

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN SUMMARY

Project Details:

Project Title:	WATER SUPPLY AND SANITATION PROGRAMME
Project Number:	P-Z1-GB0-019
Country:	UGANDA
Department:	OWAS
Division:	OWAS.2

Objectives of the ESMP:

The ESMP for the Uganda Water Supply and Sanitation Program has been prepared in accordance with AfDB's environmental and social assessment procedures. It focuses on the provision of clean and safe water and adequate sanitation services to villages and towns in Uganda Central. The ESMP aims to ensure that this is done with little or no harm to the environment at large; at the same time protecting the vulnerable groups from impacts that may emanate as a result of the program. The ESMP will ensure implementation of certain goals such as capacity building and climate change mitigation through the use of solar energy so as to render the program sustainable.

The key objectives of the ESMP are:

- to outline mitigation measures against the possible degradation of the areas;
- to enhance positive aspects brought by the program
- to ensure that the program will be developed and operated according to the stipulated requirements of African Development Bank's ESAP
- to ensure that the program will comply with relevant environmental legislation of Uganda and other requirements throughout its operational phase
- to identify roles and responsibilities and the cost involved and
- to propose mechanisms for monitoring compliance

a) Brief description of the program and key environmental and social components

It can be broadly described as a water supply and sanitation program. The specifics are not yet confirmed because currently there are numerous applications for water supply received from small towns and villages. The Ministry of Water and Environment (MWE) is yet to go through the applications and make a decision based on clear and existing criteria as to which ones will form part of this Program. The activities of the Program will include borehole drilling, construction of gravity flow and solar powered water supply systems, development of sanitation facilities, capacity building, monitoring and inspection, community mobilization and overall coordination & reporting. It is estimated that the Program will enhance the current water supply coverage of 65% by 4% and sanitation coverage will be improved from the current 70%. The Program will entail approximately 2,000 GFS taps, 1,750 domestic rain

water harvesting systems, 1,250 hand-pumped deep wells, 300 solar powered village systems, 1000 model household sanitation facilities, 20 public institutional sanitation facilities.

The MWE will work with the local government whose responsibility will be to build both piped water schemes for rural growth centres and point sources. The MWE will implement Large Gravity Flow Schemes (LGFS) and Multi-village Solar Powered Water Schemes (MVSPS) and water supply systems in rural growth centres that cut across two or more local governments. MVSPS concept is mainly to replace existing hand-pumps by solar powered pumps with 5 or more taps in order to reduce queuing for water at the water source. While the target has clearly been defined as 77% coverage by the year 2015, the current efforts (this program) can only manage to match the population growth rates.

Although the national average is at 65%, there are 120 sub-counties which are significantly lower than 30%. Many of these sub counties are located in water stressed areas. Specific programs for large gravity flow schemes are therefore required to accelerate service delivery to the underserved and develop mechanisms for sustainable management of the facilities put in place. Overall, the strategy for the program is to enable and strengthen the existing government institutions to execute their mandate of service delivery to the communities. The program will follow the already existing Joint Partnership Fund modalities agreed with Development Partners (DP) in the water and sanitation sector. The program will have three main components as follows:

- Gravity flow schemes, village water supply systems, rural growth centers and small towns will be carried out in collaboration with Local Governments. Funds for these activities will be disbursed to the Ministry of Water and Environment
- Sanitation and hygiene education and awareness component that include construction of public and individual sanitation facilities.
- Solar powered water system will be developed based on a national outlook by MWE. The funding is to be channeled through the MWE since it needs close monitoring.

Key environmental and social components of the program:

Socially the program will result in better access to safe drinking water and sanitation facilities leading to improved standard of living in terms of reduction of diseases, creation of employment during construction, empowering of women in the management of water issues and improved financial, managerial and administrative skills for the community at large due to training packages.

From a gender viewpoint, the program will lead into reduced time allocated to water supply for women and children due to closer drinking water sources, and reduced efforts associated with water transportation. This would lead to (i) increased productivity in particular for women as a result of saving time wasted in fetching water; (ii) better opportunity for girls to attend schools instead of spending their time fetching water and (iii) increased representation and participation of women in water committees and holding responsible decision making position.

