services Provider
WSTF	Water Services Trust Fund
WUA	Water Users Association

EXECUTIVE SUMMARY

This Environment and Social Management Framework (ESMF) relates to the Water and Sanitation Service Improvement Project (WaSSIP) Additional Financing (AF) which is being financed by the World Bank. The Ministry of Water and Irrigation (MoWI) through the Water Services Board Coastal Water Services Board (CWSB) Athi Water Services Board (AWSB) and Lake Victoria North Water Services Board (LVNWSB) remain responsible for implementing the WaSSIP (AF) including the provisions of this ESMF.

The project development objectives are to (a) increase access to reliable, affordable and sustainable water supply and sanitation services; and (b) improve water and wastewater services in the areas served by Athi Water Services Board (AWSB), Coast Water Services Board (CWSB) and Lake Victoria North Water Services Board (LVNWSB).

This ESMF is to be used by the MoWI in order to ensure that the World Bank environmental safeguard policies, with emphasis on Operational Policy OP 4.01 (Environmental Assessment) are adequately addressed. MoWI should in addition ensure that the relevant capacity and training needs are established in order for the recommended measures to be implemented effectively.

The purpose of this ESMF is to ensure that environmental and social management is integrated into the development and operation of projects to be financed under the WaSSIP AF to ensure effective mitigation of potentially adverse impacts while enhancing accruing benefits.

This ESMF has been prepared in compliance with the World Bank's Safeguard Policies and Kenya's Environmental Management and Coordination Act (EMCA) of 1999, both of which require environmental and social assessment prior to any investment. The ESMF recognises all World Bank (WB) safeguard policies relevant to social and environmental management and has also factored and duly recognised all Kenyan sectoral laws with bearing to environmental and social management within WaSSIP AF.

Preparation of the ESMF employed both desktop and field research methods, whereby project planning documents were reviewed to provide an insight into the scope, design and motivation of the project and later complemented by on-the ground observations and consultations with municipalities and the public within target municipalities. The core outcome of the ESMF process is an Environmental Management Plan (EMP) through which municipal and community action in environmental and social mitigation within WaSSIP AF will be collated.

Project Background

The Water and Sanitation Service Improvement Project (WaSSIP) will increase access to reliable, affordable and sustainable water supply and sanitation services; and improve the water and wastewater services in the areas served by the three Water Services Boards. At present, about 60 percent of Kenyans have access to safe drinking water while access to basic sanitation is at 80 percent. The project is expected to benefit about 9.3 million Kenyans in 27 districts with improved water and sanitation services, including residents of some of Kenya's largest urban informal settlements.

Water sector reforms since 2002 have included (i) the clarification of roles and accountabilities of sector institutions; (ii) the inclusion of multiple stakeholders in decision making processes of service delivery institutions; (iii) the financial ring-fencing of the operations of service delivery

institutions; (iv) financial and technical audits of sector institutions' operations and performances; and (v) strengthened financial management and procurement capacity. The Bank supported these actions through the \$15 million Nairobi Water and Sewerage Institutional Restructuring Project which was completed in December 31, 2007.

The WaSSIP represents the second phase of the World Bank's support to the Government of Kenya's water sector reform. The project will consolidate, enhance and scale up these measures, improve the dissemination of information as well as strengthen the risk management and internal controls of water services institutions.

Project Description

The project comprises three components. These are:

Activities envisaged under the WaSSIP AF include:

Component 1: Support to the Athi Water Services Board. This component will support the rehabilitation and extension of water supply systems, including the development of additional water sources for Nairobi and other drought mitigation measures, and improvements in wastewater collection and treatment facilities in the jurisdiction of the Athi Water Services Board (AWSB). Technical assistance will also be provided to the AWSB and its water services providers, the Water Services Regulatory Board, and the Water Appeal Board.

Component 2: Support to the Coast Water Services Board. This component will support the rehabilitation and extension of water supply schemes, including drought mitigation measures and institutional strengthening of the Coast Water Services Board and its various water service providers.

Component 3: Support to the Lake Victoria North Water Services Board. This component will support the rehabilitation and extension of water supply schemes, including drought mitigation measures and institutional strengthening of the Lake Victoria North Water Services Board and its various water service providers.

The Additional Financing will support all three project components (one for each WSB) and be used to expand the types of activities supported by the current project, specifically investment in water and sanitation infrastructure and support for strengthening of the water sector entities. Specifically, the water services boards have indicated that they need technical assistance to establish and operate a computerized complaints system, undertake energy audits, assess unaccounted for water, improve billing and collection, reform human resources management, map and model networks, improve communication and outreach, and align of sewerage master plans with urban and metro development plans.

Therefore, in compliance with the requirements outlined in the Environmental Management and Coordination Act (1999) and enforced by the National Environment Management Authority (NEMA) and the World Bank's Safeguards Policies, the government of Kenya represented by the **Ministry of Water and Irrigation (MoWI)**, has prepared this Environmental and Social Management Framework (ESMF). The ESMF is an instrument, through which the sub-project's environmental and social impacts are identified, assessed, evaluated and have appropriate mitigation, management and monitoring measures, designed and incorporated within the sub-project itself.

This ESMF is prepared for the WaSSIP Additional Financing and will be complemented by two other safeguards instruments: Environmental Assessments (EAs) accompanied by Environmental Management Plans (EMPs) for each subproject identified under WaSSIP AF. A Resettlement Policy Framework (RPF) has also been prepared that provides standards and procedures for compensation for any land acquisition, assets, or restriction of access to resources that WaSSIP AF investment may require, in accordance with World Bank OP 4.12 – Involuntary Resettlement. An Indigenous People Policy Framework (IPPF) has also been prepared in regard to the potential impacts the WaSSIP AF may have on the Sengwer community (LVNWSB area) who are categorised as indigenous.

Rationale for Additional Financing, rather than alternatives

The proposed Additional Financing would finance additional investments to improve access to water and sanitation services, and the drought response measures will make these services more reliable. These investments would permit the scale-up of the project's impact and development effectiveness. The Recipient is fully committed to scaling up the project activities, and processing an additional credit would bring procedural and other cost-effectiveness gains for the Recipient, as compared to preparing a new project. Moreover, the scale-up of activities can be easily accommodated in the context of the ongoing project, as implementation will rely on the Recipient's existing capacity and existing project arrangements. Activities would be completed within three years of the original project closing date of December 31, 2012. Thus, the Additional Financing will require an extension of the current project closing date. The economic justifications of the additional activities remain the same as in the original project. The additional activities will not raise the environmental category of the original project (category B) or trigger any new safeguard policies. Several changes to the project's key performance indicators are proposed for the original project to reflect the Bank's core indicators. These will be also used to monitor the outcomes of the proposed Additional Financing including the outcomes of the drought response measures. Targets will be adjusted to reflect the impact of the Additional Financing.

Environmental and Social Requirements

The Government of Kenya (GoK) by its national laws and the World Bank's Operational and Procedural Policies, specifically OP 4.01 (Environmental Assessment) requires the government to prepare an Environment and Social Management Framework (ESMF), which establishes a mechanism to determine and assess future potential environmental and social impacts of the MoWI planned investments/activities under the proposed WaSSIP AF.

An ESMF is prepared during project preparation as per OP 4.01 when the nature of the proposed investments is well understood, but details (either locations, designs, or both) of the specific investments in the project are not yet known, and therefore a detailed ESIA cannot be prepared. The purpose of the ESMF is:

- (i) to provide as much information as possible about environmental and social impacts (including possible land acquisition and resettlement) at the project's current state of preparation;
- (ii) to inform project planning and design process by comparing potential impacts of alternative locations, configurations, and construction techniques that are under consideration; and
- (iii) to describe procedures for subsequent assessment of impacts and development of appropriate impact management instruments when the details of the project become available.

The scope and coverage of an ESMF generally includes the following key tasks:

- Task 1: Screening and Scoping of Issues
- Task 2: Environmental Policy and Regulatory Framework
- Task 3: Identification of Key Environmental and Social Issues
- Task 4: Description of Typical Mitigation Measures to Avoid or Minimize Impacts
- Task 5: Outlines of Environmental and Social Management Plans
- Task 6: Public Consultation and Disclosure Process

An ESMF is required for this project because the precise details of the majority of investments are yet to be defined in terms of their exact location etc. Therefore it is not possible to ascertain the precise location and nature of impacts at this stage.

The draft ESMF report will firstly be made publicly available to project-affected groups and local NGOs in Kenya by placing a public notice in a national newspaper and making the report available at the offices of relevant government ministries and NEMA. This measure will also satisfy the Environmental Management and Coordination Act (EMCA).

OP 4.01 further requires that the ESMF report must be disclosed as a separate and stand alone by the Government of Kenya and the World Bank as a condition for Bank Appraisal of the WaSSIP AF. The disclosure of these documents should be both in locations where it can be accessed by the general public and local communities using the media, and at the InfoShop of the World Bank. The date for disclosure must precede the date for appraisal of the project. Following revisions, the ESMF will be officially submitted to the World Bank, and the final version will be disclosed prior to the Project being sent for approval to the Executive Directors of the World Bank.

Safeguard Screening Procedures

The proposed project has been rated Category A under the World Bank Operational Policy on Environmental Assessment (OP4.01), requiring a full Environmental Assessment (EA). The ESMF provides a baseline environmental assessment, assesses positive and negative environmental and social impacts of the project through screening tools, and recommends mitigation measures to limit negative impacts. The screening and review process will determine whether a particular subproject will trigger a safeguard policy, and what mitigation measures will need to be put in place. The screening and review process will also ensure that subprojects that may have potentially significant impacts will require more detailed study and the need for subproject specific EA and/or EMP. Environmental Management Plans have been prepared for subprojects under the original project; an Environmental Assessment has been prepared for the Northern Collector Tunnel subproject that is being financed from the Additional Financing.

Procedure for screening and development of EMPs

The ESMF serves as a guide to the preparation of subsequent site-specific Safeguards documents such as an Environmental and Social Impact Assessment, Environmental Management Plan, Emergency Response Plan, or similar documents that are appropriate to the nature of the project, once specific sites and project designs are selected and can be subject to detailed impact assessment. This ESMF requires that all the large subprojects in WaSSIP AF be subjected to the development of an EA and EMP and each of the smaller investment proposed for funding under the WaSSIP AF be screened for social and environmental impacts using the Screening Checklist provided in section 6.4.1 The screening will take place at the feasibility stage and will determine

compliance with both Government of Kenya (GoK) and World Bank Safeguard Policies and statutes, following which TORs for follow-up environmental impact assessment (EIA) and resettlement action plan (RAP) studies will be developed.

Follow-up EIA studies will be guided by LN 101 of EMCA 1999, and World Bank OP 4.01 while the scale of RAP studies will depend on whether screening has allocated an S1, S2 or S3 category to the sub-project in line with the RPF. Screening and follow-up EIA study will yield an Environmental Management Plan (EMP)—a generic version of which is outlined below—which will be reviewed and approved by WaSSIP Additional Financing and the World Bank for submission to NEMA. Upon approval by NEMA, the EMP will guide resolution of all potential environmental and social impacts likely to be identified for each investment. A RAP will be developed to deal with any resettlement or compensation that is needed as a result of project activities.

Environmental and Social Impacts

The following adverse impacts have been identified as likely to arise from the implementation of the WaSSIP Additional Financing and which this ESMF report seeks to address:

Environmental Impacts

- *Water quality and quantity degradation (both surface & ground water)*
- *Soil erosion and quality deterioration*
- *Loss of biodiversity*
- *Ecological imbalances due to construction of intake and abstraction of water from the rivers*
- *Surface water sedimentation*
- *Damage to aquatic habitats*
- *Soil salinity*
- *Sanitation and waste management problems*
- *Pathogen breeding ground*
- *Introduction of invasive flora species*
- *Loss of high value trees especially those with medicinal value*
- *Borrow pit impacts*
- *Downstream flooding or water reduction*

Socio-cultural and Economic Impacts;

- *Displacement of local inhabitants*
- *Damage to property e.g. crops, structures, houses*
- *Water use conflicts*
- *Land use change*
- *Loss of crops*
- *Damage of aesthetics of the area/land*
- *Dam safety related impacts*
- *Traffic congestion*
- *Camp construction impacts*

Health Impacts

- *Spread of water borne diseases*
- *Spread of HIV/AIDS*
- *Dust impacts*
- *Noise impacts*

- *Construction Camps related impacts*

The impacts are considered to be localised to the specific project areas, limited in scale and in terms of magnitude and should be easily mitigated through the preparation of adequate EMPs and RAPs whenever required.

Positive Impacts

- *Catchment Rehabilitation and Management*
- *Soil Conservation*
- *Water Resources Conservation*
- *Birdlife Habitat*
- *Improved soil conservation*
- *Environmental Protection*
- *Food Security*
- *Poverty Alleviation*
- *Raise Rural Income*
- *Improved access to water for domestic purposes*
- *Water for domestic use-washing clothes, bathing, watering of livestock*
- *Employment creation for community members*

Reporting and Performance Review Requirements

Quarterly environmental and social progress reports will be prepared by the AWSB, CWSB, LVNWSB Technical Assistance Consulting Team comprised of Social and Environmental specialists. These reports will be submitted to WaSSIP AF before the Bank's supervision mission arrives. The quarterly reports will be shared with AWSB's Project Coordinating Team (PCT), MoWI, NEMA, World Bank and other relevant government agencies.

Capacity Building and Training

Effective implementation of the Environmental and Social Management Framework will require that adequate capacity enhancement within institutions and other stakeholders are undertaken. There will be training for the entire WaSSIP AF Project implementing bodies (WSBs). The training will cover implementation of the ESMF including project screening, impact identification and analysis, Environmental Assessment procedures and requirements (EA and EIA), Design and implementation of mitigation measures at sub project level, monitoring and review of environmental performance and reporting.

Cost implication of this ESMF

The financial implication for implementing the ESMF is USD 7 million to cater for RAP implementation and monitoring studies, monitoring, and capacity building. However, as at the time of finalizing this ESMF, potential projects are still undergoing identification and their environmental and social impacts largely remain unknown.

Report Structure

The key highlights in this ESMF report are presented as follows:

- **Introduction** about the objectives of the ESMF including description about the WaSSIP AF. The description of the project is found in **chapter 1** and further details the WaSSIP AF project components and anticipated sub project activities within the components.

- **Chapter 2** of the ESMF outlines the methodology that was used in undertaking and developing this framework.
- Detailed and comprehensive environmental and social baseline data which provide the environmental and social management process with key baseline information when identifying adverse impacts is found in **chapter 3**. The information contains data on Kenya's bio-physical environmental features such as its, climate, hydrology in terms of ground and surface water resources, major and sensitive wetlands, flora and fauna. On social baselines the report discusses the main features of Kenya in terms of demographics, public health features, education, water and sanitation and poverty.
- **Chapter 4** presents a description of the administrative, policy and regulatory framework related to environmental concerns in Kenya.

A review of the World Banks Safeguards Policies is made in chapter 5. The triggered policies are:

- Environmental Assessment (OP4.01, BP 4.01, GP 4.01)
- Involuntary Resettlement (OP/BP 4.12)
- Natural Habitats (OP 4.04, BP 4.04, GP 4.04)
- Forestry (OP 4.36, GP 4.36) may apply
- Projects Implemented on International Waterways (OP/BP 7.50)
- Dam Safety OP/4.73
- Indigenous People OP/BP 4.0

Potential adverse environmental and social concerns and impacts from anticipated project activities have been identified and presented in detail in **chapter 6** in a generic format. A monitoring plan for the mitigation measure is in the same chapter. **Chapters 7 and 8** highlight the project coordination and implementation agreements, approvals and reporting.

The ESMF report is organized as follows:

- Acronyms and abbreviations
- Executive summary
- Chapter 1-Introduction Chapter and description of the proposed project
- Chapter 2-Study Methodology and consultation
- Chapter 3-Baseline information
- Chapter 4-Description of National and International Regulatory Framework
- Chapter 5-World Bank Environmental and Social Safeguards Policies
- Chapter 6- Determination of Potential Environmental Impacts
- Chapter 7- Project Coordination and Implementation Arrangements
- Chapter 8 - Capacity building and training requirements
- Chapter 9- References
- Technical annexes
 - *Annex A Stakeholders Consulted*
 - *Annex B- Suggested format for EA studies.*
 - *Annex B- Suggested format for a simple EMP.*

I INTRODUCTION

This chapter describes the **proposed WaSSIP Additional Financing (AF)** project including the different components and activities and outcomes expected during the duration of the project.

1.1 Project Description

Country and sector context

With an average renewable supply of freshwater resources of less than 650 cubic meters per capita per year, Kenya is among the water-scarce countries in the world. Rainfall is highly variable both geographically and temporally. Over 80 percent of Kenya's territory is arid or semi-arid lands. With such scarce water resources, efficient allocation, utilization, and management of the available resources, including drinking water supplies, is critical. However, water resource management in Kenya has been characterized by many years of neglect in both management of resources and investment in infrastructure.

Kenya made substantial investments in production and treatment capacities during the 1980s and 1990s. However, due to inadequate management and maintenance, coupled with a lack of commensurate expansion in distribution networks, these investments did not result in efficient and sustainable service delivery. Consequently, by the start of the 2000s the infrastructure had significantly deteriorated. Management of water and sanitation services was not transparent. Responsibility for delivery of services was split among various agencies and organizations, often with overlapping mandates. This led to a lack of coordination and weak accountability.

The inability of the utilities to deliver adequate services has disproportionately hurt poor residents, especially those living in informal settlements¹. Poor people have increasingly come to rely on kiosks and private vendors for their water supply, paying much higher prices per cubic meter and spending much more time fetching water than those with access to piped supplies.

In 1999 the government adopted its new National Water Policy, setting ambitious targets for access to improved water and sanitation services. The Millennium Development Goals for Kenya are that 70 percent of the population should have access to safe water by 2015, while 93 percent should have access to improved sanitation. In 2000, about 51 percent of the population had access to safe drinking water, and 41 percent had access to improved sanitation.² The government realized that the targets could not be achieved without comprehensive reform of sector institutions and large new investments, and in response prepared the Water Act, which parliament enacted in 2002. The Act is one of the most far reaching and comprehensive reforms of the water sector undertaken in any country. The Act called for a completely new institutional setup, aimed at harmonizing and streamlining the management of water resources and water supply and sewerage services. A central tenet of the new service delivery framework is the separation of functions between each aspect of service delivery: policy making, regulation, asset ownership or control, and service delivery. This change was expected to reduce conflicts of interest and increase transparency and accountability.

Although more needs to be done, the new sector arrangements have led to much improved management of water and sanitation services. Significant progress has been made in increasing

¹ In this paper, the terms informal settlements and slums are used interchangeably, and refers to areas that lack at least two of the following: secure tenure, adequate infrastructure, planning at the settlement level, and quality housing. About 30 percent of Nairobi's population lives in slums.

² World Development Indicators database.

transparency and accountability. Service delivery institutions are subject to periodic technical and financial audits, the results of which are published on their websites. Customer and employee satisfaction surveys are periodically carried out, and their results made available to the public. These show increasing levels of satisfaction with services.

The Government of Kenya's (GOK) National Water Policy (1999) envisages 100% access to safe water for the country's population by 2010. The Millennium Development Goals (MDG) envisages access to safe water and improved sanitation of 70% and 93% respectively by 2015. Current coverage figures are 49% and 86% respectively. During the 1980's and 1990's Kenya made large investments in water supply and sewerage (WSS) production and treatment capacities, but these did not result in efficient and sustainable service distribution. WSS operations were not transparent, unsustainable and ill suited to respond to consumer needs. There was widespread collapse of infrastructure due to under-investment in operations and maintenance. To address the deteriorated situation and the previously fragmented water supply and sanitation (WSS) delivery responsibilities, GOK commenced a comprehensive sector reform in early 2003.

The main sector reform vehicle is the Water Act (2002), aimed at harmonizing the management of water resources and WSS. A central tenet of the new service delivery framework is the separation of functions between each aspect of service delivery - policy making, regulation, asset ownership / control and service delivery operations. The consequent formalization of relationships between these functions is expected to reduce conflicts of interest and increase transparency and accountability. Consistent with this tenet, the GOK (i) reorganized the Ministry of Water and Irrigation (MoWI) into a body focused on policy issues, (ii) established a Water Services Regulatory Board (WSRB), and (iii) established seven Water Services Boards (WSBs). Each WSB is mandated to appoint Water Services Providers (WSPs), which are legal entities contracted by WSBs to be responsible for service delivery operations.

1.2 Bank Support

Nairobi Water and Sewerage Institutional Restructuring Project (NWSIRP)

The Bank supported the Nairobi Water and Sewerage Institutional Restructuring Project (NWSIRP) that focused on the early phase of reform in Nairobi i.e., institutional restructuring - setting up new autonomous institutions, operationalizing and strengthening them. The project was successfully implemented and has contributed to increase in revenue collection by 60% leading to operational and maintenance (O&M) cost being covered. AWSB and NWSC continue to strengthen their operational, commercial and financial functions. Transparency and governance has improved as a result of a more traceable operating framework, the organization of the sector under legally accountable sector institutions (parastatals and companies), and the implementation of governance training, broad stakeholder representation on institutional oversight mechanisms and individual performance contracts and Codes of Ethics. AWSB, CWSB and LVNWSB have established functional water service providers in line with Water Act 2002 to operate services in the area of their jurisdiction.

1.2.1 Objectives of the Project

The Kenya Water and Sanitation Service Improvement Project (WaSSIP)

Following the successful implementation of the NWSIRP the Government of Kenya engaged the Bank in discussions towards financing infrastructure development for Athi Water Services Board, (AWSB) Coast Water Services Board (CWSB) and Lake Victoria North Water Service Board (LVNWSB) under the Water and Sanitation Service Improvement project (WaSSIP). The project was financed for 150 Million USD (AWSB – 65.99 Million CWSB 43.33 Million and LVNWSB 40.48).

Original project development objectives and description

The project's development objectives are to (a) increase access to reliable, affordable and sustainable water supply and sanitation services; and (b) improve water and wastewater services in the areas served by Athi Water Services Board (AWSB), Coastal Water Services Board (CWSB), and Lake Victoria North Water Services Board (LVNWSB). The project supports a defined part of the overall investment plans of the AWSB, the CWSB, and the LVNWSB. The project also supports the institutional strengthening and capacity building of the three water services boards, the Water Services Regulatory Board (WSRB) and the Water Appeal Board (WAB). In keeping with the sector reform principle of autonomous sector institutions, the three water services boards are accountable for any support given to them by the project.

