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PROJECT: KENYA TOWNS SUSTAINABLE WATER SUPPLY AND SANITATION PROGRAM

COUNTRY: KENYA

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK SUMMARY

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ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

SUMMARY

Project Name:	**KENYA TOWNS SUSTAINABLE WATER SUPPLY AND SANITATION PROGRAM**
Project Number:	**P-KE-E00-011**
Country:	**KENYA**
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1. Introduction

Rapid urbanization in Kenya has been highly successful in supporting gross domestic product (GDP) growth, economic transformation, income, and employment creation. Towns have become the engines for spurring sustainable economic growth and social development. More so, following the promulgation of the Constitution of Kenya 2010, the new 47 County Governments are now responsible for devolved services resulting in an increase in the urban population and it is projected that by 2030, more than half of the people in Kenya will be living in towns and cities, seeking jobs, housing, infrastructure, and other services.

While vibrant cities are critical for the economic development of the country, it also poses a challenge to the water and sanitation sector, which is currently making efforts to cope with the rapid growth in demand and demographic changes. Despite increased government investments in the sector (from $5 million to $450 million in 10 years), access to water and sanitation services still remains low at 56% and 70% respectively; well below the Sustainable Development Growth (SDG) targets. This is partly due to rapid urbanization, population growth, and weak institutional capacity of the sector as well as negative impacts of climate change.

The Government of Kenya (GoK) has shown consistent commitment to the sector reform since their start in 2002 and development partners continue to support the reform process. The GoK through the Ministry of Water and Irrigation continues to pursue development programmes related to water among others in pursuit of attaining universal coverage of water services and sanitation by 2020. This is guided by the National Water Services Strategy (NWSS) and prioritized in the Second Medium Term Plan (MTP) 2013-2017.

The GoK has requested the African Development Bank (AfDB)'s support to finance the Kenya Towns Sustainable Water Supply and Sanitation Program (KTSWSSP) with the aim of improving the access, quality, availability and sustainability of water supply and wastewater management services in multiple towns with a view to catalyzing commercial activities, driving economic growth, improving quality of life of people and building resilience against climate variability and change. In addition to addressing the challenges posed by insufficient infrastructure base and weak institutional capacity, the proposed program will further support the reform initiatives such as regular performance monitoring and tariff reviews by Water Services Regulatory Board (WASREB) providing the basis for sustainability of the water services

institutions that have been set up. The proposed program will build on the success of the 2009 Small Towns, Rural Water Supply and Sanitation project financed by the African Development Bank, which helped improve access to clean water and sanitation (including sewerage) services to 778,700 and 741,635 people respectively in specific small towns within the Lake Victoria South, Tanathi and Tana Water Service Board (WSB) districts.

The program is proposed to cover 28 towns comprising multiple small to medium scale subprojects spread across Kenya. The locations and detailed designs including environmental and social aspects of each subproject will be appraised and finalized during program implementation, hence an ESMF provides a general impact identification framework to assist project implementers to screen the subprojects and institute measures to address adverse environmental and social impacts. ESMF is prepared for Bank operations that finance multiple small to medium scale sub-projects whose location, scope and designs may not be precisely known at the time the Bank appraises and approves the operation. Consequently, environmental and social assessment and other safeguard measures can be confirmed during project implementation phase.

2. Description of the Programme

The Kenya Towns Sustainable Water Supply and Sanitation Program (KTSWSSP) aims to improve the access, quality, availability and sustainability of water and wastewater services in regional centres and towns. This is expected to catalyse commercial activities, drive economic growth, improve quality of life of people and build resilience against climate variability and change.

The KTSWSSP is composed of 3 components namely: (i) Water and Wastewater infrastructure development; (ii) Institutional Development Support; and (iii) Program Management.

Component I: Water & Sanitation Infrastructure Development:
This component will finance the construction, rehabilitation and expansion of water supply infrastructure (intakes, pipelines, water treatment plants, reservoirs, networks, metering) and construct, rehabilitation and expansion of wastewater management infrastructure for 28 sub-projects.

Component II: Institutional Development Support
This component will finance institutional and capacity assessments, assist Water Service Providers (WSPs) in updating business plans; enhance the capacity to improve technical, commercial, and financial performance; provide support in reducing the unaccounted for water (UfW); support to improve the billing and revenue collection systems; and provide laboratory equipment which are required for the monitoring of water and wastewater quality. This component will provide support to the WSPs in terms of assisting WSPs and WASREB in updating of the business plans; enhance the capacity to improve technical, commercial, and financial performance; provide support in reducing the non-revenue water (NRW); support to improve the billing and revenue collection systems; sanitation and hygiene promotion; and

provided laboratory equipment which are required for the monitoring of water and wastewater quality. Preparation of future investment projects will also be supported under this component.