Ecologically the program will enhance measures to maximise the use of groundwater and rainwater for climate adaptation and development, to deal with the increased extremes, highs and lows, which are expected as result of climate change. The use of solar fo energy as a positive effect on combatting climate change.

b) Major environmental and social impacts

Beneficial impacts

The most significant positive impact of the program is the provision of safe drinking water along with appropriate sanitation facilities. The proposed program will free women and girls of the burden of having to spend a lot of their time collecting and carrying water in the dry season often from sources distant from their houses. This reduction in burden allows women and girls time for other activities including furthering their education and participating in income generating activities.

Other positive benefits pertain to health. The program will have significant strategic benefits in reducing the burden on health care services as diseases will be reduced. The use of appropriate labour intensive methods for some of the construction programme (e.g. excavation for pipelines) will present employment opportunities for local people (including women) and generate direct income benefits to local households.

Adverse impacts

Identification of the program negative impacts were based on the assumption that the program will be implemented in areas where there will be no land acquisition which would result in resettlement of the program affected peoples (PAPs). Another assumption is that none of the areas will adversely impact on protected areas, threatened species, indigenous people and cultural heritage.

The main potential adverse impacts of the program are outlined below as follows:

- *Land acquisition* – This is likely to be the most significant adverse impact of the proposed program. It includes permanent land acquisition for construction of infrastructure and temporary access to land.
- *Increased incidences of diseases* - The increase of people involved the program’s activity especially labour from outside the areas will increase the potential risk of sexually transmitted diseases including the Human Immuno-deficiency Virus / Acquired Immuno-Deficiency Syndrome (HIV/AIDS) among the program workers and local communities.
- *Visual intrusion* –This will mainly arise from the erection of service reservoir tanks on hills and with regard to abstraction points in the upstream areas. In addition visual intrusion will occur where program activities are likely to create disfigured landscapes in the program area especially around the sites of the quarries and borrow pits and other sites where construction activities result in deposition of large spoils.
- *Increased accidents and occupational hazards* - Implementation of the program will definitely increase volume of human and motor traffic in the program sites. The increase in human and motor traffic will be aggravated by the transportation of construction materials, water pipes and other equipment required in constructing the program facilities.

This is likely to result in a higher risk of accidents and occupational hazards occurring in the area of operation. Factors that may exacerbate this situation are inadequate appropriate working gear for program workers including the helmets, overalls, boots and gloves.

- *Disturbance in socio-economic activities* - Accessing economic and social public institutions; e.g. churches and market places might be blocked during the constructions of the physical infrastructure. Laying pipes, for instance, will pass through these institutions and might lead to temporary blocking of the areas. Population jobs and recreation activities and other aspects of wellbeing will be disturbed temporarily.
- *Increased soil erosion* - Increased soil erosion is likely to occur in the vicinity of program sites during the construction of the water intakes, water treatment works, waste treatment works, operations of borrow pits and quarries, installation of the water pipe reticulation and other related construction works.
- *Increased siltation of the aquatic habitats* - Some of the excavated sediments from the program site and the construction spoils emanating from excess excavated material and construction debris are likely to increase siltation of the nearby aquatic habitats associated with nearby rivers & streams, wetlands and other sensitive ecological zones
- *Ponding* - The program activities may lead to creation of stagnant water bodies in quarries, borrow pits and depressions created during the construction works. The resultant stagnant water bodies are likely to be suitable habitats for the breeding of mosquitoes and snails that are disease vectors for malaria and bilharzias respectively;
- *Disturbance of floral and faunal communities* – The program activities are likely to destroy vegetation with subsequent loss of some trees, shrubs and grasses from the area of operation albeit on a small scale. This is likely to cause loss of habitat and disturbance to faunal communities due to encroaching of alien species.
- *Increased noise levels* - Noise levels are likely to increase in the program areas during construction phase of the proposed program. High levels of noise are likely to prevail in the program sites due to the use of heavy machinery in construction activities and operations at the quarries, borrow pits and crushing plants.
- *Gaseous emissions* - Pollution through gaseous emissions in the program area will emanate from exhaust pipes for vehicles and machinery used in the construction works.
- *Dust pollution* – Program activities have the potential to generate high levels of dust in the program area especially where construction is taking place. In addition, activities taking place in the quarries, borrow pits and crushing plant sites have great potential to generate high quantities of dust thus creating a hostile environment and a health hazard to the workers and the affected local community.
- *Impacts on downstream users* - The program will affect downstream users who may include rural communities, farmers and commercial enterprises that abstract water from rivers downstream of the program's water supply intakes and the water users who abstract river water after receiving treated effluent from the installed sewage treatment facilities. The potential adverse impacts on the former group of water users will mainly be due to inadequacy of water especially during the dry season while the latter group will be concerned with pollution from the sewage effluent.
- *Impacts on water vendors* - Whilst most households will receive real tangible benefits from the operation of the improved infrastructure, there is one social group, the water