The project comprises three components. These are:

- (1) *Support to the AWSB, which will support the rehabilitation and extension of water supply systems, including the development of additional water sources for Nairobi and other drought mitigation measures, and improvements in wastewater collection and treatment facilities in AWSB's area. Technical assistance will also be provided to the AWSB and its water services providers, the WSRB, and the WAB.*
- (2) *Support to the CWSB, which will support the rehabilitation and extension of water supply schemes including drought mitigation measures and institutional strengthening of the CWSB and its various water service providers.*
- (3) *Support to the LVNWSB, which will support the rehabilitation and extension of water supply schemes, including drought mitigation measures and institutional strengthening of the LVNWSB and its various water service providers.*

Rationale for Additional Financing, rather than alternatives

The proposed Additional Financing would finance additional investments to improve access to water and sanitation services, and the drought response measures will make these services more reliable. These investments would permit the scale-up of the project's impact and development effectiveness. The Recipient is fully committed to scaling up the project activities, and processing an additional credit would bring procedural and other cost-effectiveness gains for the Recipient, as compared to preparing a new project. Moreover, the scale-up of activities can be easily accommodated in the context of the ongoing project, as implementation will rely on the Recipient's existing capacity and existing project arrangements. Activities would be completed within three years of the original project closing date of December 31, 2012. Thus, the Additional Financing will require an extension of the current project closing date. The economic justifications of the additional activities remain the same as in the original project. The additional activities will raise the environmental category of the original project from Category B to A, but they will not trigger any new safeguard policies. Several changes to the project's key performance indicators are proposed for the original project to reflect the Bank's core indicators.

These will be also used to monitor the outcomes of the proposed Additional Financing including the outcomes of the drought response measures. Targets will be adjusted to reflect the impact of the Additional Financing.

From February 14 to March 7, 2011, an International Development Agency (IDA) mission undertook the formal Mid-Term Review (MTR) of the status of the Water and Sanitation Service Improvement Project (WaSSIP). The main objective of the mission was to carry out a review of the project activities supporting Athi Water Services Board (AWSB), the Coast Water Services Board (CWSB), the Lake Victoria North Water Services Board (LVNWSB), the Water Appeals Board (WAB) and the Water Services Regulatory Board (WASREB). In addition, a post procurement review and a review of progress and compliance of the Resettlement Plan Framework and the Indigenous People Plan Framework were conducted.

1.2.2 Rationale for Continued Bank Involvement.

Based on the good implementation progress of WaSSIP of the project and the need for additional investments in all three WSB areas, it was agreed during the Medium Term Review (MTR) that the Bank's team together with the three WSBs prepare the necessary documentation to request additional financing for the project from IDA in the first quarter of Fiscal Year 2012 (July to September 2011).

The proposed WaSSIP AF project is targeted at investments on rehabilitation and expansion of existing water supply schemes, design and development of bulk water supply systems, planning and development of sanitation infrastructure in each of the jurisdictions of the three water service boards (WSBs) - AWSB, CWSB and LVNWSB, and institutional strengthening of the three WSBs, the associated Water Service Providers (WSPs), and capacity building of Water Services Regulatory Board (WSRB) and the Water Appeal Board (WAB).

The continued satisfactory implementation of WaSSIP places the Bank in a unique position to help strengthen the water sector reform. Further support would consolidate the gains in sector institutional arrangements and help these institutions to improve and expand actual WSS delivery to Kenyans through sustainable infrastructure investments. Service delivery to underserved informal settlement areas, where a majority of the poor resides is critical and will be considered under the Kenya Informal Settlements Investment Project (KISIP) which is supported by the Bank under the Ministry of Housing. The 3 WSBs will submit proposals to KISIP for financing investments for informal settlement works.

In order to minimize disruptions and loss of momentum in project implementation, the gap between the closing of WaSSIP (expected end-December 2012) and the start of a follow-on support activity should be minimized. The proposed project would be the next step in the Bank's phased support and is consistent with the GOK's Economic Recovery Strategy for Wealth and Employment Creation (ERSWEC) that calls for structural reforms, the mobilization of investments, and expansion of services. The project directly addresses the CAS that determined deteriorated infrastructure based services as a constraint to economic growth and the Africa Action Plan that calls for the closing of Africa's infrastructure gap and expanding service coverage. Further the support will go a long way towards the achievement of Kenya Vision 2030 and the MDGs.

Cooperation with development partners would maximize the benefits of common directions and visions and the optimal use of resources. In the first instance, there is an opportunity for parallel financing activities with KfW, AFD and AfDB to support the AWSB, LVNWSB, and CWSB.

Confirmation of interest from these agencies has been obtained through previously established cooperation, joint missions and through discussions in the Donor Sector Working Group. Other development partner interests (e.g., the Japanese financing agencies) would be sought.

1.2.3 Proposed project development objective(s)

The proposed WaSSIP AF will complement and build on the gains and achievements already made through the implementation of NWSIRP and WaSSIP. The development objectives of the project are therefore to:

- 1. Increase access to reliable, affordable and sustainable water supply and sanitation services; and***
- 2. To improve the water and wastewater services in the areas served by AWSB, LVNWSB and CWSB.***

This will be achieved by:

- (i) Rehabilitating selected existing water production, transmission, storage and distribution facilities and wastewater collection, treatment and disposal facilities,*
- (ii) Expanding piped water supply services to under-served areas through a balanced program including the involvement of communities in decision making and extension of primary and secondary distribution pipes where required, and*
- (iii) Refining and strengthening the institutional structure, emphasizing on increasing accountability and transparency of the institutional and governance and management framework for AWSB, CWSB, LVNWSB, WSRB and WAB.*

1.3 Preliminary Project Description

1.3.1 Rehabilitation and Extension of Water Supply Facilities

Support the (i) rehabilitation of existing water supply systems including major transmission pipelines, water treatment works, storage, water distribution networks, boreholes including deep wells; (ii) construction of water treatment networks in selected small towns; development of water storage dams and the Northern Collector Tunnel(for Nairobi supply), (iii) extension of water distribution networks and metering iv) generation of electricity from the gravity water systems and v) feasibility study and preparation of water master plan for LVNWSB. This component is focused on improving and expanding reliable, sustainable and affordable safe water supply to consumers.

1.3.2 Rehabilitation and Extension of Wastewater and Sanitation Facilities

Support the (i) planning and design of sewerage networks and sewage treatment facilities; (ii) extension of existing networks, design for development of energy generation from waste water treatment plants (iii) Preparation of Nairobi Metropolitan Sewer Master Plan. This component is focused on improving treatment and disposal of wastewater. The rehabilitation deteriorated wastewater treatment and construction of facilities would result in overall environmental benefits.

1.3.3 Institutional Strengthening Program

This component is aimed establishing and reorienting the central sector organizations and strengthening capacities in designated areas of their sector leadership, The support includes institutional strengthening of: (i) the asset holding companies – AWSB, LVNWSB and CWSB;

(ii) autonomous and ring fenced water and sewerage service provision companies in the three WSB areas, (iii) Strengthening of the Water Services Regulatory Board (WSRB); and (iv) Water Appeals Board. (WAB); (v) technical assistance for M & E, engineering, financial, legal, assets valuation, audits, informal settlements WSS program, communications, environmental monitoring, and independent assessments of institutional framework; (vi) programs to increase oversight and transparency of service delivery; and (vii) training and capacity building. This component is focused on strengthening the service delivery framework, governance and transparency, and monitoring and evaluation.

1.4 Implementation

The proposed project will be implemented using existing organizational structures and incorporating lessons learnt and experience gained in the implementation of WaSSIP 1 and with other similar projects. The project will be managed by the Project Coordination Team (PCT) established by the three WSBs and within the overall framework of WaSSIP as defined in the Project Agreement. AWSB will provide secretariat for the PCT and the team will come under the oversight of the respective Chief Executive Officers of AWSB, CWSB and LVNWSB.

An indicative list of sub-projects proposed for additional financing are described below. A final selection will be made when precise locations, routing, and/or feasibility based on detailed design are known. At that point, either EAs and/or EMPs will be prepared depending on the environmental impact of the proposed sub-project.

1.5 COMPONENT 1: SUPPORT TO THE ATHI WATER SERVICES BOARD SERVICE AREA

This component also includes a number of potential subprojects, which will be finalized during project implementation. Once sites and works are identified, Environmental and Social Impact Assessments/Environmental and Social Management Plans will be prepared, consulted upon, and disclosed.

1.5.1 Water Supply and Distribution and Wastewater Collection and Treatment

- a) Construction of Northern Collector Phase 1 (river abstraction/intake structures and 12 km tunnel): This sub-component is part of the recommendations from the on-going feasibility study and master plan for the development of new water sources for Nairobi and satellite being undertaken by AWSB. The Northern Collector Phase 1 is part of scenario 2, which is the most preferred of the 6 scenarios reviewed under this consultancy. Proposed works will include construction of the NC tunnels (12km), diverting the 3 rivers of Irati, Gikigie and Maragua for a flow of 1.5 m³/s as previously designed in 1998; improvement of Mwagu intake structure and screening equipment and construction of Mataara –Ngethu raw water main. An EA has been prepared for this subproject.
- b) Construction of Raw Water and Treated water (Thika-Ngorongo TW-Kabete) water transfer Phase 1: Details of this investment including the routing of the pipe are still unknown and no preliminary design has been prepared yet. However, it is known that on its way from Thika to Kabete the pipe will be laid in an agricultural area, and that no protected areas are nearby.

When the pipe reaches the outskirts of Nairobi then it will be laid in an existing leeway in parallel to the existing pipes already laid there coming from another water treatment plant

- c) Construction of Ngorongo High Level Water Treatment Plant phase 1: The proposed location of the water treatment plant is in an area of coffee farms and no protected area is nearby.
- d) Development of Two Deep Exploratory Wells Scenario 2 of the on-going Nairobi water masterplan indicates potential for two well-fields: Kiunyu in Thika (0.4m³/s, 2014) and Ruiru (0.35m³/s, 2015). The proposed works will undertake the necessary exploratory works for the two well-fields. In addition, this will include Consultancy services for review of designs and supervision of the development of deep exploratory wells.
- e) Development of Energy Generation Innovations at Dandora Wastewater Treatment Plant: Dandora Waste Stabilization Ponds have been identified to have a potential to generate 5.7MW of electricity from methane gas. This requires covering of the ponds with special plastic material, installing gas collection and conveyance system and mixers in the facultative and maturation ponds and power generators.
- f) Construction of Independent Community Water Supply around Thika Dam: At Gatanga WSP, development of intake and water treatment plant (3,000m³/day) on Kiama River and development of intake and water treatment plant at Gatura market have been proposed. The estimated demand in the WSP is currently 9,417 m³/day. The proposed production is nearly equal to the current water demand. The service level attained is 79.6 l/c/d. The works in the WSP are recommended on two folds, mainly the need to provide treatment to the water on account of increased biological pollution in the water and because the community is resident downstream of the intakes feeding the Thika-Chania tunnels to Mwagu and Ngethu WTW.
- g) Improvement of Water and Sanitation in the informal settlements in Nairobi: Design and Tender Documents for Improvements in the informal settlements exist under the following projects: Improvements in the informal settlements project under WaSSIP phase 1, and improvements in the informal settlements of Kibera under the Urban Slums Upgrading Project. The engineering services required include the review the extent of works and repackage tender documents to match allocated budget; land acquisition/property compensation for site of construction of mains and the reservoir; procurement of contractor and construction works. The informal settlements under consideration are: River Bank, Kayole Soweto, Maili Saba, Matopeni/Spring Valley, Hurumu, Mathare, Kahawa Soweto, Kibera, Korogocho, Githurai and Mukuru.
- h) Implementation of Drought Mitigation Measures
 - Supply of 270No. collapsible water tanks (capacity 10m³ and 5m³) including a hosepipe & pumpset
 - Supply of 780No. 10m³ plastic water tanks to public schools and institutions for rainwater harvesting including gutters, downpipes, fittings and concrete base
 - Supply of 15No. utility mini-lorries for carrying pipes, collapsible tanks etc
 - 79No. mobile water treatment units for both silty river water & saline water from B/Holes (to be pulled by a pickup)
 - Equipping and commissioning of 51No. existing boreholes with submersible pumpsets, generator sets, Solar Panels and Fittings

- Development of 51 No. borehole water sources and equipping with submersible pumpsets, solar panels & Generator sets
- Construction of 97 No. elevated steel tanks at borehole locations
- Supply of 10 No. 4WD Drought Monitoring Vehicles-Hardtops for TWSB
- Implementation of Drought Mitigation Measures

i) Institutional Strengthening Programme.

- Institutional Support to AWSB. AWSB will receive support to interlink the Board with the WSPs under its jurisdiction with internet office facilities for effective communication. AWSB will also receive technical assistance for provision of legal assistance for establishing and registering water and sewerage infrastructure wayleaves and implementation of RAP, as well as training and capacity building.
- Institutional Support to WASREB. Activities proposed include the following activities: procurement of ICT equipment and infrastructure; technical assistance for implementation of compliance and enforcement strategy for WSB's and WSP's, TA for human resources consultancy services including employee satisfaction, work, environment and baseline survey on corruption eradication, and TA for development of guidelines on minimum requirements for disaster preparedness of WSB's and WSP's; and capacity building in regulations (training, study tours, networking and benchmarking).
- Institutional Support to WAB: This will include the procurement of ICT equipment and infrastructure, procurement of works for the refurbishment of WAB Regional offices, procurement of technical assistance for enhancement of claims and dispute resolution, alignment to the new constitution, public communication and capacity building in regulations (training, study tours, networking and benchmarking)
- Institutional support to NCWSC and other WSPs, including the supply and installation of water and wastewater management equipment, supply and installation of office and ICT equipment, purchase of motorcycles, technical assistance and training and capacity building.

1.6 COMPONENT 2: SUPPORT TO THE COAST WATER SERVICES BOARD SERVICE AREA

Component 2 will provide support to the CWSB, which will assist in the rehabilitation and extension of water supply schemes, including drought mitigation measures, and institutional strengthening of the CWSB and its various water service providers. It includes a number of potential subprojects, which will be finalized during project implementation. Once sites and works are identified, Environmental and Social Impact Assessments/Environmental and Social Management Plans will be prepared, consulted upon, and disclosed.

1.6.1 Rehabilitation and expansion of water transmission and distribution pipes and improvement of water supply systems in WSPs

- a) Augmentation of Baricho Water Production Works: The proposed works will increase production from the Baricho system (8 No. boreholes drilled on the southern bank of Sabaki River) from the installed capacity of 90,240 m³/day to 148,000 m³/day, i.e., an

- increase of 52,000 m³/day. The additional water will be directed to the Mombasa North Coast (32,358 m³/day) as well as for the Sabaki-Gogoni water supply project (7,670 m³/day at year 2024) and to Kilifi (12,000 m³/day). Major works will include drilling and equipping additional wells on the southern banks of Sabaki River to yield additional 52,000m³/day, partial upgrading of the power supply and motor control systems at the borehole wellfields and at the highlift station and partial supply and installation of additional pumps at the highlift stations for Mombasa and Malindi.
- b) Construction of DN500 Sabaki-Jaribuni Pipeline: The Baricho/Sabaki-Mombasa system, designed to deliver approximately 53,256 m³/day of water through pumping upto Jaribuni highpoint, is currently delivering an average of only 45,000 m³/day due to constrained capacity in the transmission main. The proposed works is divided into two: The first investment proposal will involve improvement/modification works by elimination of the pipeline constrictions as well as the unnecessary control valves, bends and Y-sections to reduce friction headlosses, ensuring that additional capacity of 7,975 m³/day is transmitted in the Mombasa line. The second investment will include construction of a parallel main of DN500, from Sabaki to Nguu Tatu a distance of 104 km to transmit 32,358 m³/day of water from increased production at the Baricho system.
 - c) Construction of DN300 Malindi (Kakuyuni)-Kilifi Pipeline Interconnection: The Baricho-Kakuyuni pipeline is designed for 23,155 m³/day. Addition of the Sabaki-Gogoni (7,670 m³/day) and Kilifi flow (12,000 m³/day) onto this line will result in immediate required capacity of 35,670 m³/day. The proposed works is twinning of the Baricho-Kakuyuni pipeline, to carry the flow of 54,642 m³/day after production improvements at Baricho.
 - d) Swabbing of the Sabaki-Mombasa and Sabaki-Malindi Transmission Mains: This sub-component proposes to swab the Sabaki-Mombasa and Sabaki-Malindi pipelines in order to recover lost capacity due to siltation of mains, which is approximated at 5-10% (about 6,750 average m³/day). The Mombasa pipeline, which is ductile iron, is 104 km upto Nguu Tatu. The Malindi pipeline, DN600 steel, was constructed in 1987 and is 29.1 km upto Kakuyuni Reservoir. From review of water quality from sources, iron and manganese compounds and silt are suspected to have developed crusts and reduced pipe bore as typical of coastal waters.
 - e) Bulk Water Pipeline Maintenance System: Coast Water Services Board runs a bulk water service from 4 main water sources that supply water into Coast Region. CWSB has registered a limited liability bulk water company, which now requires operationalization. The proposed works will improve efficiency in the pumping equipment and electrical installations at the Baricho wellfields and highlift station and Lower Ribe pump station as well as at the Tiwi boreholes. In addition a monitoring system will be procured to assist in the management of the Bulk Water System.
 - f) Construction of Sabaki-Gogoni Water Supply System in Malindi: The project involves development of a water supply to meet immediate term water demands upto the year 2014. The proposed project covers the following infrastructure: improvements at Baricho source works; off-take at Kisimani downstream from Kakuyuni reservoir; construction of Kisimani-Kapupuni transmission main 2500 m³ reservoir at Kapupuni and booster

station; gravity main from Kapupuni to Gogoni; off-takes to Mambrui and Angel Bay, Gogoni, Ngomeni and Marikebuni; and construction of a mainline to Marereni and booster station facilities. This project is to be co-financed by the IFC and the WaSSIP AF on a 50% basis.

- g) Financing of Provisional Items in Kilifi, Tavevo, Lamu and Tana River: CWSB has recently completed the procurement and award of works contracts for the 6WSP's Water and Sanitation under WaSSIP. However, some items that were tendered for as provisional items have finally not made it to the final contract sums due to limitations financial limitations.
- h) Construction of Offices for CWSB, TAVEVO AND LAWASCO

1.6.2 Institutional Support Measures:

This will include support to CWSB, MOWASCO and to the other 6 WSPs in terms of: Goods including bulk water equipment to CWSB, office equipment, ordinary customer meters, motor cycles, sewer and leak detection equipment and handtools; technical assistance to CWSB for legal services for establishment of wayleaves and implementation of RAP and TA to 6 WSP's for reduction of NRW; and training and capacity building.

1.6.3 Implementation of Drought Mitigation Measures

- Supply of 330No. collapsible water tanks (capacity 10m³ and 5m³) including a hosepipe & pumpset
- Supply of 252No. 10m³ plastic water tanks to public schools and institutions for rainwater harvesting including gutters, downpipes, fittings and concrete base
- Supply of 39No. utility mini-lorries for carrying pipes, collapsible tanks etc
- 15No. mobile water treatment units for both silty river water & saline water from B/Holes(to be pulled by a pickup)
- Equipping and commissioning of 45No. existing boreholes with submersible pumpsets, Generator sets, Solar Panels and Fittings
- Development of 15No. borehole water sources and equipping with submersible pumpsets, solar panels & Generator sets
- Construction of 60No. elevated steel tanks at borehole locations
- Supply of 3No. 4WD Drought Monitoring Vehicles-Hardtops
- Construction of 16No. surface Water tanks (Pressed Steel Tanks), 1000 m³ capacity
- Supply of 2No. water tracking boats (with engine power) for Lamu & Wasini Islands
- Construction of 6No. underground Rain Water Harvesting Tanks (Djabias), 150m³ with cemented collection apron for CWSB
- Drought Mitigation Study (Plan) for WSB region
- Construction of 6No. Small Earth Dams (Pans)
- Ground Water Study for the Wajir Aquifer in NWSB
- Extension/Construction of Water Supply Pipelines

1.7 COMPONENT 3: SUPPORT TO THE LAKE VICTORIA NORTH WATER SERVICES BOARD (LVNWSB) SERVICE AREA

This component is aimed at providing resources to Lake Victoria North Water Services Board (LVNWSB) for the following sub components:

1.7.1 Rehabilitation and Extension of Water Supply Facilities

This sub component will support (i) the rehabilitation of existing water supply systems including water sources intakes, surface and groundwater borehole sources, transmission pipelines (gravity or pumped), water treatment works, storage tanks, water distribution networks (ii) construction of extension of water supply source works water treatment works etc in selected small towns, and (iii) construction of extension of water distribution networks and installation of metering. This sub component will focus on improving and expanding water supply to make them be reliable, sustainable, affordable and safe to consumers. This component includes a number of potential subprojects, which will be finalized during project implementation. Once sites and works are identified, Environmental and Social Impact Assessments/Environmental and Social Management Plans will be prepared, consulted upon, and disclosed.

- a) Rehabilitation of Water Supply Systems: This will include six independent rural water supply schemes of Sio Port, Port Victoria, Musanda, Navakholo, Kwanza, and 1 rural cluster. The works will comprise of (i) cleaning (flushing) and equipping of boreholes, (ii) water treatment chemical dosing units (where required), (iii) rehabilitation of pipeline fittings (section valves, air valves, wash outs, etc), (iv) replacements of pipeline sections that are prone to bursts and supply failures, (v) repair of leaking storage tanks.
- b) Expansion of Water supply Systems: The expansion works will consist of expansion of intake structures to cater for increased demand or development of new intakes and drilling of new boreholes; new treatment works or expansion of existing treatment works; new pumping units for raw water and treated water; new Storage tanks; new backwash systems; additional rising mains and reticulation systems; metering of schemes; additional balancing tanks; additional dosing facilities; water testing laboratories. The targeted project areas include Butere and Malaba/Malakisi towns, six independent rural schemes, one rural cluster, Eldoret water supply expansion (Ellegirini pipeline and Treatment works at existing Kipkaren Dam) and extension of services to informal settlements.
- c) Extension of water distribution networks and metering: This will include construction of additional distribution lines (Lumakanda/Kipkaren, Lesso, Kimilili, Kapcherop/Kasowar) and the installation of meters and GSM pressure meters in WSPs.
- d) Office rehabilitation (LVNWSB/WARMA and Kapsabet/Amati WSPs).
- e) Institutional Strengthening Program: This component aims at establishing and reorienting the water sector organizations and strengthening their capacities in designated areas of their sector leadership. The support includes operationalization and strengthening of: (i) the asset holder – LVNWSB; and (ii) the autonomous and ring fenced water and sewerage service provision companies of Western, NZOWASCO, Amatsi, Kapsabet-Nandi and ELDOWAS. This will include:

- Support for operationalization and strengthening of LVNWSB. This will include rehabilitation of office premises, workshop and provision of office equipment; technical assistance for communication, customer/employee satisfaction surveys and independent assessments of institutional framework, and hiring of individual consultants for specific assignments; and training and capacity building.
- Support for operationalization and strengthening of autonomous and ring-fenced WSPs. This will include office rehabilitation/upgrading and supply of office equipment; training and capacity building; supply and installation of operation and maintenance tools and equipments; and technical assistance to develop incentive based performance system for WSPs, integration of customer management system to GIS and updating of GIS maps and network model and hiring of individual consultants for specific assignments.