Component III: <u>Program Management</u>

Program Management will support technical assistance for program management. A program implementation team will be created with adequately skilled personnel seconded from all concerned Water Service Boards (WSBs). This component will entail; support to the daily operation of the program; implementation of environmental and social management plans (ESMPs); as well as program audits. A program implementation team will be created for each cluster of WSBs, staffed by adequately skilled personnel seconded from concerned WSBs. This component will entail support to the daily operation of the program, implementation of environmental and social management plans (ESMPs) and program financial and technical audits.

Figure 1: Map of Sub-Project Areas



Source of map: http://www.mapsofworld.com/kenya/

: Towns covered by ongoing Small Towns and Rural Water Supply and Sanitation Project

: Propose towns under the proposed program

3. Policy, Legal and Administrative Framework

Kenya Legislation

The Environment Management and Coordination Act (EMCA), 1999 provides the principal legal and institutional framework under which the environment is managed in Kenya. EMCA is implemented by the guiding principle that every person has a right to a clean and healthy environment and can seek redress through the High court if this right has been, is likely to be or is being contravened. Environmental Impact Assessments (EIAs) are guided by the EMCA through the National Environment Management Authority (NEMA). The preparation of EIAs and subsequent approval procedures are set out in the EIA Study, legal notice 101 of 2003. The provision of water supply services falls under Water Supply and Sewerage Disposal Works EMCA schedule 2 activities and is therefore, expected to comply with the EIA requirements under the same Act and its regulations.

Further to the EMCA, other policy and legal frameworks that govern environmental and social performance include the Water Act, which makes provision for the conservation, control and protection of water resources in Kenya. The Act prohibits the discharge of effluents into sewers and water bodies without consent and appropriate license.

The Government of Kenya has no legal framework or policy for resettlement, however provisions are made for land acquisition and compensation under a number of Acts including: (i) The Trust Land Act (CAP 28) states that while giving due considerations to the rights and obligations of landowners, there shall be compensation whenever a materials site, diversion or realignment results into relocation of settlement or any change of user whatsoever of privately owned land parcels; (ii) The Way Leaves Act (CAP. 292) Section 3 of the Act states that the Government may carry any works through, over or under any land whatsoever provided it shall not interfere with any existing building or structures of an ongoing activity. Notice, however, will be given one month before carrying out any such works (section 4) with full description of the intended works and targeted place for inspection. Any damages caused by the works would then be compensated to the owner as per section. Finally section 8 states that any person without consent causes any building to be newly erected on a way leave, or cause hindrance along the way leave shall be guilty of an offence and any alternations will be done at his/her costs; and (iii) The Land Acquisition Act (CAP 295) provides for the compulsory or otherwise acquisition of land from private ownership for the benefit of the general public. Section 3 states that when the Minister is satisfied on the need for acquisition. Notice will be issued through the Kenya Gazette and copies delivered to all the persons affected. Full compensation for any damage resulting from the entry onto land to things such as survey upon necessary authorization will be undertaken in accordance with section 5 of the Act.

The Bank's Environmental and Social Safeguards Policy

The Bank's Integrated Safeguards Policy Statement sets out the basic tenets that guide and underpin the Bank's approach to environmental safeguards. In addition, the Bank has adopted five Operational Safeguards (OSs), limiting their number to just what is required to achieve the goals and optimal functioning of the ISS. The ISS, specifically OS 1, requires the preparation of

an Environment and Social Management Framework (ESMF), which establishes a mechanism to determine and assess future potential environmental and social impacts of the KTSWSSP. The program has been classified environment category "2", which implies that the program has limited adverse environmental and social impacts, and may trigger the following safeguard policies:

Safeguard Policies Triggered	**Yes**	**No**	**TBD**
Environmental and Social Assessment (OS 1)	**X**		
OS 1 is triggered since the KTSWSSP will finance civil works involving the construction and rehabilitation of water and wastewater related infrastructures. These activities are likely to pose environmental and social risks associated with the biophysical and socio-economic profiles of the sub-project areas. In accordance with the Kenyan regulation, full ESIAs will be prepared for each subproject to provide a comprehensive analysis of the environmental and social footprint of the proposed investments. These risks will be managed through implementation of mitigation measures resulting from site specific Environmental and Social Management Plans (ESMPs). The ESIAs will be assessed and approved by the national NEMA, who will issue licences as approval for the implementation of the subprojects. This ESMF establishes a mechanism to determine and assess future potential environmental and social impacts, guide the development of ESIAs associated with the implementation of the KTSWSSP activities, and sets out the mitigation, monitoring and institutional measures to be taken during operations of these activities.			
Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation (OS 2)	**X**		
OS 2 is triggered because the KTSWSSP may involve land acquisition and/or restrictions of access to existing infrastructures. Isolated cases of encroachment to public land have been identified for some subproject investments, and in other cases sections of private land may be acquired along pipeline routes; which requires the preparation of Resettlement Action Plans (RAPs). Preparation and approval of the RAP have been mandated by the AfDB and set as the preconditions for the finance of each subproject. RAPs will be prepared for any subproject activity that causes involuntary acquisition of land and other assets resulting in: (i) relocation or displacement, (ii) loss of assets or temporary access to assets, (iii) loss of income sources or means of livelihood, and (iv) loss of land. The individual RAPs are being prepared by respective water service boards and agreed to finalize for approval by NEMA and the Bank before program implementation.			
Biodiversity and Ecosystems Services (OS 3)	**X**		
The Program infrastructures shall involve construction on existing and new systems including forest areas; hence OS.3 is triggered. The associated risks will be avoided/mitigated in accordance to the measures elaborated in the site-specific ESMPs.			
Pollution Prevention and Control, Hazardous Materials and Resources Efficiency (OS 4)	**X**		
OS.4 is triggered due to possible contamination of aquatic ecosystems from pollutants of			

Safeguard Policies Triggered	Yes	No	TBD
construction machinery. The Program's wastewater management investments shall utilize raw materials both during construction and operation phase that could result to pollution of biophysical environment if not handled appropriately. More-so, appropriate license shall be secured from NEMA to ensure wastewater discharges meet national requirements.			
Labor Conditions, Health and Safety (OS 5)	**X**		
The Contractor shall comply with the Labour laws and Best Practice Occupational Health and Safety requirements.			

According to the Climate Safeguards Screening, the KTSWSSP has been assessed Category II indicating the program interventions may be vulnerable to climate risk. Hence, an assessment of the climate change impacts shall be evaluated using the Bank's Adaptation Review and Evaluation Procedures (AREP) under the Bank's Climate Safeguards System (CSS). This will help identify an appropriate adaptation action including relevant activities for each sub-project as well as capacity building needs for relevant institutions including the WSBs, and Water Resources Management Authority (WARMA).

4. Environmental and Social Baseline Information

Environmental Profile

Kenya is located on the Equator and lies between latitudes 5^o North and 5^o South and between longitudes 34^o and 42^o East. The land area of Kenya is about 569,137 km^2, with a great diversity of landforms ranging from glaciated mountain peaks with permanent snow cover, through a flight of plateaus to the coastal plain. The country is split by the Great Rift Valley into the Western part, which slopes down into Lake Victoria from the Mau ranges and Mount Elgon (4,300m) and the eastern part dominated by Mt. Kenya and the Aberdare ranges which rise to altitudes of 5,200m and 4,000m respectively.

Kenya's climatic conditions range from moist to arid, varying from tropical along the coast to temperate inland to arid in the north and northeast parts of the country. The long rains season occurs from March/April to May/June. The short rains season occurs from October to November/December. The average annual rainfall in Kenya is 567 mm ranging from above 2,000mm in the highlands (on the slopes of mt Kenya) to below 250 mm in the arid areas of Northern Kenya. The temperature remains high throughout these months of tropical rain. The hottest period is February and March, leading into the season of the long rains, and the coldest is in July, until mid August.

Observed climate data for Kenya show a distinct warming trend since the 1960s (Met Office, 2011). Based on climate model output, Kenya may see a general trend towards warmer, wetter conditions in the coming decades. The Met Office (2011) projected a mean annual temperature increase ranging between 0.5 -1.5^{o}C by the 2030s and between1.6 to 2.7^{o}C by the 2060s across the country. Droughts are projected likely to occur with current frequency but with increased

severity. Kenya witnessed the most severe drought episode between 2007 and 2009, which affected all sectors of the economy.