vendors, who are likely to have their livelihoods seriously undermined following program implementation. The water vendors are the men (very rarely are women) who currently collect water and sell it on to individual users.

c) Enhancement and mitigation program

Enhancement:

As a benefit from the capacity building incorporated in the program, the implementing authorities will have adequate capacity for managing the environmental and social assessment and permitting processes. They will also have appropriate land valuation expertise. The awareness campaigns for public health & and hygiene and sanitation particularly targeted at women and girls (in relation to health and sanitation issues) who will be widened to include measures for tackling malaria, bilharzias and other diarrhoeal diseases. During construction stage, preference for employment opportunities for appropriate skills will be given to local community as far as it is possible.

Mitigation Program

Impact	Mitigation and Enhancement Measures
Water Resources	
<ul style="list-style-type: none"> • Interruption of surface water flows during construction. • Variations in the level of groundwater table resulting from changes in the drainage. • Contamination of surface and underground water quality by wastewater and hazardous materials, including stored chemicals products, used for raw water treatment. • Risk of water pollution as a result of discharge of wastewater and filter-washing waters. • Over-pumping of groundwater. 	<ul style="list-style-type: none"> • Do not hamper drainage of surface water and plan for restoration measures after construction. • Plan and set up on-site sanitary facilities for the disposal of wastewater. • Maintain vehicles, machinery and equipment in good condition in order to avoid leaks and spill of hazardous materials (hydrocarbons, chemical products, etc.). • Ensure a safe management of hazardous materials (hydrocarbons, chemical products, etc.). • Take all precautions during the refuelling of vehicles and machinery, and forbid the refuelling near water bodies. • Avoid crossing permanent waterways; if necessary, locate the crossing where the banks are stable and the waterway the narrowest. • Conserve the vegetation along water bodies and near wetlands. • Plan emergency response measures in case of accidental spill. • Favour the recycling of filter-washing waters. • Adjust the annual pumped water volumes in accordance with the aquifer annual refill.
<ul style="list-style-type: none"> • Runoff erosion & sedimentation problems. • Change in the local topography. • Soil contamination by spilling of hazardous materials. • Landslides & other types of soil movements in the works areas 	<ul style="list-style-type: none"> • Avoid areas sensitive to erosion. • Carry out the construction works in the dry season. • Favour the establishment of water supply infrastructures on low-productive soils. • Limit the circulation of heavy machinery to minimal areas. • Avoid establishing access roads along steep slopes; instead, locate access roads perpendicularly or diagonally to the slope.
<ul style="list-style-type: none"> • Reduction of soil fertility. 	<ul style="list-style-type: none"> • Use existing borrow pits rather than creating new ones; after the