1.7.2 Implementation of Drought Mitigation Measures

- Supply of 634No. collapsible water tanks (capacity 10m³ and 5m³) including a Hosepipe & Pumpset
- Supply of 384No. 10m³ plastic water tanks to public schools and institutions for rainwater harvesting including gutters, downpipes, fittings and concrete base
- Supply of 43No. utility mini-lorries for carrying pipes, collapsible tanks etc
- 23No. mobile water treatment units for both silty river water & saline water from B/Holes(to be pulled by a pickup)
- Equipping and commissioning of 33No. existing boreholes with submersible pumpsets, Generator sets, Solar Panels and Fittings
- Development of 37No. borehole water sources and equipping with submersible pumpsets, solar panels &Generator sets
- Construction of 45No. elevated steel tanks at borehole locations
- Supply of 30No. 4WD Drought Monitoring Vehicles-Hardtops

2 METHODOLOGY AND CONSULTATION

The study was conducted by the consultant using the following approach and methodology;

2.1 Detailed and in-depth literature review

Review on the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the project. Among the documents that were reviewed in order to familiarise and deeply understand the project included:

- *The ESMF and RPF for WaSSIP*
- *The Project Appraisal Document for WaSSIP AF*
- *Project Concept Note for WaSSIP AF*
- *World Bank Involuntary Resettlement Operational Policy 4.12.*
- *Environmental Management and Coordination Act (1999)*
- *Water Act*
- *World Bank Project Concept Note and Integrated Data Sheet*
- *Technical Mission Aide Memoire*
- *Project Appraisal Document*

- *World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines")*. <<http://www.ifc.org/ifcext/sustainability.nsf/Content/EHSGuidelines>>

The consultant also undertook detailed review and analysis of the national relevant legislations, policies and guidelines including the World Bank Safeguards Policies, international conventions related to this project and other relevant documents.

2.2 Field Visits

The consultant has already made visits to the already identified project sites where the WaSSIP AF sub project activities are going to be implemented under AWSB in order to familiarise with the issues on the ground and appreciate the concerns. Similar field site visits are scheduled for the already identified project sites for LVNWSB and CWSB.

2.3 Interactive Discussions

Preliminary discussions have been held with the AWSB and CWSB project staff, project contractor as well as the World Bank relevant staff. Plans are underway to conduct a more robust stakeholder/public consultation based on this draft ESMF with the other relevant staff of the key implementing partners and the views from the stakeholders including public will be incorporated in the final ESMF report.

These discussions will be very insightful in understanding the issues and are the basis for most of the measures contained in this ESMF.

2.4 Preparation of ESMF

This involved

- Collation of baseline data on the environmental conditions of the project area;
- Identification of positive and negative environmental and social impacts;
- Identification of environmental and social mitigation measures;
- Preparation of screening procedures to be used while screening subproject proposals; and
- Formulation of environmental and social monitoring plans.

3 BASELINE DATA

This section describes the overall baseline condition of Kenya in terms of bio-physical environment, as well as the socio-economic and cultural attributes.

3.1 Athi Water Services Board (AWSB)

The Athi Water Services Board serves Nairobi City and the surrounding districts of Kiambu East, Kiambu West, Gatundu and Thika. The main responsibilities of AWSB are to:

- Expand coverage with strong focus on improving access to water services in urban informal settlements and to the rural poor.
- Contribute to poverty reduction, promote gender equity, sensitize communities on good health and hygiene practices, promote HIV/AIDS awareness and conserve the environment.
- Appoint viable and well managed Water Service Providers and ensure they have appropriate systems by undertaking the following:
 - a) *Enforce water quality monitoring.*
 - b) *Ensure they have maintenance systems and procedures to minimise interruptions to water supplies.*
 - c) *Ensure they have accurate and efficient billing system.*
 - d) *Ensure they are customer focused in all their activities.*
 - e) *Monitor and evaluate performances against targets for the Board and Water Service Providers.*
 - f) *Build Capacities of Water Service Providers to embrace efficiency, accountability and responsibility in service delivery.*

3.2 Location and Size

Table 3-1 : Study Area - List of Districts and 2009 Population

Province	District	Population (2009)
Nairobi		3,138,369
Central	Muranga North	346,283
	Muranga South	335,460
	Kiambu East (Kiambaa)	253,751
	Kikuyu	265,829
	Kiambu West	131,132
	Lari	123,895
	Thika East	77,073
	Thika West	218,544
	Ruiru	241,007
	Gatanga	113,094
	Gatundu	214,791
Rift Valley	Kajiado North	263,256
Eastern	Machakos	442,930
	Kagundo	219,103
Total		6,532,280

3.3 Physical Environment

3.3.1 Climate

The climate of the area is predominantly controlled by its equatorial position and the large scale pressure systems of the African Continent and the Indian Ocean. However, topography strongly influences the magnitude of the climatic elements and to a lesser extent their seasonal distribution.

The seasonal distribution of rainfall is dominated by the movement of the Inter Tropical Convergence Zone (ITCZ) which separates the North-eastern and South-eastern trade wind systems and the belt of maximum rainfall follows the position of the overhead sun with a time lag of about 4 to 6 weeks. The two rainy seasons are therefore centered around April-May (The Long Rains) and October-November (The Short Rains). During the intervening dry seasons monsoonal systems bring rather dry air masses. From December to March the persistent North-easterly monsoon brings clear sunny weather with only occasional showers. During the period of South-easterly monsoon from June to October the weather is duller and cooler with occasional drizzle which is more persistent at higher elevations.

Rainfall is the climatological element of greatest water resource significance. The highest annual totals of over 2600mm occur at the windward side of summit of the Nyandarua Mountains and there is a decline with elevation which is much more rapid on the leeward slope towards the Rift Valley than on the windward side.

Indeed further south in the headwaters of the Thiririka and Ruiru rivers the rainfall divide is some distance to the east of the topographic divide. In general also there is a decrease towards the south in the rainfall at a given altitude.

At the edge of the piedmont zone between Nairobi and Thika, the annual rainfall values decline to 800 to 900 mm but there is little further decline towards the east. However, to the South within the Upper Athi catchment there is a further reduction to less than 600mm. Associated with these lower totals is a higher coefficient of variation.

Other climatic elements have a significant influence on water resources, especially in their effect on the rate of evapotranspiration loss. Throughout the area mean daily temperature varies little with season and the diurnal variation is greater than the seasonal variation. With increasing altitude, daily minimum temperature values decrease more rapidly than the daily maximum.

Typically the annual average diurnal range at elevations of 1500m is 13°C to 25°C whilst at 2500m the range is from 6°C to 22°C.

Mean annual relative humidity values range from 65% at lower elevations to 80% or more above 2500m. Humidity is greatest at dawn and lowest in the early afternoon when the temperature reaches the diurnal maximum. Below 1500m the mean daily duration of bright sunshine ranges from 4 hours during July and August to 9 hours during the Northern Monsoon season with an annual mean of 6.8 hours.

Sunshine shows a decrease with altitude, with an annual mean of 5 hours at 2500m. Mean annual free water surface evaporation as calculated by Woodhead using Penman's ranges from around 1800mm in piedmont zone to less than 1400mm in the Nyandarua Range Potential evapotranspiration is estimated to be about 75% of free water evaporation in the highlands and 80% or more in dryer lying areas.

3.3.2 Relief

Catchment, Topography and Hydrology

Athi Water Services Board is covered by 3 river basins used to supply Nairobi and Satellite Towns (Tana, Thika and Athi River Basins). These basins include rivers like

- *Kikuyu springs*
- *Kimakia and Kiama Rivers*
- *Chania River,*

3.4 Topography and Drainage

The Tertiary volcanic uplands on the margin of the Rift Valley are the source areas of the present drainage network. The highest land occurs in the Nyandarua Mountains where elevations of over 3,500m are reached within the Study Area. From the vicinity of Mt. Kinangop, the highest point, rise four major tributaries of the River Tana; the most Southerly, the River Chania, which provides the greater part of Nairobi's present water supply and the Rivers Thika, Maragua and Mathioya.

At the southern end of the Nyandarua Range the watershed to the internal drainage system of the Rift Valley becomes an undulating plateau and from this area originate several tributaries of the River Athi including from north to south the Ndarugu, Thiririka, Ruiru and Nairobi Rivers. The rivers within both the Tana and Athi drainage system form a parallel drainage density, oriented generally south-easterly, and following the dip direction of the underlying lava flows.

They have formed deeply incised valleys in long narrow catchments with steep side slopes and longitudinal profiles. The valley sides as well as the headwaters generally have a thick mantle of weathered rock and soil and only rarely is bedrock seen except within the river channel. This weathered mantle and the forest vegetation which covers elevations above 2200m, dampen the flood response of the rivers to intense rainfall and sustain dry weather flows.

The rivers emerge from their incised valleys onto a flat piedmont zone (at an elevation of approximately 1500m) which is without significant perennial tributaries and join up with the main Athi and Tana rivers.

With exception of the Ngong Hills which rise to 2460m, the character of the landscape changes to the South of Nairobi. The headwaters on the Rift Valley margin are both flatter and lower in elevation and in their middle courses the widely spaced tributaries of the Athi flow through a rolling plateau, with occasionally rocky hills standing above the general level. Of the three tributaries of the Athi meeting at the Athi River Township, only the Upper Embakasi (or Mbagathi) is perennial, although its dry weather flow is small.

Downstream, the course of the Athi approaches that of the lower Thika and at one point they are separated by a distance of only 1.5 km and an intervening relief of 50m. Subsequently their courses diverge, the Thika turning northwards to join the Tana at Masinga reservoir and Athi continuing south-eastward along the margin of the Yatta plateau.

3.4.1 Rivers/water sources

There are two main rivers in the project area, Athi and Tana Rivers. Nairobi City and its neighbouring Towns are located within the Athi River catchment.

3.4.2 Soils and Geology

The Study Area is overlain with an ancient core of crystalline rocks of the Basement Complex which underlies the greater part of the plateau areas of Africa which have been affected by the extensive faulting, displacement and volcanic activity associated with the Rift Valley System. The eroded surface of the pre-Cambrian basement rocks outcrops only on the southern and eastern margins of the area. Elsewhere it is overlain by a variable thickness of volcanic and pyroclastic rocks of Tertiary age.

The Tertiary succession comprises various lava flows, pyroclastic rocks or their weathered derivatives, and also palaeosols, developed intervening periods sub-aerial weathering. Upthrusting and concentration of volcanic activity at the margins of Rift Valley has resulted in a general alignment of lava flows and associated deposits in a south-easterly direction. The sporadic character of the volcanic events both in space and time has dictated the lateral and vertical variability of geological succession.

3.5 Biological Environment

The Eastern Aberdare Rivers of interest to this study, rise within the Aberdare Conservation Area (ACA). Many of the river flow measurement gauges are located near to the boundary of the ACA. The ACA includes the Aberdare National Park and the gazetted Forest Reserves that surround the National Park. These areas are all under Government protection through Kenya Wildlife Service (KWS) and Kenya Forest Service (KFS). These areas are not subject to catchment degradation through settlement and forest clearance, as has been recorded in other national forests, notably the Mau Forest. It can reasonably be assumed that the “protected area” status will not only be maintained by the Government, but will be strengthened. Hence the sustainability of the surface water sources arising from the ACA is assured under current Government policy, subject to control of abstractions under approval from the Water Resource Management Authority (WRMA).

3.6 Coastal Region

3.6.1 Climate

The Kenyan coast runs in a south-westerly direction from the Somalian border in the north, at 1o 41’S to 4o 40’S at the border with Tanzania. It lies in the hot tropical region where the weather is influenced by the great monsoon winds of the Indian Ocean. Climate and weather systems on the Kenyan coast are dominated by the large scale pressure systems of the western Indian Ocean and the two distinct monsoon periods.

From November/December to early March, the Kenyan weather, particularly at the Coast, is dominated by the Northeast Monsoon which is comparatively dry. During March and April the wind blows in an east-to-south-easterly direction with strong incursions of maritime air from the Indian Ocean bringing heavy rains. During the months of May, June, July and August, the South-easterly Monsoon influence gradually sets in and the weather becomes more stable with dull and comparatively cooler temperatures. Between September and November, the Northeast Monsoon gradually re-establishes itself and by December the northern influence is dominant once again.

3.6.2 Rainfall

A relatively wet belt extends along the entire Indian Ocean coast of Africa and annual rainfall on the Kenyan coast follows the strong seasonal pattern outlined above. The main rains come

between late March and early June with the rainfall decreasing from August. Some rain occurs between October and November but from December, rainfall decreases rapidly once again to a minimum during January and February.

Mean annual total rainfall ranges from 508mm in the drier, northern hinterland to over 1,016mm in the wetter areas south of Malindi. Relative humidity is comparatively high all the year round, reaching its peak during the wet months of April to July. However, there is a marked diurnal change particularly in Mombasa where it is around 60-70% during the afternoon, rising to 92-94% during the night and in the early morning.

Records kept for Mombasa and Malindi indicate that both are generally sunny throughout the year. The average number of daily sunshine hours at Mombasa are 8.4 in July and 8.9 in February, October and November. The corresponding values for Malindi are 7.3 in July and 9.3 in December. Evaporation at Mombasa increases from a low of 138mm in July to 221mm in March. Whereas in Malindi the low in July is around 128mm, rising to 193mm in March.

3.6.3 Geology and Geomorphology

The Kenyan coastal environments are set in a passive continental margin, the evolution of which was initiated by the break-up of the mega continent Gondwanaland in the Lower Mesozoic. The initial opening of the Indian Ocean was preceded by doming, extensive faulting and down warping similar to that observed in the modern Great Rift Valley of East Africa. These tectonic movements formed a North-South trending depositional basin. During the Mesozoic, this basin was exposed to numerous marine incursions and by the Jurassic, purely marine conditions are thought to have existed. The coastal range running parallel to the coastal zone appears to have been uplifted through faulting during this time.

Throughout the Tertiary, the coastal areas experienced further faulting and extensive continental erosion. The older Cretaceous deposits were totally removed in many areas. The present coastal configuration, however, evolved during the Pleistocene to Recent times, a period marked by numerous fluctuations in sea level.

Three physiographic zones are observed on the Kenya coastal zone. The Nyika lies at 600m above the present sea level and represents the higher ground covered by the Duruma sandstone series and older rocks to the west. The Foot Plateau occurs at an elevation between 140m and 600m above the present sea level. This coincides well with the relatively younger Jurassic rocks. The Coastal Plain, the lowest step, rises from sea level to 140m.

On average, this belt increases from a few kilometres wide in the southern sector, to over 40km in the north. The geomorphology of the Coastal Plain is dominated by a series of raised old sea level terraces. Most of the coastal environment and the modern shore configuration, follow the 0-5m and the 5-15m sea level terrace complexes. Due to its evolutionary history, the principal rocks observed along the Kenyan coastal margin, are of sedimentary origin and range in age from Triassic to Recent.

The Duruma Sandstone series, the oldest formation, is represented by the Mariakani and the Mazeras sandstones which were deposited under sub-aqueous, deltaic, lacustrine or possibly neritic conditions that prevailed before the opening of the Indian Ocean. The Upper Mesozoic is represented by marine limestones and shales with occasional horizons of sandstones and early limestones. Cenozoic to Recent rocks comprise mostly of marls and limestones, and are represented by the sandstones, clays, conglomerates and gravels such as the Marafa beds.

Quaternary representatives include windblown Magarini Sands, limestones, cemented sands and coral sands. Recent unconsolidated windblown sands, beach sands and clays overlie the older units.

Kenya has a coastline of over 600km, but the exact figure depends on the extent to which small islands are included in the measurements. The Kenyan coastal region is generally low-lying and characterised by the extensive fossil reef which lies a few metres above present sea level. The coastal plain is backed in the interior by a line of hills that rarely exceed 300m except in southern parts where the Shimba Hills reach an altitude of around 1,000m above sea level. Further inland the Taita Hills rise to an elevation of 1,500m above sea level.

Soils of the coastal region show considerable variety. The porous parent rocks of sedimentary origin, generally give rise to soils of low fertility. However, patches of highly productive soils have been observed in areas of alluvial deposits. The principal soil types in the region include a narrow strip of coastal sands towards the north where it is permeated by narrow bands of grumosolis brown clay soils. The soil south of Lamu is composed of bi-alternate bands of loams beyond which the grumosolis are permeated by thick bands of ash and pumice soils.

The shoreline in most of the region apart from the Malindi area, is receding as a result of coastal erosion. Sand supplies from rivers and coral reefs are not sufficient to keep up with the rise in sea level and the problem is further exacerbated by coastal development.

3.6.4 Hydrology

Rivers and Catchments

The hydrology of the coastal region of Kenya can best be viewed by examining the drainage patterns of both perennial and seasonal rivers draining into the western Indian Ocean basin. There are two main perennial rivers namely the Tana River and the Sabaki River which also incorporates the Athi and Galana Rivers. Each of these perennial rivers has catchments extending far from the coastal hinterland into the high country of the Mount Kenya region and the Aberdare (Nyandarua) Ranges in central Kenya.

The Tana River is the longest in Kenya being approximately 850 km in length and it has a catchment area of 95,000 km². The Tana is regularly replenished by a number of tributaries which have their headwaters on Mount Kenya. Several hydroelectric power schemes have been constructed on its upper reaches, including those at Masinga, Kamburu, Gitaru, Kindaruma and Kiambere. In terms of annual freshwater and sediment discharges, the Tana River has the greatest volume of freshwater and the highest amount of sediment. An average of 4,000 million m³ of freshwater are discharged annually with peak flows occurring between April and June and a shorter high flow period during November/December.

The Tana River also discharges some 3 million tonnes of sediment per year. It enters the ocean about halfway between Malindi and Lamu, near Kipini, into Ungwana (Formosa) Bay. However, before it does, and about 30km upstream, it gives off a branch which leads to the complex of tidal creeks, flood plains, coastal lakes and mangrove swamps known as the Tana Delta. The Delta covers some 1,300 km² behind a 50m high sand dune system which protects it from the open ocean in Ungwana Bay.

The Sabaki River (also known as the Athi and Galana in its upland stretches) is the second longest with a length of 650km and a catchment area of 70,000 km² extending into the south-eastern slopes of the Nyandarua Range in central Kenya. Its floodplain is less extensive than that

of the Tana River and its catchment comprises important agricultural regions of central Kenya. The combined Sabaki River discharges 2,000 million m³ of freshwater and 2 million tonnes of sediment annually into southern Ungwana Bay through the Sabaki estuary north of Malindi. The high sediment loads carried by the Tana and Sabaki rivers are partly attributable to poor land use practices in their upper catchments which are important agricultural lands. Such a high rate of sediment discharge is threatening the sustainability of marine and coastal ecological biotopes such as mangroves, seagrass meadows and coral reefs. In addition, the high concentrations of silt in river water makes it unattractive for recreational purposes and limits the extent to which river water can be used for other purposes.

There are also a number of semi-perennial and seasonal rivers such as the Mwache, Kombeni, Tsalu, Nzovuni, Uмба, Ramisi, Mwachema and Voi, all of which drain into the coastal region from arid and semi-arid catchments. The Ramisi River, which arises in the Shimba Hills forested area, discharges 6.3 million m³ of freshwater and 1,500 tonnes of sediments annually into Funzi - Shirazi Bay in the southern part of the Kenya coast. The Uмба discharges 16 million m³ of freshwater into Funzi - Shirazi Bay while the Mwachema and Mwache rivers discharge 9.6 million m³ and 215 million m³ of freshwater annually, respectively. Other small streams such as Mto Mkuu, Tsalu, Sinawe, Kombeni, etc, have not been gauged.

These rivers draining the coastal low plateau and the coastal ranges tend to have relatively low concentrations of silt. Since their water quality is also moderately high, these waters are normally usable for a variety of purposes with minor conventional treatment.

Coastal Lakes

There are a number of lakes in the Kenya coastal region with the greater number being found in the Tana Delta. Most of these lakes are quite small and shallow and are typical oxbow lakes, remnants of the various meanders of the Tana River. Two good examples of such lakes are Bilisa and Shakabobo. Some of the lakes, especially the smaller ones, show swamp characteristics. Examples of such lakes are Ziwa la Chakamba, Ziwa la Taa, Ziwa la Maskiti and Ziwa la Ndovu. These lakes are either recharged through ground water seepage or by the periodic flooding of the Tana River. Apart from these oxbow lakes in the Tana Delta area, there are two larger lakes in the Mount Kilimanjaro region. These are Lake Jipe which has a maximum length of 12 km and an area of 28 km², and Lake Chala which is smaller than Lake Jipe and has an area of 5.0 km² and a maximum length of 2.2km. These lakes receive ground-water contributions from the Mount Kilimanjaro region in addition to being recharged by surface runoff.

The coastal lakes of Kenya are very important economically. They are a source of water for domestic and livestock purposes and are also important sources of fish protein. More recently, they are also becoming important for recreational activities. In general, water quality in these lakes is good since they are located some distance away from the main pollution sources.

Ground-water resources

The coastal region of Kenya has enormous potential in terms of ground-water resources. This is as a result of its geological structure which promotes rapid infiltration and percolation of surface runoff to recharge. Hot water springs with temperatures ranging between 65oC and 75oC are found near Mkongani and Mwananyamala in Kwale District which is also the site of other potable freshwater springs.

The rate of ground water yield varies from place to place depending on physiographic and hydraulic factors in addition to geological influences. Highest ground-water yields are experienced in areas covered with Kibiongoni beds, and Magarini and Kilindini sands on the

coastal belt (for example at Tiwi). Areas covered with Jurassic shales and Pleistocene limestone of the low plateau and coastal belt tend to yield relatively poor quality water and yields are normally lower in volume when compared with areas covered with Kilindini and Magarini sands. Areas with Triassic sandstone geology also have relatively high groundwater yields.

4 DESCRIPTION OF THE ADMINISTRATIVE, POLICY AND REGULATORY FRAMEWORK

4.1 National Environmental and Social Management Requirements

This chapter of the report describes the institutional, legal and policy framework for environmental and social requirements in Kenya, the relevant World Bank safeguard Operational Policies applicable to the project as well as the international laws and conventions that bear relevance to the implementation of this project.

4.2 The Legal, Regulatory and Policy Framework

Constitutional provisions

Kenya now has a new Supreme law in form of the New Constitution which was promulgated on the 27th of August 2010 and which takes supremacy over all aspects of life and activity in the New Republic. With regard to environment, Section 42 of the Constitution states as follows:-

Every person has the right to a clean and healthy environment, which includes the right—

- (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and
- (b) to have obligations relating to the environment fulfilled under Article 70.

In Sections 69 and 70, the Constitution has inter alia identified National Obligations in respect of the environment and Enforcement of Environmental Rights respectively as follows:-

Section 69 (1): The State shall—

- a) *Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;*
- b) *Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;*
- c) *Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;*
- d) *Encourage public participation in the management, protection and conservation of the environment;*
- e) *Protect genetic resources and biological diversity;*
- f) *Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;*
- g) *Eliminate processes and activities that are likely to endanger the environment; and*
- h) *Utilize the environment and natural resources for the benefit of the people of Kenya.*

Section 69 (2) Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Section 70 provides for enforcement of environmental rights thus:

(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

(2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate—

- a) *To prevent, stop or discontinue any act or omission that is harmful to the environment;*
- b) *To compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or*
- c) *To provide compensation for any victim of a violation of the right to a clean and healthy environment.*

(3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

Essentially, the new Constitution has embraced and provided further anchorage to the spirit and letter of EMCA 1999 whose requirements for environmental protection and management have largely informed Sections 69 through to 71 of this document. In Section 72 however, the new constitution allows for enactment of laws towards enforcement of any new provisions of the Supreme Law.