Water resources in Kenya consist of inland saline or fresh water lakes, the Indian Ocean, permanent and seasonal rivers, wetlands and ponds. The inland water and wetlands resources are 11,200 km^2; underground abstraction 3,115 million m^3 per year countrywide with a mean yield of 5–8 m^3/h depending on the rock type. The five permanent water basins (Lake Victoria, Rift Valley, Athi, Tana and Ewaso Ng'iro North) have a total water flow of over 14.9 billion m^3, however, the water resources are unevenly distributed. Reports suggest that Tana and Lake Victoria Basins have surplus water resources, while the reminder three basins face deficits. According to the World Resources Institute (WRI) report for the year 2000, the internal renewable water resource was estimated at 20 km^3 translating to per capita per annum of 673 m^3. The ranking effectively puts Kenya in the "chronic water shortage state" category. The 2.9% annual population growth, and over-dependence on a diminishing water resource, will push Kenya beyond the water barrier of less than 5 m^3 per capita per annum by the year 2025.

Kenya's flora is highly diverse, ranging from mangrove forests and coconut palms on the coast to Savannah grassland and woods to thick coniferous evergreen forests on the mountain slopes. On the western plateaus, low trees grow amid grass over 1.5 meters high; similar vegetation is found between 915 and 1,829 meters east and south of Mount Kenya and near the headwaters of the Tana and Athi rivers. On the northern and southern edges of the highlands, flat-topped trees are scattered through meter-high grass.

Social Profile

Land is the most important resource in Kenya covering a total area of 582,646 km^2. 9.8% of the land is arable; permanent crops occupy 0.9% of the land, permanent pasture occupies 37.4% of the land; forest occupies 6.1% of the land. Arid and semi-arid lands (ASALs) comprising grassland and savannah rangelands cover 82%. The rangelands are home to 85% of total wildlife population, and 14 million people practicing dry-land farming and pastoralism.

Kenya currently has a population of approximately 45 million people. The population report shows a varied distribution of the population across the country, with Rift Valley Province being the most populous with 10.1 million people. Demographic trends show that more people are moving to urban areas and it is estimated that half of Kenya's population will live in cities by 2050. The rate of urbanization in Kenya, 4.3% is one of the highest in the world. This has the potential to over-stretch the capacity of infrastructure and services in the large towns, to the extent that large sectors of the population have to squat or live in slums, exposing themselves to numerous hazards such as floods, fires and epidemics. About 48% of the urban residents live in poverty dwelling in peripheral urban areas with limited incomes, education, and poor diets and live in unsanitary and overcrowded conditions. Safe drinking water, the disposal of solid waste, decent housing and transportation are particularly inadequate.

5. Procedures to Assess Potential Environmental and Social Impacts and Develop ESMPs

The proposed KTSWSSP has been classified Category 2 in accordance to the African Development Bank's Environmental and Social Assessment Procedures (ESAP). The detailed designs for most of the proposed subproject investments will be finalized during program implementation. Therefore, the appropriate environmental and social management framework at this stage of project preparation is an Environmental and Social Management Framework (ESMF).

The KTSWSSP includes about 28 subprojects investments, which vary in magnitude and hence, environmental categorization some of which are classified category A and others category B. Each subproject is required to prepare a full ESIA in adherence to guidelines of NEMA and RAP where applicable. As at the preparation of this ESMF, the preparation of ESIAs and RAPs were still ongoing; it is expected that all reports shall be finalized before program implementation.

The AfDB may reserve the right to finance any subproject investment unless (i) the Bank has been presented with a certified copy of the positive conclusion of the relevant national authority, NEMA (environmental license issued) and determines that no further environmental review is required, and (ii) the Bank has reviewed and cleared the environmental documentation and RAPs, and issued its formal no objection.

An ESMF is prepared for Bank operations that finance multiple small- medium scale sub-projects whose location, scope and designs are not precisely known at the time the Bank appraises and approves the operation. Consequently, environmental and social assessment and other safeguard measures can be confirmed during project implementation phase. The ESMF is expected to cover the unknowns, to help in the screening, and to recommend mitigation measures. 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 ESIA and/or ESMP. The screening process is as follows;

Step 1: Screening of Project Activities and Sites: The Ministry of Water and Irrigation (MoWI), Executing Agency, shall collaborate with respective Water Service Board to ensure the initial screening in the field is undertaken by completing the Environmental and Social Screening Form. The screening form formalizes a rapid field investigation to screen on-site whether any environmental and social issues may require specific attention and supplemental environmental assessment work.

Step 2: Assigning the Appropriate Environmental and Climate Risk Categories: The environmental and social screening form, when completed, will provide information on the assignment of the appropriate environmental category to a particular sub-project.