Impact	Mitigation and Enhancement Measures
<ul style="list-style-type: none"> • Soil destabilisation as a result of excavation. • In limestone areas, risk of soil collapsing due to the creation of underground cavities following groundwater over-pumping 	<p>works, restore borrow pits by stabilising slopes and facilitating vegetation regeneration.</p> <ul style="list-style-type: none"> • Stabilise the soils in order to reduce potential erosion. • Levelling off the soils and vegetation re-generation post construction. • Lay down water conveyance and distribution systems on surface of adequate support capacity. • Adjust the annual pumped water volumes in accordance with the aquifer annual refill capacity.
<ul style="list-style-type: none"> • Encroachment into ecologically sensitive and protected areas. • Draining of wetlands. • Reduction of the biodiversity. 	<ul style="list-style-type: none"> • Design the water conveyance layout by taking into account ecologically sensitive and protected areas. • Establish a perimeter of protection around sensitive ecosystems such as wetlands and unique habitats sheltering endangered species. • Minimise the length of work in ecologically sensitive areas. • Minimise the water conveyance layout in forest land. • Avoid crossing wetlands and protected areas.
Flora	
<ul style="list-style-type: none"> • Destruction of the vegetation cover. • Loss of forest products (fuel wood, timber, non timber forest products). • Decrease in the vegetation development that could enhance desertification. 	<ul style="list-style-type: none"> • Minimise land clearing areas. • Plan for recuperating the forest products extracted from land clearing and identify mechanisms to distribute the products to the local population. • Protect trees from machinery along right-of-way. • Restore the vegetation in cleared areas. • Ensure the plantation of indigenous species. • Promote the development of community nurseries, ideally operated by women.
Fauna	
<ul style="list-style-type: none"> • Disturbance of wildlife and fish habitats. • Disturbance of wildlife migrations. • Increase in poaching. • Disruption in wildlife habitat 	<ul style="list-style-type: none"> • Design the water conveyance layout by taking into account wildlife reproduction areas and migration corridors. • Do not carry out any work in reproduction areas during the reproduction periods. • Minimise sedimentation in spawning grounds downstream. • Forbid workers to fish and hunt illegally.
Natural and cultural heritage	
<ul style="list-style-type: none"> • Change in, encroachment, destruction or degradation of sites of cultural, archaeological or historical importance. 	<p>Carry out an archaeological survey of the project area. In case of discovery of any artifacts of cultural, archaeological or historical importance, protect the concerned areas during construction and contact the relevant authorities.</p>
Air quality	
<ul style="list-style-type: none"> • Degradation of air quality by dust and vehicles emissions. • Increase in ambient noise. 	<ul style="list-style-type: none"> • Install and operate air pollution control equipment. • Near the residential areas, avoid noisy works after regular working hours. • Maintain vehicles and machinery in good condition in order to minimise gas, noise and dust emissions. • Use appropriate means for minimising dust dispersion during construction. • Use dust and noise attenuators, such as vegetation edges along transport corridors in order to minimise noise and the aerial transport of dust.
Social and Economic Issues	

Impact	Mitigation and Enhancement Measures
<ul style="list-style-type: none"> • Increase in local development and employment. • Difficulties for water suppliers to meet profitability objectives. • Exclusion of specific groups from water facilities benefits. • Disruption of other activities, • Decrease in water prices for those who were buying from resellers. • Increase in water prices when no user fees were in place. 	<ul style="list-style-type: none"> • Give preference to local employment (men and women) and local inputs (food, basic material) to the extent possible. • Base profitability forecast on conservative revenue assumptions. • Identify why specific groups are not benefiting from the program and adopt corrective measures as required. • Ensure that the poor and other vulnerable groups can continue to safely satisfy their basic water needs. • Take into account the population's capacity to pay when determining user fees. • Offer alternative income opportunities to those having a limited access to or losing productive means.
Access to infrastructures & services	
<ul style="list-style-type: none"> • Better access to drinking water. • Decreased pressure on health services. • Increased water demand leading to insufficient supply to satisfy drinking water needs. • Unreliable water service and/or quality. • Inadequate water storage facilities causing water contamination. 	<ul style="list-style-type: none"> • Ensure adequate water supply for addressing the basic needs of the host and migrant populations. • Develop alternative supply options to palliate for service breakdowns. • Involve the population (men and women) in the management of new and improved services to ensure their sustainability. • Implement water fees/tariffs to maintain a good quality and constant service level. • Establish quality control for water supply and storage facilities.
Quality of life	
<ul style="list-style-type: none"> • Improvement in standard of living. • Disturbance of quality of life due to nuisances (noise, dust & traffic) during construction works. • Degradation of the landscape by land clearing, construction works, new infrastructures, etc. • Disagreements caused by increased wastewater quantities. 	<ul style="list-style-type: none"> • Involve the population (men and women) in the maintenance and management of new infrastructures to ensure their sustainability. • Provide information and education on monitoring and maintaining water supply systems, particularly for ensuring water quality preservation. • Establish a formal consultation mechanism with local authorities to discuss issues disturbing inhabitants and to find solutions satisfying all parties. • Use an architectural design integrating the new infrastructures into the landscape. • Plan wastewater management as part of the program.
Information, education and communication	
<ul style="list-style-type: none"> • Exclusion of specific groups from the water management processes due to a lack of knowledge. • Development of skills in water conservation and management. • Lack of awareness on the importance of hygiene at water points. 	<ul style="list-style-type: none"> • Assist groups of individuals who may lack the capacity to participate in water management processes. • Provide water suppliers, men and women, with the training required to preserve water resources and to maintain regular water supply. • Ensure that social services provide education to men and women on appropriate hygienic conditions and water conservation, taking into consideration gender particular roles and responsibilities. • Inform the local population on potential program benefits for the community and identify individual behaviours that would contribute to achieve those benefits.