4.2.1 Vision 2030

Kenya Vision 2030 is the current national development blueprint for period 2008 to 2030 and was developed following on the successful implementation of the Economic Recovery Strategy for Wealth and employment Creation which saw the country's economy back on the path to rapid growth since 2002. GDP growth rose from 0.6% to 7% in 2007, but dropped to between 1.7% and 1.8% in 2008 and 2009 respectively. The objective of the vision 2030 is to transform Kenya into a middle income country with a consistent annual growth of 10 % by the year 2030". The 2030 goal for urban areas is to achieve "a well-housed population living in an environmentally-secure urban environment." This will be achieved by bringing basic infrastructure and services—roads, street lights, water and sanitation facilities, storm water drains, footpaths, and others—to informal settlements. By strengthening tenure security in informal settlements, the KISIP will also foster private investment in housing and in businesses. The government's Medium-Term Plan 2008–2013, which presents the first five-year program to implement the Vision 2030, also specifies improving urban informal settlements as a priority. One of its flagship projects is installation of physical and social infrastructure in slums in 20 urban areas to make them formal settlements, permit construction of permanent houses, and attract private investment. The proposed KISIP will directly contribute to this goal.

4.2.2 Environment Management and Coordination Act, 1999

There are several laws and regulations that will govern the implementation of this project at the national level. However the most prominent legislation that will be evoked is the EMCA 1999. EMCA 1999 was enacted in 2000 to harmonize environmental legislation previously scattered among 77 national laws. As the principal environmental legislation in Kenya, EMCA sets the legal framework for environmental management. Its core elements are as follows;

Creation of a National Environmental Management Authority (NEMA)

EMCA 1999 allows for formation of the National Environmental Management Authority (NEMA) as the body charged with the overall coordination of environmental protection in Kenya, mainly through setting and harmonizing standards for environmental quality. NEMA was established in 2001, and is headed by a Director General appointed by the President. The Director General is assisted by several directors in charge of Enforcement, Education, and Policy, who in turn are assisted by Assistant Directors and Senior Officers.

To facilitate coordination of environmental matters at a District level, EMCA 1999 allows for the creation of District Environmental Committees chaired by respective District Commissioners, and the appointment of a District Environmental Officer who oversees environmental coordination and is also secretary to the DEC.

Environmental Assessments

Section 58 of EMCA requires that an Environmental Impact Assessment precedes all development activities proposed to be implemented in Kenya. This requirement was operationalized by NEMA through its publication of the Guidelines for the Conduct of EIAs and Environmental Audits (Kenya Gazette Supplement No. 56 of 13th June 2003). The framework for environmental assessment in Kenya and a description of types of development that should be subjected to environmental impact assessment are outlined in Legal Notice 101 and the Second Schedule of EMCA respectively.

Legal Notice 101 is silent on the minimum size threshold for projects triggering EIA requirements. However Section 10(2) (Part II) of Legal Notice 101 allows for the approval of proposed projects at the 'Project Report' Stage. This Section is used by NEMA to grant Environmental Licenses to small projects without the requirement for a full-scale EIA.

Environmental Audits

Under Sections 68 and 69, EMCA requires that all ongoing projects be subjected to annual environmental audits as further expounded in Regulation 35 (1) and (2) of Legal Notice 101 of June 2003. Part V of the Legal Notice 101 defines the focus and scope of Environmental Audit studies as including an appraisal of all the project activities, within the perspective of environmental regulatory frameworks, environmental health and safety measures and sustainable use of natural resources.

Sectoral Coordination in Environmental Protection

Among other functions, EMCA mandates NEMA to regularly review and gazette standards and regulations for environmental quality as a way of guiding activity in all sectors. Further, in recognition that EMCA is an umbrella law coordinating diverse sectoral statutes, all of which are still in force, the Legal Notice 101 of EMCA requires that the respective sectors be consulted as 'Lead Agencies' in making decisions pertaining to environmental assessment for projects in respective sectors. Therefore to ensure that NEMA does not approve projects that contradict sector policies and legislation, all EIA reports are subjected to review by the relevant sector in their capacity as Lead Agency. Their opinions have a strong bearing on the final decision arrived at by NEMA.

4.2.3 The Water Act 2002

Sessional Paper no. 1of 1999 on the National Water Policy on Water Resources Management and Development provides policy direction for the water sector.

The policy directions include:

- *Preservation, conservation and protection of available water resource;*

- *Sustainable, rational and economical allocation of water resources;*
- *Supplying adequate amounts of water meeting acceptable standards for the various needs;*
- *Ensuring safe wastewater disposal for environmental protection;*
- *Developing a sound and sustainable financial system for effective water resources management, water supply and water borne sewage collection, treatment and disposal.*

The Water Act 2002 forms the principal legislation governing protection and management of water resources in Kenya. This legislation provides diverse safeguards to regulate water development as follows:

Ownership of Water Resources.

In an effort to control abuse and irrational allocation, Section 3 of the Water Act vests the entire national water resource base to the State, which then authorizes utilization. Abstraction is regulated under Section 25 of the Water Act 2002 with the Water Resource Management Authority (WRMA) assuming responsibility of issuing Water Permits subject to conditions as specified in Sections 27 to 43 and the Second Schedule of the Act. Decisions on the granting of water permits will take account of other existing lawful uses, efficient and beneficial use of water in the public interest, requisite catchment management strategies, potential impact of abstraction on the water resource and other users, quality considerations, and strategic importance of the proposed water use among other factors.

All the WSBs will be required to request for permission to abstract water from the rivers targeted as intakes by making a formal application to WRMA.

Requirements for Environmental and Social Impact Assessment.

It is a requirement under Section 29(4) of the Water Act “for all proposed water projects to be subjected to public consultation and possibly an Environmental Impact Assessment Report” for review by NEMA through Lead Agencies including District Environmental Committees. Further, in order to complement the Water Act, NEMA sets guidelines for waste disposal into natural waters and the environment and also spells out penalties for the pollution of water.

All the WaSSIP AF projects will be subjected to EIA following screening to determine if a Full Scale EIA is required or a project report depending on the project nature and category. Similarly all the sewerage plants will be required to conform with the waste disposal standards into natural waters and the environment as provided for in the NEMA guidelines.

Service Provider Agreements (SPAs).

Section 73(1) of the Water Act 2002 requires Water Service Boards (WSBs) and other Licensees of the Water Services Regulatory Board to make rules for provision of water services and tariff levels. The WSBs are required to enter into SPAs with water service providers, which specify the approved tariff levels and performance targets for the project. This includes measures to ensure that those unable to pay for water are not denied access to clean water.

4.2.4 Land Control Act CAP 406

This law provides for the control of transactions in agricultural land, especially the machinery of the Land Control Boards. However of interest in this report is the consideration in granting or refusal of consent by the Board based on the impact the transaction is likely to have on the maintenance or improvement of standards of good husbandry within the specific agricultural area.

Government land is land owned by the government of Kenya under the Government Lands Act (Cap. 280). This includes, for example, forests, gazetted national parks and reserves. The Government Lands Act allows the president, through the commissioner of lands, to allocate any unalienated government land to any individual. In practice, such allocations have often been made without proper regard to social and environmental factors.

Trust land is land held and administered by various local government authorities as trustees under the constitution of Kenya and the Trust Land Act (Cap. 288). National reserves and local sanctuaries as well as county council forest reserves, are in this category. Individuals may acquire leasehold interest for a specific number of years in trust land and can (in theory) be repossessed by the local authorities should the need arise. Local authorities should retain regulatory powers over trust land.

Private land is land owned by private individuals under the Registered Land Act (Cap. 300). On registration as the landowner, an individual acquires absolute ownership on a freehold basis. The use of private land may, however, be limited by provisions made in other legislation, such as the Agriculture Act (Cap. 318). For instance, to protect soils the clearing of vegetation may be prohibited or the planting of trees required. Land preservation orders issued by the director of agriculture can cover a whole range of other measures.

All private land acquired for the sake of a sub project will have to be compensated for fully as spelt out in the RPF document.

4.2.5 The Wildlife Conservation and Management Act, Cap 376

This Act provides for the protection, conservation and management of wildlife in Kenya. Nature Reserves and National Parks are controlled by the Kenya Wildlife Service under the Wildlife (Management and Co-ordination) Act of 1976. The common feature with all land reserved for use by wildlife is that its conversion to any other form must be approved by Parliament.

4.2.6 Public Health Act Cap 242

The Public Health Act provides for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out researches and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

The Public Health Act regulates activities detrimental to human health. The owner(s) of the premises responsible for environmental nuisances such as noise and emissions, at levels that can affect human health, are liable to prosecution under this act. An environmental nuisance is defined in the act as one that causes danger, discomfort or annoyance to the local inhabitants or which is hazardous to human health.

This Act controls the activities of the project with regard to human health and ensures that the health of the surrounding community is not jeopardized by the activities of the project such as water development.

4.2.7 Physical Planning Act

This Act provides for the preparation and implementation of physical development plans for connected purposes. It establishes the responsibility for the physical planning at various levels of Government in order to remove uncertainty regarding the responsibility for regional planning. A key provision of the Act is the requirement for Environmental Impact Assessment (EIA). This legislation is relevant to the implementation and siting of sewerage plants in pilot urban centres as identified in the project document.

It provides for a hierarchy of plans in which guidelines are laid down for the future physical development of areas referred to in a specific plan. The intention is that the three-tier order plans, the national development plan, regional development plan, and the local physical development plan should concentrate on broad policy issues.

The Act calls for public participation in the preparation of plans and requires that in preparation of plans proper consideration be given to the potential for socio-economic development needs of the population, the existing planning and future transport needs, the physical factors which may influence orderly development in general and urbanization in particular, and the possible influence of future development upon natural environment.

4.2.8 The Local Government Act

The Local Government Act, CAP 265, gives the Local authorities powers over sanitation of their respective urban centres. This Act empowers the Municipal Authority to provide and maintain sanitation and sewerage services and to take measures to control or prohibit factories and industries from emitting smoke, fumes, chemicals, gases, dust, smell, noise, vibrations or any danger, discomfort or annoyance to the neighbourhood and to control disinfections particularly using cyanide. They are empowered to punish those disrupting sanitation or sewerage lines and can compel owners to construct sewage line into the systems and drainages.

4.2.9 Trends in Institutional and Legal Framework in Kenya

The WaSSIP AF project has been conceived and developed within the context of recently concluded legal reforms in both the forestry and water sectors in Kenya.

4.2.10 Reforms in the Water Sector

The enactment of the Water Act 2002 has driven the implementation of the national water policy. Towards this, a National Water Resources Management Strategy (NWRMS 2005-2007) was released in December 2004 to provide a clear, accountable and transparent roadmap for assessing, maintaining, enhancing, developing and managing the limited available, renewable, freshwater resources using an integrated approach and on a sustainable basis.

In line with the Water Act 2002, new institutions have been formed to take responsibilities formerly held by the Ministry of Water. These new institutions include:

The Water Resource Management Authority (WRMA).

A body corporate charged (under Section 8(1) of the Water Act 2002) with the overall responsibility of managing the water resources of the country;

Water Service Boards (WSBs)

The WSBs are responsible for ensuring adequate access to water and sanitation services within their jurisdictions. Where government assets exist they will be owned by the WSBs and operated by Water Service Providers (see below). The WSB is the primary agent of service quality oversight;

Water Services Regulatory Board (WSRB)

Mandated as the national regulator with responsibility for providing guidelines on tariff setting and quality standards. The WSRB also is responsible for issuing licenses to WSBs;

Water Services Trust Fund (WSTF)

For providing financial support to the rural water sector through grant finance for capital investments; and Water Service Providers to provide water services to consumers, ranging from public urban utilities, small private network operators in rural areas and community managed self supply through water users' associations.

WRMAs will be administered based on new boundaries that do not follow the government administrative boundaries. WRMA has divided the country into 6 regions and 25 sub regions based on catchments. Each region has a regional officer and each sub-region has a sub-regional officer. In addition, the Ministry of Water and Irrigation (MWI) is currently working to realign and rationalize the institutional functions and responsibilities based on the 2002 National Water Act so as to eliminate duplications and overlaps of roles and responsibilities among different institutions. The MWI has been downsized and many of the district water offices' responsibilities and tasks have already been taken by the WRMA and the Water Services Board.

4.3 Relevant Institutions

4.3.1 The Ministry of Water and Irrigation (MoWI).

The Ministry of Water and Irrigation (MWI) is the ministry in charge of the water sector and is therefore responsible for the overall management of water resources and general government policy on the water sector in the country. The Ministry was established in January 2003 with the goal of conserving, managing and protecting water resources for socio-economic development.

Under the water sector reforms, the Ministry transferred management of and operation of water services to the Water Services Regulatory Board (WASREB) from mid 2005. The Director of water was the person in charge of water services in the ministry but these powers and duties were transferred to the regional water service boards that are now licensed by the WASREB to provide water services in different regions across the country. The ministry and other state corporations that were involved in water supply such as the National Water Conservation and Pipeline Corporation also transferred their water supply facilities to these regional water service boards. NGOs, CBOs and any other community self help groups are required to enter into agreements with the respective regional water service boards with regard to use of water supply facilities owned by the community organisations.

4.3.2 Water Resources Management Authority (WRMA)

The Water Resources Management Authority (WRMA) was formed as one of the water sector bodies under the water sector reforms; the body was established under the Water Act 2002. The overall mandate of WRMA is to protect and conserve water resources. Water resources for purposes of the Water Act include lakes, ponds, swamps, streams, marshes, watercourses or anybody of flowing or standing water both below and above the ground.

The functions of the WRMA include planning, management, protection and conservation of water resources. The WRMA is also authorized to receive and determine applications for water permits and monitor their compliance. There are currently six established regional offices in Kenya these are Athi catchment area in Machakos, Tana catchment area in Embu, Rift Valley catchment area in Nakuru, Lake Victoria South catchment area in Kisumu, Lake Victoria North catchment area in Kakamega and Ewaso Nyiro North catchment area in Nanyuki. The WRMA responsibilities extend to the management of water catchments. The Water Act establishes the Catchment Area Advisory Committees whose principal functions are to advise the WRMA on water resources conservation, use and apportionment at the catchment levels.

4.3.3 Water Services Regulatory Board (WASREB)

The Water Services Regulatory Board is established under the Water Act and was operationalized in March 2003. The functions of the WASREB include the issuance of licences to Water Service Boards and to approve service provision agreements concluded between Water Service Boards and Water Service Providers. The Water Service Providers are the agencies that directly provide water and sanitation services to consumers. The WASREB is responsible for ensuring that water services and supply are efficient and meet expectations of consumers through regulation and monitoring of Water Service Boards and Water Service Providers. To standardize service provision, the Board has the responsibility of developing among others, tariff guidelines.

The Board is therefore supposed to oversee the implementation of policies and strategies relating to provision of water and sanitation services, these policies include the National Water Services Strategy (2007 -2015), Pro-Poor Implementation Plan for Water Supply and Sanitation (refer to the popular versions of these documents prepared by COHRE & Hakijamii Trust), the specific functions of the WASREB include:

- *Providing information about water and sanitation services.*
- *Regulating the provision of water and sanitation services; this is done through such methods as setting standards for the provision of water services, monitor compliance of facilities for water supply with the set standards.*
- *Licensing Water Service Boards such as the Athi Water Services Board and other regional water service boards and approving their appointed Water Service Providers through service provision agreements.*
- *Setting the rules, establishing standards guidelines and monitoring the performance of Water Service Boards and Water Service Providers and enforcing regulations.*
- *Establishing technical, water quality and effluent disposal standards.*

4.3.4 Water Services Trust Fund (WSTF)

The Government of Kenya, through the Ministry of Water and Irrigation established the Water Services Trust Fund (WSTF) under the Water Act 2002 to channel funding for its long-term objectives of developing water and sanitation services in areas of Kenya without adequate water. The main objective of the WSTF is to assist in financing capital costs of providing services to communities without adequate water and sanitation services. The WSTF focuses on reaching those areas that are underserved or not served at all such as informal settlements, the priority being given to poor and disadvantaged groups. The projects are funded through direct allocation

by the Government and donations and grants that may be received from bilateral and multilateral development partners, organisations and individuals.

4.3.5 Water Appeals Board

The Water Appeals Board is established under the Water Act to adjudicate disputes within the water sector. The Appeals Board is made up of three persons, one appointed by the President on advice of the Chief Justice and two others appointed by the Minister for Water and Irrigation. The Water Appeals Board can hear and determine appeals arising from the decision of the Minister of Water and Irrigation, the WASREB and the Water Resources Management Authority (WRMA) with respect to the issuance of permits or licenses under the Water Act.

4.3.6 Water Services Boards (WSB)

Water Services Boards (WSBs) are constituted under the Water Act 2002. The WSBs are responsible for the provision of water and sewerage services within their areas of coverage and are licensed by the WASREB. The WSBs are also responsible for contracting Water Services Providers (WSPs) for the provision of water services. WSB and WSP enter into service provision agreements that include but not limited to the supply area, development, rehabilitation and maintenance of water and sewerage facilities of the WSBs. The WSBs are responsible for the review of the water services tariffs proposals from WSP before submission to WASREB for consideration.

There are currently eight (8) established WSBs namely: Athi Water Services Board, Tana Water Services Board, Coast Water Services Board, Lake Victoria South Water Services Board, Lake Victoria North Water Services Board, Northern Water Services Board, Rift Valley Water Services Board and Tanathi Water Services Board.

5 DESCRIPTION OF WORLD BANK ENVIRONMENTAL & SOCIAL SAFEGUARDS POLICIES AND TRIGGERS

This ESMF has been designed so that all investments under the WaSSIP AF will comply with the relevant laws of Kenya's Environmental and Social Safeguard Policies of the World Bank. In this chapter, the Bank's safeguards policies and their applicability are discussed. The World Bank Safeguard Policies are;

- 1) *Environmental Assessment (OP/ BP 4.01,)*
- 2) *Natural Habitats (OP/ BP 4.04,)*
- 3) *Forestry (OP/ BP 4.36)*
- 4) *Pest Management (OP/BP 4.09)*
- 5) *Physical Cultural Resources (OP/BP 4.11)*
- 6) *Indigenous Peoples (OP/BP 4.10)*
- 7) *Involuntary Resettlement (OP/BP 4.12)*
- 8) *Safety of Dams (OP/BP 4.37)*
- 9) *Projects on International Waterways (OP/BP 7.50)*
- 10) *Projects in Disputed Areas (OP/BP 7.60,)*

In preparing this ESMF, a consideration of the type of future investments planned vis-à-vis the baseline data presented in Chapter 4 and the requirements of the Bank Safeguard policies, has led to the determination that only the following Bank policies are triggered.

- 1) *Environmental Assessment (OP/BP 4.01,)*
- 2) *Involuntary Resettlement (OP/BP 4.12)*
- 3) *Projects on International Waterways (OP/BP 7.50)*
- 4) *Forestry (OP 4.36, GP 4.36)*
- 5) *Safety of Dams (OP/BP 4.37)*
- 6) *Indigenous Peoples (OP/BP 4.10)*

Notwithstanding, since the exact location of the investments was not known at the time of preparation of the WaSSIP AF, other Bank policies may apply and not all policies selected above may apply simultaneously.

Therefore, a complete description of the bank safeguards and their triggers for applicability can be found on the World Bank's official web site www.worldbank.org and summarized in this chapter, to be used as part of the Environmental and Social Management process presented in chapter 6 of this ESMF.

5.1 Environmental Assessment (OP4.01, BP 4.01, GP 4.01)

This policy requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed investments under the WaSSIP AF.

The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and transboundary and global environmental aspects.

The environmental and social impacts of the WaSSIP AF will come from the proposed investment activities. However, since the exact location of almost all these investments will not be identified before World Bank appraisal of the project, the EA process calls for the GoK to prepare an Environmental and Social Management Framework (ESMF).

This report which will establish a mechanism to determine and assess future potential environmental and social impacts during implementation of WaSSIP AF activities, and then to set out mitigation, monitoring and institutional measures to be taken during operations of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

Operational Policy 4.01 further requires that the ESMF report must be disclosed as a separate and stand alone document by the Government of Kenya and the World Bank as a condition for bank appraisal. The disclosure should be both in Kenya where it can be accessed by the general public and local communities and at the InfoShop of the World Bank and the date for disclosure must precede the date for appraisal of the program.

The policy further calls for the WaSSIP AF as a whole to be environmentally screened to determine the extent and type of the EA process. The World Bank system assigns a project to one of three project categories, as defined below:

5.1.1 Category “A” Projects

An EIA is always required for projects that are in this category. Impacts are expected to be ‘adverse, sensitive, irreversible and diverse with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forests and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.

5.1.2 Category “B” Projects

Although an EIA is not always required, some environmental analysis is necessary. Category B projects have impacts that are ‘less significant, not as sensitive, numerous, major or diverse. Few, if any, impacts are irreversible, and remedial measures can be more easily designed.’ Typical projects include rehabilitation, maintenance, or upgrades, rather than new construction.

5.1.3 Category “C” Projects

No EIA or other analysis is required. Category C projects result in negligible or minimal direct disturbance of the physical environment. Typical projects include education, family planning, health, and human resource development.

The WaSSIP AF has thus been screened and assigned an EA Category A, largely because of the significant water abstraction related to the proposed Northern Corridor subproject, and the

resultant cumulative impact on the Athi river basin and the Masinga reservoir. An Environmental Assessment has been prepared for this subproject..

Therefore, this ESMF sets out to establish the EA process to be undertaken for implementation of project activities in the proposed WaSSIP AF when they are being identified and implemented. This ESMF also conforms to the Bank's Environmental, Health and Safety Guidelines.

This process requires that WaSSIP AF and its implementing partners screen their activities to identify their potential adverse impacts and thereby determine the corresponding mitigation measures to incorporate into their planned activities.

5.2 Involuntary Resettlement (OP 4.12)

The objective of this policy to avoid where feasible, or minimize, exploring all viable alternative project designs, to avoid resettlement. This policy is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts.

This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

For project activities that impact people and livelihoods in this way, WaSSIP AF will have to comply with the requirements of the disclosed RPF and RAPs to comply with this policy.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to project appraisal of proposed projects. The objective of this policy to avoid where feasible, or minimize, exploring all viable alternative project designs, to avoid resettlement.

The policy requires the displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement. Appropriate and accessible grievance mechanisms are established for these groups. In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.

A separate Resettlement Policy Framework (RPF) was thus prepared that establishes standards and procedures for the preparation of Resettlement Action Plans (RAPs), as required. The RAPs would be prepared by WaSSIP AF and its implementing partners. In this case, the World Bank reserves the right to also approve this RAP as a condition for that particular project investment to be financed. This policy would be triggered when a project activity, in the cases mentioned above, for example, causes the involuntary taking of land and other assets resulting in:

- 1) *Relocation or loss of shelter,*
- 2) *Loss of assets or access to assets,*

- 3) *Loss of income sources or means of livelihood, whether or not the affected persons must move to another location,*
- 4) *Loss of land,*

5.3 Forests OP4.36

This operational policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development.

The policy recognizes the role forests play in poverty alleviation, economic development, and for providing local as well as global environmental services. Success in establishing sustainable forest conservation and management practices depends not only on changing the behavior of all critical stakeholders, but also on a wide range of partnerships to accomplish what no country, government agency, donor, or interest group can do alone.