Step 3: Carrying out Environmental and Social Impact Assessment: The ESIA studies of the projects will focus on issues requiring the implementation of specific mitigation in cases where

specific environmental and social issues are identified and where a change in the design or sitting of the sub-project is not possible including among others: (i) Potential conflicts between neighbor users, (ii) Impacts on a bio-physical ecosystem, (iii) Impacts on land without physical displacement or significant impacts on livelihoods, (iv) Potential for heavy traffic at construction phase through inhabited areas, (v) Construction in water bodies (pipeline gulley crossings, water works in river beds-intakes). The WSB staffs supported by concerned parties will determine whether (a) The application of simple mitigation measures outlined in the Environmental and Social Checklist will address the potential impacts, (b) No additional Environmental Assessment will be required; and (c) a comprehensive Environmental Impact Assessment (EIA) will need to be carried out, using the national EIA guidelines.

With respect to climate risk, the Bank has already categorised the program Category 2 in terms of Climate Risk and the Bank's Climate Adaptation Review and Evaluation Procedures (AREP) shall be applied in the assessment of adaptation measures to be incorporated.

Step 4: Preparation and Implementation of RAP: The steps to be undertaken for the RAP include a screening process, a socio-economic census, land asset inventory of the area and identification of Project Affected Persons (PAPs). This will be followed by the development of a Resettlement Action Plan (RAP), RAP review and approval, implementation of the RAP and monitoring of RAP implementation and its successes. These steps will be the responsibility of the Water Service Boards in association with county governments and other relevant institutions. Consequently, the implementation of RAP will be evaluated and documented. Throughout this process, consultation and public disclosure will take place with the PAPs, ensuring that the affected persons are informed about the objectives of the water supply and wastewater investments and involvement of landowners in the programs.

Following approval of the RAP, the process of implementation will take place. This will involve:

- Consultation (a continuation of the process entered into during RAP development process);
- Notification to affected parties;
- Documentation of assets;
- Agreement on compensation; and
- Preparation of contracts, compensation payments and provision of assistance in resettlement.

Step 4: Review, Approval and Disclosure of Subproject Information: The results and recommendations presented in the environmental and social screening forms and the proposed mitigation measures presented in subproject or site-specific ESIAs, ESMPs and/or RAPs, whichever isdeemed appropriate, will be reviewed by MoWI and implementing Water Service Boards and validated by NEMA.

In compliance with Bank's guidelines and in the national EIA decrees, before a subproject is approved, the applicable documents (ESIA, ESMP and/or RAP) must be made available for public review at a place accessible to local people (e.g. at a district council office, at the Ministry of Environment), and in a form, manner, and language they can understand.

Step 5: Public Consultation: This will involve notification (to publicize the matter to be consulted on), consultation (a two-way flow of information and opinion exchange) as well as participation involving interest groups.

Step 6: Integration of environmental and social provisions in tendering documents
The Program Implementation Teams (PIT) will ensure that the recommendations and other environmental and social management measures and adaptation measures from subproject/site-specific safeguard instruments are integrated in bidding documents and works to be performed by contractors.

Step 7: Environmental Monitoring and Indicators: This describes the processes and activities that need to take place to characterize and monitor the quality of the environment in the project sites. The PIT at the implementing water service boards (WSBs) will have the overall responsibility for monitoring during the program implementation. The Bank will closely follow up the implementation of the program, through regular supervision mission during the implementation, and ex-post evaluations. The MoWI will compile and submit to the steering committee and the Bank quarterly progress report and annual progress reports. The mid-term review will provide an opportunity to re-examine the implementation progress and further strengthen/ fine tune the program. Upon completion of the program, MoWI will prepare and submit to the Bank the PCR.

6. Potential Environmental and Social Impacts and Mitigation Measures

Positive Impacts

The KTSWSSP is expected to generate positive environmental and socio-economic impacts that would lead to increased access to water and sanitation services. The water supply and wastewater service investment under the program will include infrastructure for bulk water supply, wastewater management, upstream activities to ensure sustainability of investments (catchment management for selected sites, community outreach, water quality and quantity monitoring, etc.) and enhanced downstream productive water uses to ensure investment performance. Key benefits include:(i) employment opportunities leading socio-economic development of the towns, (ii) educational enrolment and attendance for children, (iii) household health status, (iv) time savings to engage in other productive activities (women), (v) climate resilience status of the population and environment.

Negative Impacts and Mitigation measures

The potential adverse environmental and social impacts of the KTSWSSP vary with subprojects and this ESMF highlights the broad impacts that cut across most of the envisaged investments. The specific adverse impacts for each subproject will be distinguished in the specific ESIA based on the sub project investment environmental category once the screening process is complete.