Impact	Mitigation and Enhancement Measures
Communicable diseases	
Changes in exposure to: <ul style="list-style-type: none"> • Water borne diseases e.g.: diarrhoea and cholera associated with contamination, intermittency and poor sanitation. • Water related diseases e.g.: malaria, filariasis, dengue associated with drainage, storage and wastewater disposal. • Water contact diseases e.g.: schistosomiasis and swimmer's itch associated with impoundment. • Water washed diseases e.g.: scabies and skin infections associated with insufficient supply. • Sexually transmitted infections e.g.: HIV/AIDS associated with migration, construction, economic change. 	<ul style="list-style-type: none"> • Facilitate the implementation of appropriate latrines and other sanitation facilities. • Information, education and communication about safe uses of drinking water. • Environmental management for vector control; contact avoidance via settlement location and design and use of bed nets and repellents; rapid diagnosis and treatment; • Focal insecticide application; covered water storage; reduced domestic storage; functional drainage. • Strengthen medical services to ensure rapid diagnosis and treatment. • Safe water and food storage and handling. • Implement HIV/AIDS prophylaxis through appropriate health promotion as well as wide distribution and use of condoms (for men and women); employment opportunities for program-affected women; provision of family accommodation for construction workers. • Assure continuous supply. • Avoid using contaminated groundwater and unauthorized connections. • Avoid contamination via runoff and contamination of collection and storage equipment. • Train communities in pump maintenance. • Ensure piped supply is accompanied by appropriate drainage and disposal. • Survey community opinion about taste of water and water collection preferences. • Refer to measures proposed under environment and poverty crosscutting themes as they address many health determinants of communicable diseases.
Non communicable diseases	
<ul style="list-style-type: none"> • Poisoning associated with excess chemicals (e.g. fluoride, chlorine). • Diseases associated with chemical deficiencies (e.g.: iodine). 	<ul style="list-style-type: none"> • Monitor water quality and adjust chemical content as appropriate.
Injuries	
<ul style="list-style-type: none"> • Increased risk of accidents on working sites and roads due to increased traffic. • Work injuries. 	<ul style="list-style-type: none"> • Develop, communicate and implement safety and preventive measures for the population (such as traffic calming devices). • Control access to working sites & install and maintain appropriate signage. • Develop an emergency preparedness plan, communicate it to workers , the community and all involved and conduct drills. •
Natural resources and land management	
<ul style="list-style-type: none"> • Disturbance of land and water uses, which can lead to social conflicts including rivalry associated with incompatible uses upstream and downstream of the water abstraction points. 	<ul style="list-style-type: none"> • Design the program and coordinate work with other land users. • Consult all groups of the population using water or rejecting effluents in water. • Clearly define water rights in consultation with affected groups. • Create water supply system management committees. • Build on the respective knowledge and experience of women and men in water management.