The forest strategy suggests three equally important and interdependent pillars to guide future Bank involvement with forests including harnessing the potential of forests to reduce poverty, integrating forests in sustainable economic development, and protecting vital local and global environmental services and forest values.

This policy applies to the following types of Bank-financed investment projects: (a) projects that have or may have impacts on the health and quality of forests; (b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and (c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned.

The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures. Any project activities that are likely to have negative impacts on forests will not be funded under WaSSIP AF. However, as some of the subprojects may involve reforestation to repair or improve certain sites, the policy is triggered.

5.4 OP 4.10 Indigenous Peoples

Indigenous peoples in particular geographical areas are identified by having: a close attachment to ancestral territories and to the natural resources in these areas; self-identification and identification by others as members of a distinct cultural group; an indigenous language, often different from the natural language; presence of customary social and political institutions; and primarily subsistence-oriented production.

The Bank's objective is to ensure that indigenous peoples do not suffer adverse effects from Bank financed projects and that they receive culturally compatible social and economic benefits. Effectively the World Bank requires a project to develop a program for addressing issues based on the informed participation of the indigenous people themselves. Any project that affects indigenous peoples is expected to include components or provisions that incorporate an "Indigenous Peoples Plan". Certain sub projects targeted for implementation by the LVNWSB will be located in areas where the Sengwer, a community considered as indigenous is located.

This therefore requires the preparation of an Indigenous People Policy Framework (IPPF) and an Indigenous People Plan (IPP).

5.5 Op 4.37 Dam Safety

This policy is triggered if the project involves construction of new dam(s), or is dependent on an existing dam, or a dam under construction. In the case of new dams, experienced and competent professionals to design and supervise construction; borrower adopts and implement dam safety measures for the design, bid tendering, construction, operation and maintenance. In the case of existing dams, any dam that can influence the performance of the project must be identified and its safety assessed. Necessary dam safety measures or remedial work are implemented. Dams over 15 metres in height are classified as large dams. High hazard dams are those under 15 metres but which are in a zone of high seismicity and /or where foundations and other design features are complex.

If deemed necessary, a dam safety assessment may be prepared for the intake of water into the existing Thika Dam, under the proposed Northern Collector subproject.

5.6 OP BP 7.50 International Waterways

Ascertain whether riparian agreements are in place, and ensure that riparian states are informed of and do not object to project interventions. (As notifications were made under the original WaSSIP project, and since the scope of work has not changed significantly, there is no need to re-issue notifications to riparian states.)

5.7 OP BP 4.11 Physical Cultural Resources

A Bank Operational Policy 4.11-Physical Cultural Resources

The objective of this policy is to assist in preserving physical cultural resources (PCR) and avoiding their destruction or damage. PCR includes archaeological, paleontological, architecturally significant, and religious sites including graveyards, burial sites, and sites of unique natural value. Initial indications are that no observed physical or cultural resources will be affected by the project. Nevertheless, the Contractor is responsible for familiarizing themselves with the following “Chance Finds Procedures”, in case culturally valuable materials are uncovered during excavation, including:

1. Stop work immediately following the discovery of any materials with possible archeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities;
2. Protect artifacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artifacts
3. Prevent and penalize any unauthorized access to the artifacts
4. Restart construction works only upon the authorization of the relevant authorities.

All contracts should include a Chance Finds Procedure clause.

Table 2: Summary of World Bank Safeguards Policies

Safeguard policy	Description

<p>OP 4.01 Environmental Assessment</p>	<p>The environmental assessment process provides insights to ascertain the applicability of other WB safeguard policies to specific projects. This is especially the case for the policies on natural habitats, pest management, and physical cultural resources that are typically considered within the EA process. The policy describes an environmental assessment (EA) process for the proposed project. The breadth, depth, and type of analysis of the EA process depend on the nature, scale, and potential environmental impact of the proposed project. The policy favors preventive measures over mitigatory or compensatory measures, whenever feasible.</p> <p>The operational principles of the policy require the environmental assessment process to undertake the following:</p> <ul style="list-style-type: none"> ▪ Evaluate adequacy of existing legal and institution frameworks, including applicable international environmental agreements. This policy aims to ensure that projects contravening the agreements are not financed. ▪ Stakeholder consultation before and during project implementation. ▪ Engage service of independent experts to undertake the environmental assessment. ▪ Provide measures to link the environmental process and findings with studies of economics, financial, institutional, social and technical analysis of the proposed project. ▪ Develop programmes for strengthening of institutional capacity in environmental management. ▪ <p>The requirements of the policy are similar to those of EMCA, which aim to ensure sustainable project implementation. Most of the requirements of this safeguard policy have been responded to in this report, by evaluating the impact of the project, its alternatives, existing legislative framework and, conducting public consultations and by proposing mitigation measures for the potential impacts identified</p>
<p>OP 4.36 Forests</p>	<p>All projects must avoid significant damage to Critical Forests (= forested Critical Natural Habitats), same as under the Natural Habitats OP 4.04. All projects must minimize and mitigate damage to other (non-critical) natural forests, same as OP 4.04.</p>
<p>OP 4.04 Natural Habitats</p>	<p>This operational policy requires that the study use a precautionary approach to natural resource management, to ensure environmental sustainability. The policy requires conservation of critical habitat during project development. To ensure conservation and project sustainability the policy requires that:</p> <ul style="list-style-type: none"> ▪ Project alternative be sought when working in fragile environment areas; ▪ Key stakeholders are engaged in project design, implementation, monitoring and evaluation including mitigation planning.
<p>OP 4.09 Pest Management</p>	<p>This policy promotes the use of ecological based pest management practices. The policy requires that procured pesticides should meet the WHO recommendations and not be among those on the restricted list of formulated products found in the WHO Classes IA and IB or Class II.</p> <p>This policy is not triggered by the proposed project as it shall not involve use of pesticides despite the fact that the project will involve bush clearing to pave way for development of various project components and landscaping of project area on completion using trees, grasses and other vegetation to improve aesthetic value of the area, control soil erosion and, act as windbreakers among other functions. All activities involving handling of vegetation will be manual labor based thus not necessitate use of pesticides. It is recommended that plant enrichment will be done using organic manure if necessary which can be locally found.</p>

<p>OP/ 4.12 Involuntary Resettlement</p>	<p>Details involuntary resettlement, emphasizing the severe economic, social and environmental risks, if unmitigated. It ensures that the population displaced by a project receives benefits from it and also covers those with usufruct or customary rights to land or other resources taken for the project. The Operational Policy is specifically inclusive, ensuring that all those affected both directly and indirectly by project developments are compensated as part of the project. Affected populations include those with income derived from informal sector and non-farm activities, and from common property resources. The absence of legal title does not limit rights to compensation.</p> <p>The World Bank’s Policy objectives urge that involuntary resettlement be avoided whenever possible. If unavoidable, displaced persons need to:</p> <ul style="list-style-type: none"> • Share in project benefits, • Participate in planning and implementation of resettlement programs, and • Be assisted in their efforts to improve their livelihoods or standard of livings or at least to restore them, in real terms, to pre-displacement levels or levels prevailing prior to the beginning of project implementation, whichever is higher.
<p>OP 4.10 Indigenous Peoples</p>	<p>Indigenous peoples in particular geographical areas are identified by having: a close attachment to ancestral territories and to the natural resources in these areas; self-identification and identification by others as members of a distinct cultural group; an indigenous language, often different from the natural language; presence of customary social and political institutions; and primarily subsistence-oriented production.</p> <p>The Bank’s objective is to ensure that indigenous peoples do not suffer adverse effects from Bank financed projects and that they receive culturally compatible social and economic benefits. Effectively the World Bank requires a project to develop a program for addressing issues based on the informed participation of the indigenous people themselves. Any project that affects indigenous peoples is expected to include components or provisions that incorporate an “Indigenous Peoples Plan”.</p>
<p>OP 4.11 Cultural Property</p>	<p>Cultural property is defined to include both remains left by previous human inhabitants (e.g. graves, shrines) and unique natural environmental features such as canyons and waterfalls. The Bank does not support projects that will significantly damage non-replicable cultural property and assists only those projects that are sited or designed so as to prevent such damage.</p>
<p>Op 4.37 Dam Safety</p>	<p>This policy is triggered if the Project involves construction of new dam(s), or is dependent on an existing dam, or a dam under construction. In the case of new dams, experienced and competent professionals to design and supervise construction; borrower adopts and implement dam safety measures for the design, bid tendering, construction, operation and maintenance. In the case of existing dams, any dam that can influence the performance of the project must be identified and its safety assessed. Necessary dam safety measures or remedial work are implemented. Dams over 15 metres in height are classified as large dams. High hazard dams are those under 15 metres but which are in a zone of high seismicity and /or where foundations and other design features are complex.</p>
<p>OP BP 7.50 International Waterways</p>	<p>Ascertain whether riparian agreements are in place, and ensure that riparian states are informed of and do not object to project interventions. (As notifications were made under the original WaSSIP project, and since the scope of work has not changed significantly, there is no need to re-issue notifications to riparian states.)</p>

OP 7.60 Disputed areas	Ensure that claimants to disputed areas have no objection to proposed project.
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Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	X	
Natural Habitats (OP/BP 4.04)		X
Pest Management (OP 4.09)		X
Physical Cultural Resources (OP/BP 4.11)	X	
Involuntary Resettlement (OP/BP 4.12)	X	
Indigenous Peoples (OP/BP 4.10)	X	
Forests (OP/BP 4.36)	X	
Safety of Dams (OP/BP 4.37)	X	
Projects in Disputed Areas (OP/BP 7.60)*		X
Projects on International Waterways (OP/BP 7.50)	X	

5.8 Alignment of WB and GOK Polices relevant to this ESMF

Both the World Bank safeguards and GoK laws are generally aligned in principle and objective:

- Both require Environmental Assessment before project design and implementation (which also includes an assessment of social impacts).
- Both require public disclosure of EIA reports and stakeholder consultation during preparation.
- While OP 4.01 of World Bank stipulates different scales of EIA for different category of projects, EMCA requires EIA for all sizes of projects, which require to be scoped as applicable.
- Where EMCA requires Strategic Environmental Assessments, OP 4.01 requires that an Environmental Assessment be conducted depending on the project category while an ESMF should be prepared for municipal projects.
- EMCA recognizes other sectoral laws while WB has safeguards for specific interests.
- The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is equivalent to the EMCA requirements.
- Additionally, statutory annual environmental audits are required by EMCA.

In Kenya, it is a mandatory requirement under EMCA 1999 for all development projects (Schedule Two) to be preceded by an EIA study. Thus, under the Laws of Kenya, environmental assessment is fully mainstreamed in all development process consistent with World Bank policies. It is anticipated that projects to be supported under WaSSIP AF will be quite small in scale. However since EMCA provides no minimum size threshold, all projects will be screened at identification stage so as to determine level of environmental assessment required under EMCA. Further, in order to fully insure against triggers to WB safeguard policies, individual investments will be screened against each policy as part of the EIA Study.

5.9 Requirements for Public Disclosure

This ESMF will be disclosed in line with both Kenyan and WB requirements. The draft output has gone through the first round of local disclosure through posting on the Ministry's of Water and Irrigation website www.mowi.go.ke and on the World Bank's external website. The final version will be publicly disclosed through the WB's Infoshop, and be published on the WB's external website.

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

Table 3: Activities Triggering World Bank Safeguard Policies

Policy	WaSSIP AF Sub Projects	Discussions
Environmental Assessment (OP 4.01, BP4.01, GP 4.01)	Yes	The project components will trigger EA safeguards and is Category A. Projects include: dam construction, water treatment works, tunnels, boreholes, storage and distribution facilities and wastewater collection, treatment and disposal facilities, and expanding piped water supply services to under-served areas.
Dam Safety (OP /BP 4.37)	Yes	It is still to be determined for certain if the Northern Collector Tunnel will trigger this OP, although it will not lead to an increase in capacity in the existing Thika Dam.
Forestry (OP4.36, GP 4.36)	Yes	There is a remote possibility that the new pipeline to be constructed on the Sabaki-Malindi-Kilifi may trigger this OP. The route will be adjacent to the existing pipeline, will follow an existing road, and will not encroach on the Arabuko-Sokoke Forest. However, if proper mitigation measures are not put in place during the construction certain activities could impact adversely on the forest; for example creation of borrow pits in the forest etc. Other subprojects may involve small-scale reforestation.
Involuntary Resettlement (OP4.12, BP 4.12)	Yes	Sub projects including water treatment works, tunnels, boreholes, storage and distribution facilities and wastewater collection, treatment and disposal facilities, expanding piped water supply services to under-served areas will trigger this OP.
Indigenous People (OP/BP 4.10)	Yes	A sub project under LVNWSB is expected to trigger this OP because it is located in an area where the Sengwer an indigenous community is located.
Projects on International Waterways (OP/BP 7.50)	Yes	The projects under LVNWSB trigger the OP on international waterways with respect to Lake Victoria
Physical Cultural Resources (OP/BP 4.11)	Yes	Construction works may lead to the discovery of cultural or religious artifacts, or graves. In such cases chance finds procedures will be followed.

6 DETERMINATION OF POTENTIAL ENVIRONMENT AND SOCIAL IMPACTS

6.1 Positive Impacts

Potential positive impacts include local employment opportunities and the creation of a local market for materials and consumables that can be sourced locally. Construction of access roads may also provide positive impacts to local communities. Positive impacts from pipeline construction include the creation of job opportunities, as well as the potential for improved habitats for local wildlife species along the wayleave if this strip of land is managed appropriately, including habitat restoration. Other positive impacts include:-

- a) *Increased access to reliable, affordable and sustainable water supply and sanitation services; and*
- b) *Improved water and wastewater services in the areas served by AWSB, LVNWSB and CWSB.*
- c) *Water Resources Conservation*
- d) *Improved soil conservation*
- e) *Poverty Alleviation*
- f) *Raise Rural Income*
- g) *Improved access to water for domestic purposes*
- h) *Water for domestic use-washing clothes, bathing livestock*
- i) *Employment creation for community members during construction*
- j) *Prevention of excess nutrients and agricultural pesticides from entering the river*

6.2 Adverse impacts

6.2.1 Environmental Impacts

Highlighted in summary below are the potential adverse impacts that could occur when the WaSSIP AF sub projects are implemented. A sample EMP has been prepared and details the potential adverse impacts for each of the proposed activities.

- a) *Water quality and quantity degradation (both surface & ground water) by discharges of treated waste water*
- b) *Soil erosion and quality deterioration*
- c) *Vibration, Noise, air pollution, and dust generation by traffic and machinery during construction*
- d) *Sewage sludge production*
- e) *Soil run off and erosion*
- f) *Surface water sedimentation*
- g) *Impacts on aquatic habitats*
- h) *Sanitation and waste management problems*
- i) *Borrow pit impacts*
- j) *Downstream flooding and water use denial for downstream users*
- k) *Pollution by unprocessed effluent / polluted runoff (from solids, heavy metals, etc) may kill these waters' vegetation and destroy their effluent stripping capabilities.*
- l) *Increased levels of pollution due to an increase in motorized traffic during construction and emissions from construction processes.*

- m) *Ecological related impacts on the water resources especially during the abstraction and diversion of water at the intake points*
- n) *Land acquisition within the catchments*
- o) *Impact on existing land uses*
- p) *Destruction of existing vegetation cover hence increased turbidity and suspended matter and solids in the river flows during high rainfall periods*
- q) *Impact on biodiversity*
- r) *Impact on riverine ecosystems*

6.2.2 Socio-cultural and Economic Impacts;

- a) *Displacement of local inhabitants*
- b) *Damage to property*
- c) *Water use conflicts*
- d) *Damage of aesthetics of the area/land*
- e) *Camp construction related impacts*
- f) *Traffic congestion*

6.2.3 Health Impacts

- a) *Spread of water borne diseases*
- b) *Spread of HIV/AIDS*
- c) *Dust impacts*
- d) *Noise impacts*

6.3 A description of the potential adverse environmental and social impacts is described below;

6.3.1 Impacts on Ecosystems

Potential environmental impacts will result from the creation of the diversion sites and structures themselves, and from operational management of diversion sites and the impacts on downstream riverine ecosystems, including maintenance of in stream and riparian habitats. Downstream impacts on riverine ecosystems are considered above under downstream environmental flows and these are considered to be the primary environmental impacts associated with the development of these water supply abstraction sites. The most important mitigation measures are the release of good quality Reserve Flows capable of maintaining important environmental services, and satisfying downstream water requirements. Additional impacts are related to a) construction and b) operation of the diversion sites and associated transmission pipelines, as well as to reservoirs that have additional site level or local level impacts.

6.3.2 Protected Areas and Endangered Species

The sub projects are not expected to be located in protected areas or in sites where endangered species are recorded. So far there is no indication that the sub projects will be located in protected areas with the exception of a proposed pipeline targeted for implementation by CWSB. This is the Sabaki-Malindi-Kilifi a new pipeline whose routing is adjacent to the existing pipeline, will follow an existing road. Even though the pipeline will not encroach on the Arabuko Sokoke Forest, if adequate mitigation measures are not provide for during the EMP certain activities like clearing, creation of borrow pits etc may require that particular due diligence is

undertaken, especially if the materials are sourced from the forest for example. Some subprojects may involve small-scale reforestation.

Reduced flows due to abstraction will have an overall negative impact on the riparian vegetation cover, with expected medium and long-term effects as indicated below:

The long-term changes to riparian vegetation are expected to have a negative impact on the species diversity and populations of all birds and animals using these resources. As a result, population numbers of some bird species are expected to decline downstream of the intake structures. Impacts are expected to reduce in intensity further downstream as other tributaries merge with the main rivers and the effective catchment area increases, providing some seasonal hydrological changes.

6.3.3 Impacts from Construction

Impacts that can be expected from construction include: potential soil erosion resulting from site preparation and construction activities, including weirs, tunnels and pipelines; pollution from machinery and construction activities; land acquisition; access roads; settlement, and workmen's camps. Potential positive impacts include improved access enabling farm produce to gain better access to markets, as well as some limited local employment opportunities. The overall levels of impact experienced as a result of construction under the different development scenarios are expected to be similar for each scenario. The overall impacts from construction are considered to be manageable with appropriate mitigation measures. Scenarios with less overall construction can be expected to have reduced impacts.

Due diligence and monitoring during construction activities can be expected to mitigate the majority of potential negative impacts due to construction and operational activities. Loss of land would need to be covered by compensation. The construction of dams will significantly have greater negative impacts due to the increased construction activity and greater areas involved and loss of land.

Potential negative impacts due to construction of weirs together with associated intakes and tunnels result from:

- *Loss of land;*
- *Construction of access roads;*
- *Change in local topography during site preparation/grading;*
- *Potential soil erosion resulting from site preparation and construction activities;*
- *Pollution from machinery and construction activities;*
- *Temporary settlement and workmen's camps;*
- *Impacts on hydrogeology as a result of tunnelling;*

Detailed designs for the proposed weirs, intake structures and associated tunnels and pipelines are not available at this stage, but preliminary assessments and scoping of likely impacts from construction are indicated by Table 4.

Similar levels of impact will be experienced by the development of each of the weirs and associated intake structures and connecting tunnels. Construction of tunnels and associated outlets is an essential project component. Possible impacts resulting from the construction of tunnels include the creation of underground fractures with impacts on hydrogeology leading to alteration of underground drainage. In addition, the steep terrain increases the likelihood of local earth

movements and landslides. Any construction activities, including tunnelling may increase the chance of landslides.

Site-level and local-level impacts resulting from the construction of dams are likely to be significantly greater than the environmental impacts related to the weirs, intake structures and connecting tunnels. Detailed designs for the proposed dams are not available, and the final site currently uncertain. Preliminary assessments and scoping of likely impacts from dam construction are indicated by Table 4.

Construction of pipelines can be expected to include the following negative impacts:

- *Impacts on local flora and fauna as a result of clearing vegetation along the pipeline if habitat restoration is not carried out,*
- *Land acquisition for pipeline wayleave, together with associated needs for resettlement and compensation requirements,*
- *Noise generation and vibration resulting from use of heavy machinery during construction,*
- *Temporary construction camps,*
- *Disposal of material from excavation and earthworks,*
- *Increased water demand during construction,*
- *Extraction and use of construction materials from local sources such as quarries,*
- *Solid waste generation and requirements for disposal,*
- *Soil erosion and potential pollution of rivers or streams crossed by the pipeline,*
- *Impacts on roads where transmission pipelines cross roads.*

6.3.4 Impacts from Operation

Primary environmental impacts resulting from operation of the diversion sites and reservoirs are related to the change in downstream hydrology, through changes to water flow patterns, quantity and quality. The provision of adequate downstream environmental flows is considered to be essential for all rivers, as described above, as a component of Reserve Flows.

Additional impacts from operation, related to changes in flow rates, include significant increases in flow over short stretches of river, for example where flow is diverted from South Mathioya to Maragua River under the AWSB sub projects and the proposed diversion of flow from Chania to Komu Rivers. In particular, the increased flow will result in potentially increased erosion of river banks. In such cases it will be necessary to create and maintain structures to limit river bank erosion, prevent the loss of riparian habitat, and prevent the loss and destruction of buildings, roads and other existing structures alongside or close to the rivers.

Catchment protection is viewed as an important task during operation of the weirs, intake structures and reservoirs. Careful planning and management of land use in the catchments will limit the inflow of sediments and excessive nutrients.

Both weirs and reservoirs will trap sediments. Sediment transport is an important function of river flows, and this serves to maintain aquatic habitats and downstream environments. Changes to sediment transport, especially trapping of sediment in reservoirs, will have inevitable impacts on downstream systems. Sediment that arrives at a dam site will accumulate in the reservoir, and will not be available for downstream ecosystems. Sediment will also not be available for downstream agricultural systems, some of which may partly depend on some of the alluvium deposited by flood events.

The design of the proposed dams should allow for sediment release. Sediment flushing is a technique in which flow velocities in a reservoir or weir are increased so that deposited sediments are remobilized and transported through bottom outlets. This may be especially relevant at periods with high flows or flood flows and can be combined with flood release. A related technique, sediment sluicing, concerns passing sediments straight through a weir during times of flood. Generally, sediment flushing is used to remove sediments up to and including sands and gravels whereas sediment sluicing tends to remove the finer fractions. Sediment removal, by either of these two techniques (or by a combination of both of them) would, if implemented, maintain the effective storage volume of the dams, and also provide important downstream environmental benefits. It is recommended that these issues should be dealt with at final design stage. In conjunction with sediment release, a multi-level off-take also permits the release of water of suitable quality and temperature more suited to downstream environments.

The development scenarios that can be expected to have the greatest local level environmental impacts as a result of operational activities are effectively those with the greater numbers of diversion weirs and intake structures or dams and reservoirs.