Soil Erosion – Site clearance and removal of vegetation precedes construction activities. This makes the soil susceptible to erosion. In addition, soils can be affected due to soil pollution resulting from wasters from machinery chemicals (oils and lubricants). The proposed mitigation measures will include scheduling construction activities involving earthworks for dry season to reduce soil erosion, refilling the exposed or excavated soil soon after completion of works and avoiding or minimizing compaction of soils.

Land Acquisition, Resettlement and Compensation: Preliminary social assessments of program investments have indicated that some of the sub-project interventions may require land access and/or land acquisition from private or public assets for pipeline transmission routes and construction of new infrastructures.

Site-specific RAPs shall be prepared as applicable for each sub-project to address all issues of land acquisition in accordance to regulations of the GoK and requirements of the Bank. Preparation and approval of the RAP have been mandated by the AfDB and set as the preconditions for the finance of each subprojects. RAP will be prepared for any subproject activity that causes involuntary acquisition of land and other assets resulting in: (i) Relocation or displacement, (ii) loss of assets or access to assets, (iii) loss of income sources or means of livelihood, and (iv) loss of land. The individual RAPs are being prepared by respective water service boards and agreed to finalize for approval before Program appraisal and subsequent implementation.

Impact on Water Quality **–** Increase in suspended particles due to construction works; risk of human contamination from construction camps; and competition for water will affect the water quality especially where investment projects are close to natural water bodies. Mitigation measures shall include strict monitoring of construction methods and protection of watercourses during construction.

Poor location of sewerage facilities that could lead to social discomfort and nuisance - The process of wastewater collection, conveying or treatment has the potential to generate and release odours to the surrounding area. Most odour problems occur in the collection system, in primary treatment facilities and in solids handling facilities as well as the sludge drying beds. The most frequently reported symptoms attributed to odours from Wastewater Treatment Plant include headache, nausea, hoarseness, cough, nasal congestion, palpitations shortness of breath, stress, drowsiness, alterations in mood, and eye, nose, and throat irritation.
The proposed mitigation measures will include proper siting facilities some distance from town centers (proposed new sewer systems have been determined to be located over 10 km from communities), windbreaks around proposed sites, and proper sizing and alignment of the lagoons/ponds.

Impact of Groundwater Extraction – Groundwater extraction may impact and change the hydrological regime when schemes are constructed. This risk will be mitigated by strengthening the utilities capacity for periodic monitoring of groundwater level of the wells in the impact zone as well as establishing an efficient water management system. Water abstraction permits shall be obtained from the Water Resources Management Authority (WARMA).

Public Health (HIV/AIDs) - The increased production of drinking water may lead to an increased generation of wastewater and will affect the sanitation in the sub-project areas. This will be avoided/minimized by educating communities on personal hygiene and environmental sanitation.

Water Use, and Changes in downstream morphology of the riverbed and banks – The impact of the proposed water projects such as, bulk water supply dams on downstream habitats will be through changes in the sediments load of the rivers. All rivers carry some sediment as they erode their watershed. When the river is held behind a dam in the reservoir for a period of time, most of the sediment is trapped in the reservoir and settle to the bottom. Clear water below the dam will recapture its sediments load by eroding the downstream bed and banks. Eventually all the erodible material on the riverbed below the dam will be eroded away, leaving a rocky streambed, and a poorer habitat for aquatic fauna. The proposed mitigation measures will include maintaining environmental flows for river basins as well as obtaining water abstraction permits from appropriate authority.

Climate Change and Adaptation Measures

Preparation of sub-project ESMPs shall include climate change risks assessment as well as the application of the Bank's AREP procedures and adaptation measures suggested by the Kenya National Climate Change Action Plan (2013 – 2017) for the water sector. Adaptation measures likely to be considered by the sub-projects depending on their location and design include; (i) riverbank restoration and catchment protection activities, (ii) capacity building and campaign

programs at the sub-project/town levels to promote water conservation and water-use efficiency as well as water capture and storage such as rainwater harvesting (iii) rehabilitation and equipping of water service providers (WSP)'s laboratory for effective water quality monitoring, and (iv) strengthen and build capacity of water resources management authority (WRMA) for early warning systems (including groundwater monitoring).

7. ESMF and ESMP Implementation and Monitoring Program

The ESMF requirements ensure that implementation of the program integrates environmental and social issues for the sustainability of the sub-projects and overall program. Among other things the ESMF recommends the following key issues namely; capacity building, reviewing and monitoring mechanisms.