Impact	Mitigation and Enhancement Measures
<ul style="list-style-type: none"> • Sustainable management of water resources including conservation. • Loss of or limited access to territory for some groups, particularly farmers and livestock herders. • Reduction in the quantity of water available for other uses. 	<ul style="list-style-type: none"> • Restore productive lands into initial conditions. • Ensure that water user fees and conditions are determined in consultations and well understood by all program beneficiaries. • Plan water intake according to available water resources. • Implement appropriate methods for water distribution.
Migration and resettlement	
<ul style="list-style-type: none"> • Decreased standard of living for involuntarily displaced people (likely few people). 	<ul style="list-style-type: none"> • Avoid private land and where impossible follow the ADB Resettlement policy and ESAP and have it approved by the ADB prior to implementation.

d) Monitoring program and complementary initiatives

Monitoring includes monitoring of the implementation of the mitigation measures to assess their efficiencies and eventually develop other mitigation measures if the expected results are not reached. To ensure social and environmental sustainability of the program, the MWE will monitor all the above impacts and ensure that proposed mitigation measures and enhancement of benefits are implemented. The table above (section c) shows parameters that will be monitored. Due to the fact that the areas have not yet been finalized, it is not easy to allocate responsibilities. However, it is evident that the MWE will assume the overall responsibility. They will have a resident engineer with hydrology/hydrogeology background and a social and environmental officer on site during construction. Furthermore they will work with non-governmental organisations and community based organisations. Institutions that will be involved include the district local government, the environmental management authority (NEMA), the local police and health officials. All parties will have to be part of the finalisation of the ESMP and agree to responsibility assigned and the timeframes. High frequency of monitoring will be during construction with a few activities left to MWE for post construction.

e) Institutional arrangements and capacity building requirements

The program will follow the already existing Joint Partnership Fund (JPF) modalities agreed with the development partners in the water and sanitation sector. This will ensure use of existing structures with improvement where required. The capacity building component of the program includes support in community mobilisation before and during program implementation; water catchment management; hygiene & sanitation and other technical & institutional capacity building activities. All these activities support the enhancement and implementation of the program environmental and social management plan. The complementary awareness components focusing on hygiene and sanitation issues will be widened to include awareness of waterborne, water related and insect borne diseases, in particular the issues of malaria and bilharzias, and also HIV-AIDS.

There is need for institutional strengthening of the Environmental and Social Assessment review and permitting process and the program has already included this in the training/awareness sessions. The MWE has no Environment and social management system that will ensure that sub-projects are implemented in line with the AfDB's procedures and in that case once the ESIA. ESMP for the sub-projects are completed, the MWE must appoint an independent person who should audit the documents to ensure that they are in line with AfDB's ESAP and submit such a report to AfDB.

f) Public consultations and disclosure requirements

In order to fully involve the beneficiary communities and other interested stakeholders in the formulation and development of the proposed program, substantial consultations will be conducted with a wide range of key stakeholders at all levels once the areas have been finalised. Consultative meetings will be carried out at district level involving officers from district environment and wetlands; agriculture; forestry, health and water sectors. This will be followed by consultative meetings at lower local governments involving technical and political leadership at that level during program design and construction. Consultations will also be carried out during the early stages of program preparations. This will involve Socio-Economic and Needs Assessment and Environmental Assessment consultations processes by the design consultants.

In accordance with the Uganda national legislation, as part of the detailed design process of the sub-projects, Environmental and Social impacts Assessments (ESIA) will be carried out for each of the proposed interventions in all the benefiting areas/ communities in Uganda. ESIA process on its own entails identification of key stakeholders and consultations. Although no involuntary resettlement is foreseen for the program, consultations on the acquisition of land and compensation for the affected property will be held with the program affected people (PAPs), the local community, local administration, and other stakeholders of the affected areas in order to ensure minimal disturbance and transparency in transactions between the program implementers and affected persons. During the consultation, the affected people will be briefed on the procedures of land acquisition, compensation processes involved and modalities of settling grievances. The AfDB resettlement policy and ESAP will be fully adhered to and upon establishment that private properties will be affected; the ADB will be informed for consent on the process to be followed.

g) Estimated costs

The cost for the implementation of this ESMP shall be included in the overall supervision cost of the program. Most of the social and environmental cost which involves engineering design is embedded in the engineering costs. However, it is estimated that 2% percent of each subproject cost will be spent in the implementation of the social and environmental mitigation measures.

h) Implementation schedule and reporting

All the mitigation measures above will be implemented alongside with the implementation of program subprojects as required and planned in the subproject implementation schedules during construction. However some monitoring will happen beyond construction for water quality. Capacity building may also go beyond construction phase. All mitigation and enhancement measures will be implemented and reported in the periodic progress reports for supervision missions, midterm reviews and a specific annual report on ESMP implementation to the ADB on an annual basis.