The most significant reductions in downstream flows are likely to result from the construction and operation of proposed reservoirs as a result of storage of high flows, as well as tunnels, such as the Northern Collector Tunnel. The dams and reservoirs also result in greater negative site-level impacts on local environments and local communities. Those proposed development scenarios that include the development of reservoirs can therefore be considered to have the greatest potential environmental impacts. Mitigation is possible through the release of good quality Reserve Flows from all structures, including environmental flows and compensation flows from both weirs with intake structures and from the proposed dams and reservoirs. However, it is important that flows and demands are monitored and that when abstraction is not required, no water is diverted unnecessarily and it is allowed to flow downstream in the source rivers. Similarly, when monitoring indicates that downstream requirements may be in deficit, abstraction volumes will need to be adjusted accordingly.

Impacts related to reduced downstream flows and resulting hydrological alterations are considered above under Downstream Environmental Flows.

6.3.5 Aquatic and Riparian Environments

Impacts on Aquatic and Riparian Species

Weirs, dams and other structures along a river or stream will have inevitable impacts on fish species living in the rivers. In particular, obstacles to upstream movement or migration need to be avoided and, where present, fish ladders or other means of passage need to be provided.

The potential for passage of fish upstream through the planned diversion structures will need to be assessed in detail at the detailed design stage of each diversion structure, as well as the planned dams, to ensure survival of the local fish species, including endemics and potentially threatened species.

Invertebrates play a major part in river functioning, whilst their forms, ecological and habitat requirements are diverse. They are responsible for retaining and breaking down organic material, recycling minerals and nutrients, and contributing to energy processing in the river at different trophic levels. Most benthic invertebrates are detritivores, although some are herbivores and some are carnivores.

Other possibly lesser effects include the transport of organic material into and out of the river and structural activities such as case building and gluing or enmeshing particles of silt and sand. Burrowing invertebrates, such as worms, are also important in aerating sediments and releasing nutrients. Changes to flow regimes can have significant impacts on invertebrate communities, and may result in long-term changes to ecological processes. Adequate provision of environmental flows, including periods of low flow, freshets and high flows, will be important in helping to maintain invertebrate communities.

Vegetation is a dominant part of most riverine ecosystems, where it fulfils a number of critical functions. This is the case along all of the riverine environments downstream of the proposed intakes and reservoirs. Aquatic and riparian vegetation stabilise river channels, river banks and floodplains; contribute towards the attenuation of floods (recharging local groundwater resources); influence water temperature and quality; and provide habitat, refuge and migration corridors for terrestrial and aquatic fauna. The structure, composition and overall condition of the vegetation determine the degree to which it is involved in ecosystem functioning.

The vegetation also provides many resources used by man, including food, and has an aesthetic component that is also valued by man. Aquatic and riparian vegetation is adapted to the full range of flows experienced by the relevant stretch of river. Modification of the flows, for example changing from natural flows to a flow regime that is equivalent to a permanent low flow, "flatlining", drought flow or extreme low flow, can be expected to have long term negative consequences, especially for riparian vegetation and communities that are adapted to a range of different flow regimes.

The potential impacts on the different components of aquatic and riparian ecological communities emphasize the importance of maintaining adequate downstream Reserve Flows, including the full range of periods of extreme low flows, low flows, high flow pulses, and periods with high flows.

6.3.6 Impacts on Diseases

Permanent low, or extreme low flows, are known to have an impact on the populations of a number of disease vectors. This includes the invertebrate hosts of malaria and schistosomiasis (bilharzia). Low flows will tend to increase vector populations in downstream environments.

Mosquito larvae have no way of combating current and therefore are swept out of riverside pools and shallow areas by periods of higher flows and short high flow pulses. Retreating flood waters may however create new pools and breeding opportunities for mosquitoes, and the short duration of the larval stage means that the short pulses of high flows generally need to be repeated within 10 days. Regular flushing, for example at weekly intervals from reservoirs, will result in significant reductions in populations of the mosquito vectors and reduced potential for malaria transmission. Similarly, the snail hosts of schistosomiasis (*Bulinus globosus*) are likely to increase under situations dominated by low flows or extreme low flows. However flushing of streams with high flow pulses is also an effective method of control.

A change in faecal bacteria concentrations and associated waterborne pathogens as a result of runoff and inflow of contaminants is possible and needs to be monitored. The reduced flows resulting from upstream abstraction will reduce the potential for flushing of contaminants downstream, for example during high flow pulses. This will increase the concentrations of and potential dangers from bacterial concentrations in rivers, with associated risks when untreated river water is used, for example by rural households.

The potential impacts on vector control and disease transmission further reinforces the requirements for a Reserve Flow that includes regular high flow pulses and other periods of higher flows. In particular, it is recommended that regular high flow pulses from reservoirs are adopted as a standard management practice.

6.3.7 *Inter-basin Transfers*

Impacts on the basins are not expected to be significant as the rivers on which the proposed intakes are situated are connected to several tributaries. However, transfers of water will take place from these rivers to locations within the basins. Transfer of flow from tributaries to the basins could result in some fish species present in the Tana basin being transferred to the Athi.

Potential environmental impacts related to inter-basin transfers include water quality changes (positive or negative) and impacts on the habitats of fish and other aquatic species. Similarly, any changes in aquatic habitats will primarily result from hydrological changes rather than from inter-basin transfers.

6.3.8 *Chance Finds Procedures*

Chance finds procedures should be incorporated into the EMP and civil works contracts. The following wording is proposed:

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Ministry of State for National Heritage and Culture take over;
- Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the responsible local authorities and the Ministry of State for National Heritage and Culture immediately (within 24 hours or less);

Responsible local authorities and the Ministry of State for National Heritage and Culture would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the National Museums of Kenya. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.

Decisions on how to handle the finding shall be taken by the responsible authorities and the Ministry of State for National Heritage and Culture. This could include changes in the

layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.

Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.

-Construction work may resume only after permission is given from the responsible local authorities or the Ministry of State for National Heritage and Culture concerning safeguard of the heritage.

6.4 Localized Impacts

Most of the developments or subprojects planned under the WaSSIP AF Project will vary from medium to small in scale. Consequently the significance of the direct negative environmental and social impacts is likely to be moderately significant except where they accumulate in single watersheds.

6.5 Environmental and Social Management Process

The Environmental Management Plan outlined here below consists of a set of measures to be undertaken during planning, design, procurement, construction and post-construction stages of the activities to be financed in the WaSSIP AF, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The EMP includes the actions needed to implement these measures. Refer *Annex C* for sample EMP to be used in the project.

Table 4; Generic Environmental Management Plan for WaSSIP AF Sub Projects

Impacts Due to Construction of Weirs, Intake Structures, Tunnels, and Offices

Issue	Nature of Impact	Mitigation Measure(s)
Issues Loss of land	Land will have to be purchased to enable construction of and provision of adequate buffer zones round dams or weirs, treatment works, pipeline wayleave, workmen's camps and working areas. Loss of smallholder tea plantations in particular may lead to long-term changes in household incomes, since tea is a long-term crop.	Compensation for loss of land Compensation for loss of household income
Change in land use	Change in land use from one dominated by natural riparian vegetation to a cleared area with dam or weir, intake structures and associated infrastructure. Clearance of riparian vegetation may disrupt natural wildlife corridors.	Minimize clearance of natural vegetation Creation of wildlife corridors
Construction of access roads	Access roads will be required to enable construction, as well as for subsequent system operation. Optimum location of access roads will benefit local communities through improved access to markets, health centres, schools and community facilities. Easier access to Aberdare Forest may result in unplanned and illegal deforestation and clearing.	Planning of access roads taking account of local requirements Monitoring and policing of forests
Soil erosion	Combined with the steep terrain, exposed earthworks required for site preparation and construction are likely to result in soil erosion, especially after heavy rainfall.	Erosion control measures Due diligence during construction
Siltation	Siltation created during construction will pass downstream, with potential negative impacts on the environment and on water quality.	Due diligence during construction
Pollution	Construction activities will create air, dust and noise pollution. Contamination from wastes and oil/fuel spills may occur. Contamination may spread to adjacent agricultural land, e.g. tea, thereby reducing its value.	Pollution control measures • Due diligence during construction
Solid waste disposal	Construction activities may result in significant volumes of spoil at some locations, especially from tunnels. Disposal of spoil may have a negative impact unless carefully planned, or used for other activities such as road construction.	Careful planning of spoil disposal
Workmen's camps and Settlements	Camps required for construction workers may overburden local services. Problems may occur in relation to disposal of waste and sewage, and surface waters may be contaminated, with associated dangers to public health. Induced settlement is likely to occur as a result of construction. This may be beneficial to local communities, but will also stress local resources, including water supplies and household fuel. There may also be health risks and increased requirements for health services. The construction phase may also provide local employment opportunities, but these must be scheduled to avoid teak tea picking activities.	Careful planning and location of campsites • Provision of adequate sewage and waste disposal facilities • Provision of adequate services • Provide local employment
Hydrogeology	Tunnelling may result in changes to underground drainage as a result of underground fractures.	

Impacts Due to Construction of Dams

Issues	Nature of Impacts	Type of Impact and Mitigation Measures
Loss of land	Land will have to be purchased to enable construction of and provision of adequate buffer zones round dams or weirs, treatment works, pipeline wayleave, workmen's camps and working areas. Loss of tea and other plantation crops in particular may lead to long-term changes in household incomes.	Compensation for loss of land Compensation for loss of household income
Flooding of biomass in the reservoir area	Risk from eutrophication as a result of excessive nutrients from decomposition of flooded vegetation. Complete clearance of all biomass in the reservoir area is recommended. Floating and submerged debris may also have serious negative impacts on dam infrastructure.	Low impact if mitigation measures are adopted Mitigation possible by clearance of vegetation
Clearance of biomass from impoundment area	Land clearance within the reservoir area will need careful planning to ensure minimal impact to adjacent communities. Benefits may be derived from creation of organic fertiliser through composting of cleared biomass. If not composted, disposal of this biomass will need careful planning. Cleared biomass must not be burnt.	Low impact if mitigation measures are adopted Mitigation possible through careful management
Construction of the access roads	Access roads open up new areas to development. Habitat restoration will be required.	Low impact if mitigation measures are adopted Mitigation possible through careful routing of access roads, together with strict control of workforce
Construction of Power lines	Disturbance as a result of construction activities. Loss of land related to wayleave. Potential negative impact of power lines on large birds.	Low impact • Mitigation possible through careful design of power lines
Construction and laying of transmission pipelines	Laying of pipelines will result in potential disturbance to natural habitats, to agricultural land and to communities. Habitat restoration and maintenance will be required after pipelines are completed. Most of the pipelines will be in	Low impact if mitigation measures are adopted Mitigation possible through habitat restoration

	settled areas that are already environmentally altered. Land will have to be acquired.	Compensation
Air and water pollution	Construction activities will create both air and water pollution during the construction period if not well managed. The formation of local residents groups and technical committees is recommended as part of community participation and monitoring.	Low impact if mitigation measures are adopted Mitigation by avoidance
Soil erosion	Surface erosion during construction activities needs to be carefully managed so as to minimise the negative impacts.	Limited area. Mitigation by avoidance.
Creation of borrow and spoil areas. Erosion of borrow areas	Additional land will be used by borrow pits, quarries and spoil areas. All land use in these areas will be changed on a permanent basis and full compensation for this lost land will be required. Erosion from these areas will need to be controlled. Restoration of spoil pits and borrow areas is will be required.	Limited area Mitigation by avoidance where possible and by restoration where not. If no restoration is possible then full compensation required Restoration will bring additional environmental benefits
Changes in groundwater quality near to borrow areas and spoil pits	Pollution from construction activities can result in pollution of groundwater close to borrow pits and spoil areas.	Mitigation by avoidance, monitoring and good management
Impacts from the construction labour force	This includes boomtown effects, such as squatter settlements, strain on local resources and services, and the opening up of new markets for local goods.	Unknown but variable impact Labour camps or facilities to be carefully sited and controlled
Impacts from increased construction traffic	Increase in heavy traffic and noise will need to be managed to ensure minimal impact on and disruption to adjacent communities. This includes the avoidance of overloading existing structures not specifically designed for heavy traffic.	Low impact Upgrade existing roads where required
Impact from blasting associated with construction activities	Local community groups will need to be informed about and provide feedback on blasting activities.	Mitigation by consultation with local groups Compensation

Impacts due to Operation of Weirs and Proposed Reservoirs

Issues	Nature of Impacts	Type of Impact and Mitigation Measures
Change in downstream flow	Change from a natural flow to a permanent low flow, extreme low flow or drought condition as a result of: <ul style="list-style-type: none"> ▪ Diversion of water at weirs, and ▪ Retention of water in proposed reservoirs. ▪ Loss of downstream water resources, and reduced ecosystem services. ▪ Loss of vegetation and wildlife dependant on these water resources. ▪ Reduced potential for settlement and agricultural development downstream. 	<ul style="list-style-type: none"> • Long-term. Permanent • High impact without adequate EFR • Low impact if good quality Reserve Flows are adopted and managed • Release Reserve Flow adequate to sustain the required water resources • Establishment of a monitoring programme and technical committee
increased flow downstream of outflows	Some stretches of river will receive significant increases in flow.	<p>Long-term impact</p> <p>Creation of structures to limit river bank erosion, loss of habitat, and damage to roads and other existing structures.</p> <p>Rebuild some bridges</p>
Change or loss of habitat downstream as a result of changed hydrological regime	Loss of riparian vegetation.	<p>Long-term impact</p> <p>High impact without EFR. Low impact if a good EFR is put in place</p>
Effects of reducing the flow of nutrients downstream	Reduced nutrient availability in downstream areas may result in a reduction in productivity of downstream systems, including cultivation in alluvial areas downstream.	<p>Long-term. Permanent</p> <p>Mitigation possible through EFR and sediment release from weirs and dams</p>
Temperature of water released from reservoirs	Release of water downstream from the reservoir may be a different temperature to the natural river flow. This impacts the plant and animal life and may create habitats unsuitable for endemic species. A multi-level offtake permits the release of water of suitable quality and temperature.	Install multi-level offtakes for release of water from reservoirs
Trapping of sediments	Both dams and weirs will trap sediments. Nutrients captured in reservoirs, especially those that tend to bind with fine sediments, will no longer be available to downstream systems and may result in eutrophication in the reservoir. These need to be released to provide benefits to downstream environments.	Incorporate sediment release capabilities in both weirs and dams
Sedimentation at interface between inflowing streams and the reservoir	Formation of sediment deposits at reservoir entrance creates a backwater effect, creating localised flooding immediately upstream.	<p>Long term. Low impact.</p> <p>No mitigation other than digging out accumulated sediments</p>

Discharge of water with low sediment content from the reservoir	Scouring of river bed below dam due to the low sediment content and therefore greater potential energy of released water, especially at times of higher flow. There will also be reduced soil replacement following flooding. Combined, these activities will result in change to downstream river morphology.	Low impact if mitigation measures are adopted. • Sediment release facilities.
Change in aquatic environments and reduced potential for fish migration	The potential for passage of fish upstream will need to be assessed in detail at the detailed design stage of each structure, to ensure survival of fish species, including endemics and potentially threatened species.	Designs for fish ladders need to be reviewed and fully incorporated in all proposed weirs, dams and reservoirs
Aquatic fauna	Increased reservoir area will extend available habitat for aquatic and semi-aquatic vertebrates, incl. fish and amphibians. This may have benefits for local communities through increased access to fish resources.	Management of fish species in the reservoirs • Enable fish production in reservoirs • Ensure that fish migration upstream and downstream is possible by use of fish ladders
Aquatic plant species	Aquatic weed colonization of reservoirs is possible but considered unlikely.	Regular monitoring
Power lines	The presence of power lines creates a potential hazard to larger bird species.	Mitigation through appropriate design of power lines and transmission towers.
Access roads	Access roads open up new areas to development and if carefully planned with inputs from local communities can provide local benefits.	• Low impact if mitigation measures are adopted • Mitigation through careful routing of access roads
Settlement resulting from project operation	In addition to operational staff, induced settlement is likely to occur in the surrounding area, creating potential stress on local resources and facilities, including fuel wood.	Planning of settlements and provision of fuel resources
Impact from presence of pipelines	Long-term access to the pipelines will be required for routine checking and maintenance. Assuming that most of the pipeline length is buried with limited surface structures, the overall impacts will be relatively low.	Careful management and location of pipelines
Leakage from pipelines and contamination of supply lines	Leaks are likely to occur along tunnels, along transmission and distribution pipelines, and at treatment works. Leakage may result in health risks, e.g. Malaria, Cholera and other water-related diseases.	Regular monitoring and maintenance is essential • Early detection of leaks reduces the possibility of public health risks
Public health risks	A change in faecal bacterial concentrations and waterborne pathogens, especially in reservoirs, as a result of inflow of contaminants from upstream is possible and needs to be monitored.	Conduct pathogen monitoring and assessment of risks of waterborne disease
Noise pollution from pumping stations	Structures associated with the dams are likely to result in noise pollution.	Mitigation is possible by careful designs of these facilities to minimize noise levels
Inflow of effluents and pollutants from upstream	Inflow of dissolved effluents and pollutants will have an impact on water quality in the proposed reservoirs with potential impacts on	Regular water quality monitoring will be required

sources	<p>human health.</p> <p>Inflow of solid wastes are likely to have a negative impact on the natural environment, as well as creating a potential source of damage to reservoir facilities, e.g. to pumping systems.</p>	<ul style="list-style-type: none"> • Active management and clearance of solid wastes may be necessary • Sewage and effluent collection and treatment facilities for all habitation within the catchment areas
Effects from changes in groundwater levels	<p>Changes in local groundwater regime are possible, depending on the geology at the proposed reservoir sites.</p> <p>There may also be impacts on local groundwater quality as a result of infiltration of reservoir water to the groundwater system.</p>	<p>Long-term</p> <ul style="list-style-type: none"> • Uncertain impact
Impacts due to proposed treatment works	<p>Use of hazardous chemicals, including chlorine.</p> <p>Agricultural chemicals and increased sediment loads caused by agricultural activities in the catchment areas will also require additional or special treatment of water before distribution.</p>	<p>Proper procedures for use and disposal of chemicals</p> <ul style="list-style-type: none"> • Adequate compensation flows for dilution of wastes, and sludge from treatment • Catchment management
Risks from Seismic Activity	<p>The proposed dams are in an area with some recorded seismic activity. This could have an impact on both dams and tunnels.</p>	<p>Risks will need to be fully assessed as part of detailed design.</p>
Chance finds	<p>Cultural or religious artifacts may be unearthed during excavation.</p>	<p>Work will be stopped, and chance finds procedures will be followed.</p>
. General Conditions for environmental management of Office Construction at the Water Boards.	<p>Notification and Worker safety</p>	<p>a) The local construction and environmental inspectorate and communities will be notified of upcoming activities</p> <p>b) The public will be notified of the works through at publicly accessible sites (including the site of the works)</p> <p>c) All legally required permits will be acquired for construction</p> <p>d) The contractor will ensure that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighbouring residents and environment</p> <p>e) Workers' PPE will comply with good international practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots)</p> <p>Appropriate signposting of the sites will inform workers of key rules and regulations to follow</p>
General rehabilitation and/ or construction activities	<p>Air Quantity</p>	<p>a) The surrounding environment (side walks, roads) shall be kept free of debris to minimize dust.</p> <p>b) There will be no open burning of construction / waste materials at the site</p> <p>c) There will be no excessive idling of construction vehicles at sites.</p>

	Noise	<ul style="list-style-type: none"> a) Construction noise will be limited to restricted times agreed to in the permit b) During operations the engine covers of generators , air compressors and other powered mechanical equipment shall be closed and equipment placed as far away from residential areas as possible
	Water Quality	<ul style="list-style-type: none"> ▪ The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and /or silt fences to prevent sediment from moving off site.
	Waste Management	<ul style="list-style-type: none"> a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from construction activities. b) Mineral construction waste will be separated from general refuse, organic, liquid and chemical wastes by onsite-sorting and stored in appropriate containers. c) Construction waste will be collected and disposed properly by licensed collectors d) The records of waste disposal will be maintained as proof for proper management as designed. e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
Individual wastewater treatment system	Water Quality	Wastewater management will be through connection to the sewerage network of the local Water and sewerage Company Limited.
Toxic/hazardous materials		<ul style="list-style-type: none"> a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition , properties and handling information b) The containers of hazardous substances shall be placed in a leak-proof container to prevent leaching and leaking. c) The waste shall be transported by specially licensed carriers and disposed in a licensed facility. d) Paints with toxic ingredients or solvents or lead-based paints will not be used
Traffic and pedestrian safety	Direct and indirect hazards to public traffic and pedestrians by construction activities	<ul style="list-style-type: none"> a) In compliance with national regulations, the contractor will ensure that the construction site is properly secured and

		<p>construction related traffic regulated. This includes but is not limited to:</p> <ul style="list-style-type: none">▪ Signposting. Warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes.
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6.6 Monitoring Plan

The objective of monitoring is two-fold;

- 1) *To alert project authorities (i.e. primarily) by providing timely information about the success or otherwise of the environmental management process outlined in this ESMF in such a manner that changes can be made as required to ensure continuous improvement to WaSSIP AF environmental management process (even beyond the project's life).*
- 2) *to make a final evaluation in order to determine whether the mitigation measures incorporated in the technical designs and the EMP have been successful in such a way that the pre-project environmental and social condition has been restored, improved upon or is worst than before and to determine what further mitigation measures may be required.*

This section sets out requirements for the monitoring of the environmental and social impacts of the WaSSIP AF projects. Monitoring of environmental and social indicators will be mainstreamed into the overall monitoring and evaluation system for the project. In addition, monitoring of the implementation of this ESMF will be carried out by NEMA and the key implementing institutions of WaSSIP AF.

6.6.1 Monitoring of Environmental and Social Indicators

Two opportunities will be taken to build a simple system for the monitoring and evaluation of environmental and social impacts:

The goals of monitoring are to measure the success rate of the project, determine whether interventions have resulted in dealing with negative impacts, whether further interventions are needed or monitoring is to be extended in some areas. Monitoring indicators will be very much dependent on specific project contexts.

Monitoring and surveillance of subprojects will take place on a “spot check” basis as it would be impossible to monitor all the subprojects to be financed under the project. The spot checks consist of controlling the establishment of mitigation measures. It is not recommended to collect large amounts of data, but rather to base monitoring on observations by project technicians and stakeholders to determine the trends in indicators.