7.1 Institutional Capacity for ESMF Implementation

The Ministry of Water and Institution will provide overall coordination including administration of the KTSWSSP and shall ensure environmentally sound design and management of proposed project investments. Other institutions directly and indirectly involved in the Program include Water Service Boards, Water Service Providers, NEMA, Water Resources Management Authority (WARMA), and respective counties.

Ministry of Water and Irrigation: MoWI is the principal executing institution for the program and a senior official in the Ministry will be the overall Program Coordinator. The implementing agencies of the program will report periodically to the MoWI on all issues and aspects related to the subprojects including environmental and social safeguards.

Water Service Boards: The implementing Water Service Boards (WSB) will be responsible for day-to-day implementation including project management, financial management, procurement, disbursement, monitoring and evaluation in addition to the environmental and social components of the sub-projects.

In order to effectively carry out the environmental and social management responsibilities for subproject implementation, institutional strengthening will be required. Capacity building will encompass all KTSWSSP staff and sub-project executing institutions – Implementing Agencies (IA) and service providers. This ESMF proposes capacity building through training workshops that will focus on various topics relevant to the environment and social management process including among others;

- Public consultations.
- Design of appropriate monitoring indicators for the sub-projects mitigation measures.
- Grievance redress mechanism.
- Community mobilization/participation and social inclusion.
- Training sessions on mitigation of environmental and social impacts and ESMP.
- Integration of sub-project ESMPs and RAPs into the KTSWSSP's cycles during their implementation stages.

Environmental capacity building for the WSB environmental and social safeguard staffs will enable them to screen, review and monitor environmental issues in the sub-projects to ensure compliance with requirements of the national policies and the Bank's safeguard policies.

7.2 Monitoring

Monitoring is essential to understand the impacts of subproject interventions and evaluate the degree of success or failure of mitigation measures. The monitoring has two main components: (a) monitoring of the compliance and effectiveness of the ESIA,/ESMP and application of the recommended standards and mitigation measures; and (b) impact monitoring: measuring the biophysical and socio – economic impacts of the subprojects and effectiveness of mitigation measures in avoiding or minimizing adverse impacts and the nature and extent of any such impacts.

A monitoring plan will be developed during the implementation of the sub-projects in order to measure the effectiveness of the mitigation measures. The monitoring and reporting procedures will ensure early detection of conditions that necessitate particular mitigation measures and will furnish information on the progress and results of mitigation. The environmental and social specialists of the PITs shall monitor the implementation of the ESMP in coordination with county NEMA officers and the MoWI environmental officer(s).

The arrangements for monitoring and resettlement and compensation activities will fit the overall monitoring program, which falls under the responsibility of the different implementing agencies with oversight from MoWI. Periodic evaluations will be made in order to determine whether the PAPs have been paid in full and before implementation of the schemes activities; and determine livelihoods are same or higher than before. A number of objectively verifiable indicators shall be used to monitor the impacts of the compensation and resettlement activities. These indicators will be targeted at quantitatively measuring the physical and socio-economic status of the PAPs, to determine and guide improvement in their social wellbeing. Therefore, monitoring indicators to be used for the RAP will have to be developed to respond to specific site conditions. In addition, an independent audit will take place on the completion of the RAP.

7.2.1 Monitoring Roles and Responsibilities

Program Implementing Teams (WSBs)

Programme Implementing Teams have been set up in designated WSBs, under the auspices of the Ministry of Water and Irrigation and shall bear the responsibility of supervising and overseeing the coordination and management of the program activities including ESMPs and RAPs.

NEMA

The EMCA places the responsibility of environmental protection on NEMA as the coordinating agency. NEMA is charged with the overall role of providing oversight in regard to monitoring of all project activities that have potential impacts on the environment in Kenya. NEMA will undertake periodic monitoring of the sub-projects by making regular site inspection visits to determine compliance with the approved ESIAs and reviewing annual audit reports submitted to NEMA as required by EMCA. All monitoring reports as well as annual environmental audit

repost will be submitted to NEMA as specified by the environmental assessment and audit regulations.

Environmental and Social Specialists

The respective WSB/PITs shall appoint/recruit environmental and social safeguard specialists who will specifically support the environmental screening of the sub-projects, develop ToRs to update and/or develop ESIAs and RAPs, and monitor compliance of interventions to agreed ESMP measures. The specialists will submit quarterly monitoring reports of all active investments under implementation to the MoWI Program Coordinator who will then submit these reports to the Bank.