In order to fully achieve mitigation, it is necessary to monitor actual impacts and the mitigation measures that are incorporated, and to adapt management strategies based on the results of monitoring. The Environmental Monitoring Plan (EMP) that will be further developed during subsequent stages based on the chosen development scenario will include recommendations that the following be monitored:

- *Regular monitoring of flows upstream and downstream of all diversion structures and storage reservoirs. This will include the monitoring and reporting of Reserve Flows, including both Environmental Flow and Compensation Flow components;*
- *Regular monitoring of increased flows downstream of relevant diversion outlets, together with surveys and monitoring of possible erosion problems in land adjacent to stretches of river with increased flow;*

- *Regular surveys of aquatic fauna upstream and downstream of the intake weirs, designed to deliver an up-to-date and comprehensive assessment of the aquatic and riparian communities, to create a baseline and monitor changes, and to allow for subsequent monitoring of impacts on these communities;*
- *Changes to communities of aquatic fauna downstream of the intake weirs;*
- *Changes to communities of aquatic fauna in reservoirs;*
- *Changes to riparian vegetation downstream of the intake weirs;*
- *Changes in demand for water downstream of the intakes, including changes in demand related to increased demand for agricultural production (including small scale irrigation, commercial irrigation and livestock);*
- *Water quality, including regular testing for chemical pollution from agricultural inputs upstream of intake points;*
- *Monitoring of sediment loads at intake weirs and downstream of intakes;*
- *Forest cover in the catchment areas;*
- *Land use and land cover, including agricultural activities in the catchment areas of the rivers associated with the intakes;*
- *Impacts of changes in the quality and availability of water supplies from rivers and associated streams on public health, including those communities dependant on downstream flows.*

In addition, Construction Environmental Management Plans will be required to deliver a practical and achievable plan of management and to ensure that any environmental impacts during the construction phases are minimised. Plans will need to be developed prior to construction, but can only be proposed once sites are finalised and full design and construction details are available. The following issues will need to be included:

- *Physical setting, flora and fauna, ensuring minimal environmental impact and proposing mitigation measures, including the setting aside of alternative terrestrial and aquatic habitats for preservation;*
- *Prevention of interruption to existing infrastructure installations and services, including the building of alternative access routes as required;*
- *Resettlement and land compensation, including compensation for potential loss of livelihoods;*
- *Ensure that noise and vibrations are kept to acceptable standards, including the impacts from blasting associated with construction activities for tunnels;*
- *Ensure that the environmental, health, and safety aspects are properly addressed and implemented;*
- *Include wording on chance finds procedures in all construction contracts*
- *Water quality management, dust and air quality, soil and groundwater contamination control*
- *Waste management, land contamination, erosion and sediment control, and*
- *Environmental Performance Monitoring.*

Operational Environmental Management Plans will also be required. These should focus on sound environmental management practices undertaken to minimise adverse impacts on the environment during normal operation of the intake sites, reservoirs and water transmission tunnels and pipelines. The following issues will need to be included:

- *Overall management strategy, including environmental performance monitoring and regular reporting. It is recommended that a scientific advisory committee be established to aid with long-term environmental monitoring, including those points covered above under the Environmental Monitoring Plan;*
- *Maintenance of environmental integrity, including the provision of adequate downstream environmental flows, the preservation of those habitats that depend on these flows, and the maintenance of compensation flows for downstream communities;*
- *Energy management, including measures to ensure minimizing greenhouse gas emissions.*

6.6.2 Monitoring of participation process

The following are indicators for monitoring of the participation process involved in the project activities.

Number and percentage of affected households consulted during the planning stage;

- *Levels of decision-making of affected people;*
- *Level of understanding of project impacts and mitigation;*
- *Effectiveness of local authorities to make decisions;*
- *Frequency and quality of public meetings;*
- *Degree of involvement of women or disadvantaged groups in discussions.*

Monitoring of implementation of mitigation plans lists the recommended indicators for monitoring the implementation of mitigation plans.

6.6.3 Evaluation of Results

The evaluation of results of environmental and social mitigation can be carried out by comparing baseline data collected in the planning phases with targets and post-project situations.

A number of indicators would be used in order to determine the status of affected people and their environment (land being used compared to before, how many clean water sources than before, etc). In order to assess whether these goals are met, the WaSSIP AF Environmental Safeguards Advisors will indicate in the EMP, parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities.

The following are some pertinent parameters and verifiable indicators/questions to be used to measure the ESMF process, mitigation plans and performance;

- *Have the Environment consultants trained WSB social and environmental Officers?*
- *Have the EMPs and Final Designs been cleared by the NEMA and the World Bank?*
- *Have the Civil Works Contractors got considerable legal muscle to enforce the EMP?*
- *At what rate are the civil works been monitored by WaSSIP AF and by the NEMA?*
- *How many violations of the contractors/transporters have been recorded and at what rate are they occurring.*
- *How many recorded grievance cases have been settled within one year?*

6.6.4 Monitoring of ESMF Implementation

In addition to the Project Reports and ESIA studies required under the EMCA, an Annual Audit on ESMF Implementation will be prepared by the WaSSIP AF and delivered to NEMA. In addition, each large project that has been subject to an EA study (or RAP etc) will also be required to produce an annual audit report, for delivery to NEMA.

6.6.5 Monitoring Roles and Responsibilities

WaSSIP AF Implementing Partner Institutions

All the WaSSIP AF implementing agencies identified under this project will monitor the specific components of the WaSSIP AF project that they are responsible for implementing. They will be required to prepare periodic (quarterly) monitoring reports for submission to the WaSSIP AF.

National Environment Management Authority (NEMA)

NEMA will play the leading oversight role of monitoring the activities of this project. The NEMA will carry out this role by ensuring that the environmental management plans (EMPs) contained in the cleared design package is being implemented as specified therein. NEMA will monitor the reports on a regular basis, perhaps quarterly. They will rely on a bottom up feedback system from the ground by going through the monitoring reports and making regular site visits to inspect and verify for themselves the nature and extent of the impacts and the success or lack off, of the mitigation measures.

WSB Environmental and Social Officers

The Water Services Board (AWSB, CWSB and LVNWSB) are expected to have in house environmental and social specialists but so far it is only AWSB that has this staffing. It is expected that the environmental specialist for the AWSB will provide oversight monitoring and evaluation of the project all through the implementation period. CWSB and LVNWSB are also advised in this report to consider recruiting this expertise on a full time basis or hire a consultant to undertake the above role.

Local Communities

Local communities will be useful agents in collection of data that will be vital in monitoring and as such they will play a role in the monitoring framework. Local communities in the project intervention areas will receive training and capacity building skills in data collection to be done by the implementing agencies so as to equip them with the ability to collect data.

6.6.6 Specific Community Groups

Water Users Association (WUA)

In 2002, the present Water Act (“the Act”) was enacted “to provide for the management, conservation, use and control of water resources and for the acquisition and regulation of the rights to use water ...”. In September 2007 the long-awaited Water Resources Management Rules (“the Rules”) were promulgated, helping to fill some of the gaps in the Act.

The Act is notable in general terms for devolving the management (not supply) of Kenya’s water resources to the Water Resources Management Authority (WRMA). This in turn is mandated by S 15 to “... formulate a catchment management strategy for the management, use, development, conservation, protection and control of water resources within each catchment area”. Kenya has been divided into six Catchment Areas.

One of the statutory ways to promote an effective catchment management strategy is for WRMA to “provide mechanisms and facilities for enabling the public and communities to participate in managing the water resources within each catchment area” (S 15(3)(e)). S 15(5) then goes on to say that “... the catchment management strategy shall encourage and facilitate the establishment and operation of water resources users associations as fora for conflict resolution and co-operative management of water resources in catchment areas.”

This is the only reference to WRUAs in the Act, almost as if they had been granted statutory recognition as something of an afterthought. The references to WRUAs in the Rules are more detailed, particularly regarding formation and also registration with WRMA, but despite this, the WRUA-WRMA relationship remains very ill-defined.

Water Users Associations in all the river basins in the WaSSIP AF area should be involved in the monitoring of the project implementation.

7 PROJECT COORDINATION AND IMPLEMENTATION ARRANGEMENTS

7.1 Projects and Sub-Project Preparation, Approval and Reporting

This section of the ESMF describes the process for ensuring that environmental and social concerns are adequately addressed through the institutional arrangements and procedures used by the project for managing the identification, preparation, approval and implementation of subprojects. This section sets out the reporting systems and responsibilities of the institutions in implementing the ESMF including the details to be addressed by the ESMF and the specific steps to be undertaken to ensure adherence to the ESMF.

7.2 Subproject Review

Subprojects and activities will each need to be reviewed for potential environmental and social impacts. The WaSSIP AF is expected to produce net benefits. However certain project activities may have environmental and social impacts that will require mitigation. For this reason, this project has been rated as Category B under the World Bank Policy on Environmental Assessment (OP 4.01), requiring Environmental Assessment.

7.3 EMPs for Large Sub Projects

All large sub projects in the WaSSIP AF project will be required to prepare an EMP hence automatic need for EA report. These include for example the Northern Collector sub project under AWSB; the construction of dams under LVNWSB among others. At the same time in cases where a full scale EIA is required, it will be paramount that the feasibility study occurs concurrent with the EIA study in order to ensure that the findings of the EIA are incorporated in the feasibility study at the design stage. This will ensure that environmental sound design including proposed mitigation measures as well as alternatives are incorporated in the feasibility reports at the design stage hence avoiding design change at an advanced stage.

The need for EA studies for all the large sub projects has already been factored in the feasibility and design studies where mandatory preparation of EIA and RAP is included.

7.4 Subproject Screening and Screening Checklist For Smaller sub projects

Smaller subprojects and activities (e.g. smaller water distribution projects; boreholes under drought mitigation; small earth dams; collapsible water tanks; mobile water treatment units; construction of small water supply pipelines etc) that fall under component B will each need to be reviewed for potential environmental and social impacts. Using the screening and review process for subproject identification presented here, will, therefore help determine which of the safeguard policies are triggered and what measures will need to be taken to address the potential adverse impacts.

The screening will further ensure that smaller subprojects that may have potential adverse impacts are studied in greater detail including need for subproject specific EIA. As part of the identification of sub-projects, the project proponent will prepare a simple screening checklist (*Format 1.0*).

The Primary Environmental Focal Persons (EFPs) shall be the Environmental Officers at the level of each of the Provincial Water Boards. It should be understood that these EFPs designated as such by the Boards shall where required or necessary undergo training in the screening process as contained in this ESMF.

It is the consultant's view such assignments will only apply to GOK sponsored or funded programs as opposed to Private Proponents of the afore-mentioned programs. In this latter case the Proponent is required to undertake the screening process him/herself using recognised consultants.

The EFP will complete the Environmental and Social Screening Form. Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, or recommend the execution of an Environmental Impact Assessment (EIA), if necessary.

7.4.1 Screening and sub project preparation

The screening will begin right at the time that the sub project has been identified including proposed location, scope and nature. The idea is to have the screening occur at the time of conducting feasibility studies so that any potential impacts identified through screening are immediately incorporated into the feasibility study hence ensuring that environmental sound design of the sub projects occurs right at the project design phase. This procedure will also apply when preparing the project report.

7.4.2 Who prepares a screening checklist?

The screening checklist will be prepared by the WSBs specifically they will be prepared by the Environmental specialist contracted by the boards. The screening checklist/form will be submitted to NEMA for review and approval. If NEMA determines that the impacts will be significant a project report will be required.

The reviewer of the screening checklist has an option to determine whether a more detailed Project Report, based on a field appraisal, is required. A Project Report (will require the DEO to briefly visit the proposed project site, interview the project proponents, and assess the project's impacts in view of their knowledge concerning environmental and social risks and concerns in the area.

In the eventuality that a subproject cannot be approved by NEMA on the basis of a Project Report, the proponent will be advised to undertake an environmental assessment and prepare an EMP. Project reports will be prepared by independent consultants registered by NEMA, who will be paid by the WSBs with funding from WaSSIP AF.

7.5 Screening Checklist Review Form

Based on this application, the proposal will be reviewed and selection for the next stage of evaluation undertaken. At this selection stage, a first level of environmental screening takes place on the basis of the screening checklist completed by the proponent in this case WaSSIP AF and done by the environmental specialist within the WSBs.

The screening checklist will be reviewed using the Review Form, to be completed either by the district environment officer. Where there are social impacts indicated, the form will have to be

reviewed in addition by Social Specialist in the WSBs. The form prompts the reviewer to verify the information provided by the proponent, and confirm the best course of action. The reviewer must consider the nature and location of the project and the anticipated impacts, and based on his/her judgment, confirm or propose the best course of action.

What measures will the project take to ensure that it is technically and financially sustainable?

[type here]

CONCLUSION

Which course of action do you recommend?

ESMP **RAP**

There are no environmental or social risks

[Type here]

If a RAP is required, will the project Displace or restrict access for less than 200 individuals, or if over 200, are losses for all individuals less than 10% of their assets?

If Yes, Prepare an abbreviated RAP

If No, Prepare a full RAP

Full details of resettlement requirements are provided in the accompanying Resettlement policy Framework.

Completed by: [type here]

Name: [type here]

Position: [type here]

Date: [type here]

Format 2.0: SCREENING CHECKLIST REVIEW FORM

	Yes	No
Based on the location and the type of project, please explain whether the Proponent’s responses are satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>
Their description of the compliance of the project with relevant planning Documents	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their responses to the questions on environmental and social impacts	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their proposed mitigation measures	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their proposed measures to ensure sustainability	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		

REVIEWER’S CONCLUSION

Which course of action do you recommend?

ESMP; **RAP**

There are no environmental or social risks

[Type here]

If a RAP is required, will the project displace or restrict access for less than 200

Individuals, or if over 200, are losses for all individuals less than 10% of their assets?

- If Yes,** Prepare an abbreviated RAP
If No, Prepare a full RAP

Full details of resettlement requirements are provided in the accompanying Resettlement Policy Framework. If this differs from the Proponent’s recommended course of action, please explain:

[Type here]

- Preparation of a project Report, based on field appraisal by NEMA District Officer, is required to investigate further, specifically to investigate:

[Type here]

- Reject**

Review form completed by: [type here]
Name: [type here]
Position / Community: [type here]

Project Reports are normally prepared as a means of informing NEMA of the proposed development such that after review of the report, NEMA advises on the need or otherwise for a full EIA. The EIA regulations allow for approval of proposed projects at the Project Report Stage and have been effectively used by NEMA to grant Environmental Licenses to small projects without requiring a full EIA.

Table 5: The NEMA Process for Approving Project Reports

Steps	Action	Actor	Time requirement
One	Submission of PR to NEMA. NEMA receives PR, issues a receipt and acknowledgement.	WSBs	To be undertaken by WaSSIP environmental and social specialists with input from the Safeguards Advisor
Two	NEMA mails PR to Lead Agencies	NEMA	7 days assuming all requirements are fulfilled
Three	Lead agencies review PR and issue comments	Lead Agencies	21 days (minimum) after receipt of PR from NEMA.
Four	Review of PR by NEMA	NEMA	30 days after receipt of PR.
Five	Communication of findings from NEMA review	NEMA	45 days after receipt of PR.

Typical outcomes of review of Project Reports from NEMA are likely to be as shown in **Table 6** below. These are as follows:

Project is approved. Where NEMA and Lead Agencies ascertain that a project report has disclosed adequate mitigation for identified impacts, the project is approved by NEMA upon which, conditions attached to grant of an Environmental License are issued. Once these are fulfilled, an Environmental License is also issued subject to conditions which will be specific to the scheme in question. Among these is the requirement that the scheme design should not be altered without approval by NEMA. As well, an audit report is required of each project after the first year of completion.

Project Report discloses potential for major irreversible adverse impacts. In this case, NEMA may not approve the project.

Table 6: Possible Outcomes of NEMA Review of Project Reports

Outcome	Recommendation	Important precautions
Project found to have no significant Social and Environmental Impacts or Project report discloses sufficient mitigation measures	An Environmental License will be issued by the Authority	Project report must disclose adequate mitigation measures and show proof of comprehensive consultations within the area of influence.
Significant adverse social and environmental impacts found or Project Report fails to disclose adequate mitigation measures.	A full cycle EIA will be required by NEMA	As above
A proponent is dissatisfied with the outcome of the NEMA review.	An Appeal is provided for	

Format 3.0: PROJECT REPORT FORM

WaSSIP AF	Select relevant project
Sub-project name	[type here]
Estimated cost (USD)	[type here]
What are the project objectives and Activities	[type here]
Reason for field appraisal, based on Issues in screening checklist	[type here]
Approximate size of the project in land area	[type here]
Approximately size of the project in terms of affected individuals	[type here]
How was the site of the sub-project chosen?	[type here]
Does the project comply with the most Relevant planning document, for example the Development Plan?	[type here]

Will the Project:	Yes	No
Adversely affect natural habitats nearby, including forests, rivers or wetlands?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Is the project sited within a strict protected area, national park, nature reserve, natural/historical monument or area of cultural heritage?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Require large volumes of construction materials e.g. gravel, stones, water, timber, firewood)?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Use water during construction, which will reduce the local availability of ground water and surface water?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Lead to soil degradation, soil erosion or soil salinity in the area?	<input type="checkbox"/>	<input type="checkbox"/>

Will the Project:	Yes	No
If 'Yes,' give details: [type here]		
Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Create pools of water that provide breeding grounds for diseases vectors (for example malaria or bilharzia)?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Involve significant excavations, demolition, and movement of earth, flooding, or other environmental changes?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Affect historically-important or culturally-important site nearby?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Require land for its development, and therefore displace individuals, families or businesses from land that is currently occupied, or restrict people's access to crops, pasture, fisheries, forests or cultural resources, whether on a permanent or temporary basis?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Result in human health or safety risks during construction or later?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Involve inward migration of people from outside the area for employment or other purposes?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Result in conflict or disputes among communities?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Affect indigenous people, or be located in an area occupied by indigenous people?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Result in a significant change/loss in livelihood of individuals?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		
Adversely affect the livelihoods and /or the rights of women?	<input type="checkbox"/>	<input type="checkbox"/>
If 'Yes,' give details: [type here]		

MITIGATION MEASURES

If you have answered **Yes** to any of the above, please propose adequate mitigation measures.

[Type here]

ALTERNATIVES

Is it possible to achieve the objectives above in a different way, with fewer environmental and social impacts? If yes, describe these alternatives, and state why they have been rejected.

[Type here]

OTHER OBSERVATIONS

Please describe any other observations, especially any related to the reason for the field appraisal.

[Type here]

CONCLUSION

- Approval:**
- There are no environmental or social risks
- Independent preparation of a Detailed Plan is required:
- ESMP**
- IPP**
- RAP**

If a RAP is required, will the project displace or restrict access for less than 200 individuals, or if over 200, are losses for all individuals less than 10% of their assets?

- If Yes,** prepare an abbreviated RAP
If No, prepare a full RAP

Full details of resettlement requirements are provided in the accompanying Resettlement Policy Framework.

- Reject**

Review form completed by [type here names of all contributors to the appraisal]

Name: [type here]
Position/ community: [type here]
Date: [type here]

In the eventuality that a Project cannot be approved by NEMA on the basis of a Project Report, the proponent will be advised to undertake full cycle ESIA leading to development of a fully fledged Environmental and Social Impact Assessment Study Report.

Scoping Report

Firstly, on advice from NEMA, the proponent will prepare a Scoping Report specifying the project's area of influence, the thematic scope and depth of assessments required, the composition of the required EIA team, and the probable budget required to mount the EIA Study.

ESIA Study

Upon review and approval of the Scoping Report, NEMA will advise that an ESIA Study be undertaken. The ESIA Study will entail a systematic investigation of all impact areas as identified in the scoping report, taking care to document the current baseline environment, resource exploitation patterns and ecological pressure points. It is mandatory for the ESIA study to undertake public consultation with all stakeholders in the project's area of influence. The ESIA Team should note and understand all stakeholder interests so as to cater for them in the ESMP. All accruing information will be written into a Draft ESIA Report prepared in the same format as

the project Report and submitted to NEMA for review. Upon review of this report, it will be subjected to public review.

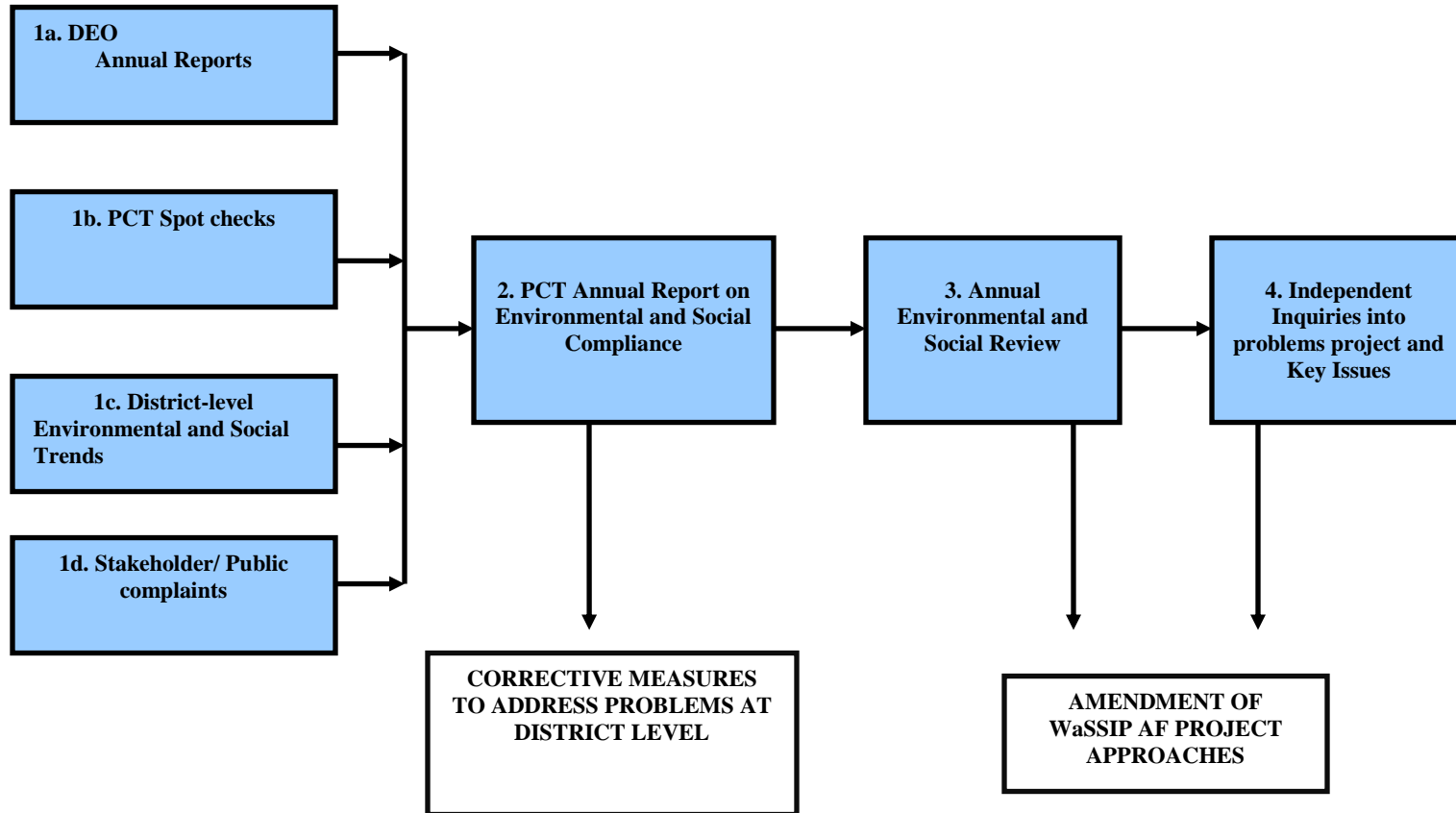
Public Review of the ESIA Report

This will entail exposure of all the EIA documents at strategic points within the project's area of influence so as to allow all stakeholders to read and understand how they stand to be affected by the project. The public review has to be advertised twice in local dailies that are widely read in Kenya, and are often supplemented by public hearings organized by NEMA where the project is explained to local stakeholders. Upon expiry of the public review period, the ESIA team will organize the written comments either into an additional chapter or a volume to the ESIA report. This chapter will clearly explain how each of the comments and concerns have been addressed and resolved. This will be issued under the same conditions as is the case of the project report.

7.6 Overall Project Compliance and Reporting

Owing to the significant nature of some of the project activities, a strict system of compliance monitoring and reporting will be adopted. *Figure 4 sets out the key reporting lines and triggers.*

Figure 4; The key reporting lines and triggers.



7.6.1 Annual Reports

Forms proposed for completion on an annual basis are set out in Formats 4 and 5 below. These will comply with Kenya EIA regulations, and will provide:

- A means of communication between districts and PSC team at national level (i.e. through the Environmental Officer in the PCT), and between the PCT and the relevant government departments;
- A paper trail of experience and issues running from year to year throughout the project;
- Practical information from which the Environmental Officers Officer can assess strategic effectiveness of the proposed plans in achieving project objectives;
- Practical information from which the Environmental Officers in the PCT and the consultant used to carry out the annual performance audit can draw on.

The District-level annual report will be completed with input in the appropriate sections by the District Environment Officer. The objective of the report is to feedback on activities and observations from sub-projects implemented over the review period in the district. The form will be submitted to the District Environment Committee and the PCT.

This national-level annual report is to be completed by the PCT principally by the Environmental Officer. The objective of the report is to consolidate and summarize the feedback from the districts, and assess the overall progress of the WaSSIP AF projects against objectives.

Format 4.0: ANNUAL REPORT FORM FOR THE DISTRICT LEVEL

WaSSIP AF project: select relevant project

District: [type here]
 Reporting year: [type here]
 Date of report: [type here]

PROJECT SUMMARY

Please enter numbers of sub-projects in the following table:

	Approved this year	Application included a screening checklist	Community carried out mitigation without advice	WaSSIP AF provided advice on mitigation	Field Appraisal	ESMP	RAP
CATEGORY B							
Construction of dams							
Construction of water treatment works							
Construction of transmission pipelines							
Construction of sewer lines							
Construction of water distribution networks,							
construction of water treatment networks and boreholes							
Total							

CATEGORY B – Results of ESMPs, RAPs etc

Type of projects that have been subjected to ESMP, RAPs etc	Impacts identified included:	Are mitigation or monitoring measures being carried out adequately? If not, why not?
[type here]	[type here]	[type here]

MANAGEMENT ISSUES

Have you or your predecessor been involved in the targeting or identification of sub-projects?

<input type="checkbox"/> Yes <input type="checkbox"/> No If `Yes` ,please describe: [type here]

--

Have communities been involved in the targeting or identification of sub-projects?

<input type="checkbox"/> Yes <input type="checkbox"/> No
If `Yes`, please describe : [type here]
Please explain any participatory issues that have impacted ability of communities to identify sub-projects : [type here]

Please describe the activity of the following actors on environmental and social issues in your district this year

	Activity
Government line agencies working with WaSSIP AF on environmental and/ or social issues	[type here]
NGOs in partnership with WaSSIP AF to examine environmental and / or social issues	[type here]
DEC	[type here]

Summarise any gaps /non –compliance in environmental and /or social activities:

Key gaps /areas of non – compliance	Summary of key conclusions	Follow up activities recommended
[type here]	[type here]	[type here]

STRATEGIC IMPACT

Is the project contributing to improved watershed sustainability in this district?

- Yes**, is contributing to an overall improvement
- No**, it's worsening watershed degradation / it's having a negative impact on the environment
- Too early to say

Please explain:

[type here]

Is the project contributing to increased welfare in this district?

- Yes**, it's contributing to an overall improvement
- No**, it's reducing income generating opportunities / having a negative impact on socio development
- Too early to say

Please explain

[type here]

Has there been any analysis of cumulative environmental impacts in your district? If `yes` please describe. If No` tick here

Activity review or study	Summary of key conclusions	Was the work successful? e.g. were its recommendations carried out? If not, why?
[type here]	[type here]	[type here]

Have there been any other environmental or social analyses that have been carried out in the district?

Examples of activities reviews or studies	Summary of key conclusions	Levels of success in achieving objectives. If not successful, why not?
[type here]	[type here]	[type here]

Has there been any analysis of `catchment management plans in your district? If `Yes, please describe. If No` tick here

Activity , review or study	Summary of key conclusions (e.g. does the catchment management plan `fit` with the River Basins Management plan?)	Was the work successful e.g. were its recommendations carried out? If not, why?
[type here]	[type here]	[type here]

POLICY AND INSTITUTIONAL

Please describe the activity of the projects in addressing policy constraints that affect environmental and social sustainability

Policy issue	Reforms required
[type here]	[type here]

Are there any policy issues that limit environmental and /or social sustainability that require addressing at a national level?

Policy issue	Reforms required
[type here]	[type here]

TRAINING

Please list the training you have received under the WaSSIP AF projects or otherwise	List TWO key areas of training you need in order to carry out your role in managing environmental and social issues in the WaSSIP AF Projects
[type here]	1) [type here] 2) [type here]

Please list the training others have received under	List TWO key areas of training that you
---	---

the WaSSIP AF projects or otherwise	suggest other agencies require , in order to improve environmental and social management :
[type here]	1) [type here] 2) [type here]

Completed by:

[type here the names of all those who have contributed to completion of the form e.g. DEO]

Position:

[type here position of all contributors to the report]

Date: [type here]

Format 5.0: ANNUAL REPORT FORM TO BE COMPLETED BY WaSSIP AF PCT ENVIRONMENT SPECIALISTS

Project reference year: [type here]
 Reporting year: [type here]
 Date of report: [type here]

PROJECT SUMMARY

Please enter numbers of micro-project in the following table (i.e. insert totals from district reports):

Please enter numbers of sub-projects in the following table

	Approved this year	Application included a screening checklist	Community carried out mitigation without advice	WaSSIPAF provided advice on mitigation	Field Appraisal	ESMP	RAP
CATEGORY B							
Construction of dams							
Construction of water treatment works							
Construction of transmission pipelines							
Construction of sewer lines							
Construction of water distribution networks,							
construction of water treatment networks and boreholes							
Total							

CATEGORY A – Results of ESMPs, RAPs etc

Type of projects that have been subjected to ESMP, RAPs etc	Summary of typical Impacts identified:	Effectiveness of mitigation or monitoring measures carried out. Explain instances where not effective
[type here]	[type here]	[type here]

Describe key unforeseen environmental and /or social problems associated with any sub-projects:

Problem	Actions taken	Actions to be taken
[type here]	[type here]	[type here]

--	--	--

MANAGEMENT ISSUES

Summarise, from the district reports, the ways in which District Environment and Development Officers have been involved in the targeting or identification of any sub-projects under the WaSSIP AF projects.

[type here]

Summarise the extent to which communities have been involved in the targeting or identification of sub-projects.

[type here]

Please summarise any key participatory issues that have impacted communities’ ability to target or identify projects:

[type here]

Please summarise key points concerning the activities of the following actors on environmental and social issues in the districts

	Activity
Government line agencies working with WaSSIP AF on environmental and/ or social issues	[type here]
NGOs in partnership with WaSSIP AF to examine environmental and / or social issues	[type here]
DEC	[type here]

Summarise any gaps /non –compliance in environmental and /or social activities:

Key gaps /areas of non – compliance	Summary of key conclusions	Follow up activities recommended
[type here]	[type here]	[type here]

STRATEGIC IMPACT

Is the project contributing to improved watershed sustainability in project area?

- Yes**, it’s contributing to an overall improvement
- No**, it’s worsening watershed degradation / it’s having a negative impact on the environment
- It’s contributing to improvements in some micro-catchment areas, and deterioration in others
- Too early to say

Please explain:

[type here]

Is the project contributing to increased social benefits (both financial and non-financial) in the project area?

- Yes**, it's contributing to an overall improvement
- No**, it's reducing income generating opportunities / it's having a negative impact on socio development
- It's contributing to improvements in social benefits in some areas, and deterioration in others
- Too early to say

Please explain

[type here]

Summarise key activities to analyse cumulative environmental impacts:

Examples of activities reviews or studies	Summary of key conclusions	Levels of success in achieving objectives. If not successful, why not?
[type here]	[type here]	[type here]

Summarise any other environmental or social analyses that have been carried out in the districts?

Examples of activities reviews or studies	Summary of key conclusions	Levels of success in achieving objectives. If not successful, why not?
[type here]	[type here]	[type here]

Summarise any assessments that have been undertaken with respect to the catchment management plans.

Examples of activities, reviews or studies	Summary of key conclusions	Level of success in achieving objectives. If not successful, why not?
[type here]	[type here]	[type here]

Summarise your overall conclusions on the strategic fit and effectiveness of the catchment management plans in relation to the Catchment Management Plan including any revision that should be made to the Catchment Management Plan.

Please explain:

[type here]

POLICY AND INSTITUTIONAL

Please describe the activity of the projects in addressing policy constraints that affect environmental and social sustainability:

Policy issue	Reforms required
[type here]	[type here]

Are there further policy issues that limit environmental and /or social sustainability that require addressing at a national level? (Please describe, citing any relevant experiences from the districts)

Policy issue	Reforms required
[type here]	[type here]

TRAINING

Based on feedback from the districts, what are the 3 priority training requirements identified under the WaSSIP AF projects?

Training requirement	Who for
1) [type here]	1) [type here]
2) [type here]	2) [type here]
3) [type here]	3) [type here]

Completed by:

[Type here the names of all those who have contributed to completion of the form e.g. Environmental Officer and Monitoring and Evaluation Officer]

Position:

[Type here position of all contributors to the report]

Date:

[Type here]

8 CAPACITY BUILDING, TRAINING AND TECHNICAL ASSISTANCE –WaSSIP AF

Effective implementation of the Environmental and Social Management Framework (ESMF) will require technical capacity in the human resource base of implementing institutions as well as logistical facilitation. Implementers need to understand inherent social and environmental issues and values and be able to clearly identify indicators of these.

The need to increase environmental and social management capacity at LVWSB and to a lesser extent, at CWSB, is recognised and has been budgeted for in the project cost. At present, capacity is supplemented by high quality local environmental consultants.

While undertaking this study a capacity needs assessment was inbuilt to identify strengthening needs on social and environmental evaluation, screening, mitigation and monitoring. Capacity enhancement was consolidated into two key areas; human and institutional resources capacity. These are discussed in detail below.

8.1 Technical Capacity Enhancement

Awareness creation, training and sensitization will be required for personnel of the following institutions.

- *National Environment Management Authority*
- *Environmental and Social officers for the 3 WSBs*
- *Local Engineering Contractors who will be contracted or sub contracted to undertake the construction works*
- *Local governments authorities*
- *District Environment Officers,*

8.2 Training will focus on:

- *Stakeholder engagement, consultation and partnerships;*
- *EIA law, relevant environmental policies;*
- *Development of mitigation measures and Environmental Management Plans*
- *Thorough review of Country EIA procedures, Environmental Management policies & guidelines and WB safeguards as well as their implementation and enforcement.*
- *The group will also be trained on use and application of ESMF tools (Screening checklists, EA), their review, implementation and enforcement.*
- *Participants will be trained on environmental reporting, monitoring and follow-up of ESMF*
- *Significant emphasis will be placed on understanding EIA procedures, Environmental Management policies & guidelines, WB safeguards, implementation and enforcement*
- *Reporting, monitoring and follow-up of ESMF*

In order to reduce costs, minimize duplication of efforts and integrate existing technical expertise, officers with relevant knowledge and experience in particular fields will be used to train the others. As an example the District Environment Officers can be used to train on requirements of the EMCA and associated guidelines and regulations.

Table 7; Trainings and Target groups

Training Aspect	Target group
EIA law, relevant Environment policies and World Bank Safeguard Policy and guidelines	Government agency representatives including district-level officials, NGOs, CBOs.
Relevant social laws and policies	Government agency representatives including district-level officials, Local Government, Private Sector, NGOs, CBOs and community members.

Table 8: Training directly linked to implementation ESMF

	<i>PSC and Central Gov.Agencies</i>	<i>Local Auth.</i>	<i>Private Sector</i>	<i>NGO & CBO</i>	<i>Community</i>
Role of ESMF in WaSSIP AF	A	S	S	S	S
Identification of Indicators and data collection		TS	TS	TS	TS
Identification of environmental and social Impacts		T	T	T	T
Determination of negative and positive projects and sub projects	T	T	T	T	A
Development of mitigation measures and Environmental Management Plan including Institutional Responsibility Framework and Budget.		T	T	T	T
EIA procedures, Environmental Management policies & guidelines, WB safeguards, implementation and enforcement	T	S	S	S	S
Use and application of ESMF tools (Screening checklists, EIA, EA)	T	T	T	T	T
Review of ESMF tools, implementation and enforcement	T	T	S	T	S
Reporting, monitoring and follow-up of ESMF	S	T	T	T	S

* Training of community members at the grassroots level will be undertaken by extension officers on site.

A=Awareness-T=Training-S=Sensitization

The training and capacity building exercises will take into consideration during their development, the integration and fulfilment of the requirements of World Bank social and environmental policies and guidelines, as well as those on Environmental Protection (including relevant policies, regulations and guidelines). Where institutional capacity in terms of availability of human resource is inadequate, the project will engrain support for this through hiring of qualified staff to provide necessary expertise.

Inadequacy in institutional infrastructure, facility resources and equipment will be addressed through an initial needs assessment or the identified implementing institutions and a gap analysis generated. The project will develop a priority list and thereafter provide financial support to

purchase necessary equipment and facility strengthening items. The priority list will ensure that key necessities to successful implementation of the ESMF are addressed in order of their strategic importance.

Training directly linked to the implementation of the ESMF should be undertaken first and subsequently followed with regular interval training on aspects influencing success of ESMF. The training program/agenda below provides a sample training outline and course content. The training programmes have been clustered into appropriate groups to facilitate for various target groups. Target groups for training, awareness and sensitization will be as follows.

- DEOs
- NGO & CBO Project Team Leaders
- Contractors managers and personnel

Table 12: Estimated Capacity Building Budget								
Component	subcomponent	Activity	Budget US\$					Total US\$
			Year 1	Year 2	Year 3	Year 4	Year 5	
Implementation of ESMF	Public / institutional Consultations on EMSF implementation	Involves the holding public forums, consultations with relevant authorities on implementation of EMSF, the institutions involve, KWS, KFS, Kenya Museums, NEMA	1,000	1,000	1,000	1000	1000	5,000
	District Level players Sensitization through Seminars (Water Service providers, District Environment Officers, DFOs, DDC, DWO, Private sector)	Detailed training on use implementation and management of ESMF and associated tools (SEA, EIA, EA, Screening checklists	5,000		5,000		5000	15,000
Subtotal								20,000
Technical capacity building for WaSSIP 2	Training of PIU in the three WSB Environmental Safeguards (national and International)	Capacity building in of the PIU in World Bank Operation Policies, Implementation of RAPs and EMPs, the training is estimated for 6 persons from all the WSB	20,000		20,000			40,000
	Training (workshops and Seminars)	Annual seminar at least 2 for 15 persons from the 3 boards running for 2 days.	5,000		5,000			10,000
	Technical Assistance	One Long term technical Assistant for the three Boards for a period of at least one year.						10,000
Subtotal								60,000
TOTAL								80,000

*the funds for the capacity building budget are under the WaSSIP Additional Financing procurement plan for consultancy services and training (workshops and tours)

8.3 ESMF Implementation Budget

The breakdown of estimated costs for implementing the ESMF is provided in Table 9 and 10. This includes costs for undertaking capacity building as outlined below.

ESMF Implementation Budget for WaSSIP AF Project

The estimated total cost for ESMF implementation is indicated in the table 13 below and included the resettlement implementation costs.

Table 10. Overall costs for implementation of ESMF and RAPs in WaSSIP AF

Water Services Board	Amount in USD
Athi Water Services Board	3,000,000
Coast Water Services Board	2,000,000
Lake Victoria North Water Services Board	2,000,000

8.3.1 Mainstreaming Costs

Some costs of environmental management and impact mitigation are directly integrated into the main project budget. Specifically these are:

- *Costs related to mitigation measures for subprojects, which will be assessed and internalized as part of the overall subproject cost; and*
- *Cost of studies related to strategic issues of natural resource management, which are internalized.*

8.3.2 Costs of Training

The total estimated cost for expenses associated with training and sensitization is included in Table 12 above.

9 PUBLIC CONSULTATION AND DISCLOSURE

The objective of the public consultations with stakeholders is gather information on their concerns, perceptions and fears of the livelihood changes to be brought about as a result/consequence of WaSSIP AF project .

Public consultations will be organized as a way to collect first-hand accounts of benefits and grievances from interested/and affected parties by WaSSIP AF project. Consultation will involve organized group discussions with purposively selected individuals/stakeholders to gain information on their concerns, perceptions, reactions and experiences as a result/consequence of WaSSIP AF project.

A stakeholder mapping exercise will be conducted to identify all the stakeholders within and in the surrounding area including local community, local authorities, civil society, government ministries and agencies, government projects and private sector among other stakeholders.

Most have already been extensively consulted under the original WASSIP project.

For example, the 2009 consultations on the EIA for the Bulk Water Supply Project, Mzima Pipeline, under the **Coast Water Services Board**, provide an excellent example of participatory consultation, employing household surveys, interviews and focus groups, and involving local inhabitants, Kenya Wildlife Service, medical officials, district officers, and water service providers. Work is thorough and a detailed analysis of findings is presented.

Stakeholders have recommended the following to avoid vandalization of the Mzima pipeline:

- Increase of community water kiosks to reduce distances covered while fetching water;
- Provision of watering troughs for cattle;
- Provision of water for irrigation.

In the very comprehensive minutes of the stakeholder meetings held for the **Lake Victoria North Water Services Board** projects common concerns (and responses) included:

- Pipelines being laid through individual plots. (*Compensation was provided through the RAPs*).
- Low income groups were concerned about affordability and access to water. (*Water Kiosks will be located in low income areas as identified and tariffs will take into account affordability of water by low income groups.*)
- How will the new supply cater for the likelihood of population growth within urban areas? (*The design is intended to cater for the present demand and the projected future demand up to the year 2025. The system will undergo expansion in the future based on demand growth and as funds become available.*)

- Will rationing be introduced during the dry season? (*The new source has adequate flow to supply water without rationing. However, during extreme dry periods some rationing may be inevitable.*)
- Can we use the water for irrigation? (*The Project Objective is to provide potable water for drinking, livestock, health and educational institutions, etc. not for irrigation.*)
- Will the local community benefit from employment opportunities during the implementation of the project? (*According to the requirements of the contract, all unskilled and casual labour should come from the local community.*)

In the **Athi Water Services Board** projects, key issues were around the need for prompt compensation, the need to provide local employment, and the establishment of local committees to liaise with the Water Services Board during and after construction. Stakeholders welcomed the opportunity to be connected to the sewage system, rather than continued reliance on septic tanks.

Minutes of consultations on the subprojects under the original WASSIP, and those sub-projects carried forward into WASSIP AF, are included in the EMPs and EIAs for these sub-projects. Because these minutes contain personal information on the stakeholders, they will be re-disclosed on the websites of the Water Boards, and in the Bank Info Shop, once this information has been removed. Consultations will be conducted for the subprojects as they are identified.

A stakeholders meeting was held on 30th August 2011, informing all stakeholders about one of the key sub-projects that is being considered under WASSIP AF – the Northern Collector Tunnel Phase I from Maragua, Gikigie and Irati Rivers to Thika reservoir . The Proceedings of that Stakeholders Workshop are attached to the EIA for that project. Amongst the points presented were the perceived environmental impacts and their potential mitigation.

Consultations on the ESMF will be undertaken on December 15th, and the conclusions will be provided in the final version of this ESMF.

10 REFERENCE

1. Environmental and Social Management Framework (ESMF) for WaSSIP 2007
2. Government of Kenya Environmental Management and Coordination Act 1999
3. Government of Kenya Land Control Act
4. Government of Kenya Local Government Act
5. Government of Kenya Physical Planning Act
6. Government of Kenya Public Health Act
7. Government of Kenya Vision 2030
8. Government of Kenya Water Act 2002
9. Government of Kenya Wildlife Conservation and Management Act
10. Indigenous People Policy Framework (IPPF) For WaSSIP 2007
11. Project Concept Note for WaSSIP AF
12. Technical Mission Aide Memoire
13. WaSSIP Additional Financing Project Appraisal Document (PAD)
14. WaSSIP Additional Financing Project Information Document (PID)
15. World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines"). <<http://www.ifc.org/ifcext/sustainability.nsf/Content/EHSGuidelines>>
16. World Bank Project Concept Note and Integrated Data Sheet

II ANNEX

11.1 Annex A. Stakeholders Consulted

This section has been deliberately left blank pending additional stakeholder consultations to those described in Chapter 9 above. They will be incorporated into the final draft.

11.2 Annex B Suggested Format for EA Studies

The environmental impact assessment study report will incorporate, but not be limited to, the following information:

- a) *The proposed location of the project including map;*
- b) *A concise description of the national legislative and regulatory framework, baseline information, and any other relevant information related to the project;*
- c) *The objectives of the project;*
- d) *The technology, procedures and processes to be used in the implementation of the project;*
- e) *The materials to be used in the construction and implementation of the project;*
- f) *The products, by-products and waste generated by the project;*
- g) *A description of the potentially affected environment;*
- h) *The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long term effects anticipated;*
- i) *Alternative technologies and processes available and reasons for preferring the chosen technology and processes;*
- j) *Analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies;*
- k) *An environmental management plan proposing measures for eliminating, minimizing or mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures;*
- l) *Provision of an action plan for the prevention and management of foreseeable accidents and hazardous activities in the cause of carrying out activities or major industrial and other development projects;*
- m) *The measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies;*
- n) *An identification of gaps in knowledge and uncertainties which were encountered in compiling the information;*
- o) *An economic and social analysis of the project;*
- p) *An indication of whether the environment of any other state is likely to be affected and the available alternatives and mitigating measures; and*
- q) *Any other matters as NEMA may require.*

11.3 Annex C. Suggested Format for a Simple EMP

The ESMF emphasizes that an environmental management plan (EMP) should fit the needs of a subproject and be easy to use. The basic elements of an EMP are:

- *A description of the subproject activity;*
- *A description of potential environmental impacts;*
- *A description of planned mitigation measures;*
- *An indication of institutional/individual responsibility for implementing mitigation measures (including enforcement and coordination);*
- *A program for monitoring the environmental effects of the subproject both positive and negative (including supervision);*
- *A time frame or schedule; and*
- *A cost estimate and source of funds.*

<i>Subproject Activity</i>	<i>Potential Environmental Impacts</i>	<i>Proposed Mitigation Measures</i>	<i>Responsibility (including Enforcement and coordination)</i>	<i>Monitoring Requirements (including supervision)</i>	<i>Time Frame or Schedule</i>	<i>Cost Estimate</i>
[type here]	[type here]	[type here]	[type here]	[type here]	[type here]	[type here]
[type here]	[type here]	[type here]	[type here]	[type here]	[type here]	[type here]
[type here]	[type here]	[type here]	[type here]	[type here]	[type here]	[type here]

The above matrix should be filled out for each subproject that will have the need for a separate EMP (the screening process using the screening checklist should determine this).