7.3 Implementation of ESMF, ESMP and RAP

Implementation of ESMPs developed from the project ESIAs shall be the responsibility of the implementing water service boards (PITs) through *supervising contractors*. Wherever possible provisional sum for mitigation measures shall be included in the Contractor's Engineering Drawings, and Bill of Quantities. The ESMP must outline the institutional arrangements and cost estimates for environmental and social management as well as assess climate change risk assessments during the implementation, operation and decommissioning of the projects.

In addition, where applicable, the implementing agencies (WSBs) must develop the RAPs, which should provide details of land requirements, compensation modalities and implementation. Because the exact unit prices, number of project affected population, and the scope of land acquisition are estimates, the exact figures will not be known until the RAPs are prepared.

Most of the costs associated with environmental mitigation shall be included in the design costs, the cost of carrying out further studies and preparing / implementing the RAPS, as well as costs included in the Bill of Quantities, and normal operating and maintenance costs. Compensation costs will be determined during the preparation of the RAPs.

The total cost of implementing the EMSF in the table below has been estimated from an average among the 28 sub-projects. The individual cost per sub-project will vary depending on the level of intervention required.

Table 1**: Cost for ESMF Implementation**

Activity	Description	Concerned Institutions	Costs (US$) per unit	No	Total Cost
Prepare and/update ESIAs and RAPs and related safeguard management plans for subprojects funded through the program	Recruitment of Consultants and experts to update or prepare ESIAs, and RAPs	MoWI, WSBs, and NEMA	**1,200,000**		**1,200,000**
Monitoring of ESMPs, RAPs and related safeguard management plans for subprojects funded through the program	Recruitment of Consultants and experts to monitor ESIAs, ESMPs, and RAPs	MoWI, WSBs, NEMA and WSPs	**1,000,000**		**1,000,000**
Awareness creation and capacity building		NEMA, MoWI, WSBs	500,000	Biannual	500,000
Monitoring Activities	Training workshop/seminars on Programme for MoWI, WSBs, project staffs	NEMA, MoWI, WSBs	250,000	Biannual	250,000
Awareness creation for general public	Radio, TV discussions, Newspaper adverts on issues relating to ESMF		50,000		100,000
Total			**3,000,000**		

8. Public Consultations and Public Disclosure

Consistent with the requirements of the African Development Bank, the borrower is responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and also for ensuring broad community support.

In compliance with the Kenya's ESIA policy, public consultations form an integral part of the ESIA studies. Consultative meetings have been held with relevant stakeholders at various levels during the preliminary assessment studies and EIAs conducted by the government, to provide an overview of proposed sub-projects, challenges and mitigation and obtain views on anticipated benefits, opportunities and concerns of the interventions. This process began at an early stage during project preparation and will continue as needed. It will be conducted in a timely manner in the context of key project preparation and implementation steps, in an appropriate language, and in an accessible place. The recommendations of the consultations were adequately reflected in the project design and in the project documentation.

Consultation and public participation is a continuous process during project cycle and it begins at an early stage during project preparation and continues as needed. As the Program preparation, appraisal and implementation progresses, MoWI, Water Service Boards, WSPs and District/County Authorities will continue to consult with key stakeholders with respect to improved benefits, suitability of the infrastructure, design and timing of construction.

9. Conclusion

This ESMF is meant to ensure that the implementation of the program will be carried out in an environmentally and socially sustainable manner. It provides the project implementers with an environmental and social screening process that will enable them to identify, assess and mitigate potential environmental and social impacts of the activities, including the preparation of site-specific.

This proposed KTSWSSP has the potential to bring considerable benefits to concerned communities and within the sub-project areas as well as adjoining settlements. Anticipated benefits include increased access to safe water supply and wastewater services, job creation, improvement in public health status and sanitation conditions, time and energy savings particularly for women and children, among others.

Environmental Social Impact Assessments (EIA) and Environmental and Social Management Plans (ESMP) and when applicable, Resettlement Action Plans (RAPs) should be finalized before any implementation can begin and further be in accordance with Kenyan legal framework, as well as AfDB safeguard policies particularly Environmental Assessment.

The ESMF recognizes existing gaps and weaknesses (personnel and systems) in some of the institutions with regard to effectively implementing the ESMF under this program. Thus strengthening and building the capacity of key implementing institutions will be critical to the success of the proposed program. The capacity development will provide an enabling environment to address environmental and social issues by MoWI and its WSBs to implement the ESMF.

The ESMF requires this program to ensure that procedures are followed in relation to environmental and social screening, review and approval prior to implementation of sub-projects to be financed under the AfDB. Furthermore, appropriate roles and responsibilities, for managing and monitoring environmental and social concerns related to sub-projects should also be adhered.