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REVOLUTIONARY GOVERNMENT OF ZANZIBAR



ZANZIBAR URBAN SERVICES PROJECT (ZUSP)

ZANZIBAR URBAN SERVICE PROJECT - ADDITIONAL FINANCING

Contract No.MOF/ZUSP/WB/ZMC/FDCT/SWSM/CS/10/2015

*Environmental and Social Management Framework (ESMF)*

*(Draft Report)*

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VRN 40-004304-G

8<sup>th</sup> February 2016

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# 1. INTRODUCTION

The Zanzibar Urban Services Project (ZUSP), effective in 2011, was prepared in a response to a request from the RGoZ to assist with the financing of an investment operation that would provide finance for critical infrastructure in key urban areas of the Zanzibar Municipal Council (ZMC) and Pemba Towns and support for improved management capacity for urban development and management. ZUSP recognizes the strategic importance of Zanzibar urban centers as the engines for the country's structural transformation, economic growth and nationwide improvements in welfare. Zanzibar Municipal Council has strategic importance to Zanzibar Island and the country in terms of its physical location, importance for local and international trade and tourism, demographic weight and contribution to the national economy.

The project development objective (PDO) is to improve access to urban services in Zanzibar and conserve the physical cultural heritage at one public location within Stone Town. ZUSP has three components: (i) Institutional strengthening and infrastructure development for Zanzibar Municipal Council (ZMC), (ii) Support to Town Councils in Pemba Island, and (iii) Project management. Project financing (IDA credit) totals US\$ 38 million. ZUSP is executed by the Project Management Team (PMT) under the implementing agency, the RGoZ's President's Office – Finance, Economy and Development Planning (PO-FEDP, now Ministry of Finance). The existing ZUSP project supports provision of basic infrastructure services (sanitation, flood control, and public green space) and cultural heritage.

The proposed additional financing for the project (ZUSP-AF) will enable the project to maximize development impacts and sustainability through scale-up. These activities will increase access and quality of urban services; improve quality of life and local economic development; strengthen municipal finances, and provide strategic investments supporting Zanzibar's urbanization and economic development agenda. The ZUSP-AF would include a \$45 million credit that would primarily be used to scale up Project activities in four areas: (i) environmental sanitation, (ii) urban upgrading and cultural heritage, (iii) small-scale investments in Pemba, and (iv) improving municipal finance.

The proposed ZUSP-AF will support sub-projects likely to generate some detrimental environmental and social impacts the extent, magnitude and duration of which have not yet been determined. Additionally, there will be new developments whereby the exact nature of the works (or their location) is not currently known. In order to guide environmental and social due diligence and management during implementation of the investments receiving funds from ZUSP-AF, the World Bank's Environmental and Social Safeguard Policies require the RGoZ to prepare an Environmental and Social Management Framework (ESMF) to guide target urban Local Government Authorities – Zanzibar Municipal Council (ZMC) and Pemba Town Councils (PTCs) in assessing, managing, and monitoring environmental and social impacts of these additional sub-projects.

The RGoZ has developed this Environmental and Social Management Framework (ESMF) (and the Resettlement Policy Framework, which is a stand-alone document) as a tool to be used by the ZUSP and ZMC Project Management Team (PMT) and others responsible for ZUSP-AF project design and implementation.

## 1.1 PURPOSE AND OBJECTIVES OF THE ESMF

The proposed ZUSP Additional Financing Project (ZUSP-AF) has been classified as Category A project with potential to cause significant environmental and social impacts, which is consistent with the parent ZUSP project. Although, most of the low-cost urban upgrading infrastructure investments are envisaged

to generate site specific impacts that can be minimized by the application of mitigation measures, it is likely that some activities will cause detrimental impacts albeit at a Category B level. Proposed additional improvements entailing construction of a landfill and sludge treatment facility at Kibele, which have not yet initiated complete technical designs, likely fall under Category A. This ESMF is envisaged as a road map to ensure the sub-projects to be financed under the project are designed and implemented in an environmentally and socially sustainable manner and meet all RGoZ legislative requirements and the World Bank Safeguard Policies.

The objective is to have in place a practical ESMF to enable early screening for potential impacts and select appropriate instruments to prevent, minimize, mitigate or compensate adverse environmental and social impacts and to enhance beneficial impacts. Specific ESMF objectives are to:

- Establish clear procedures and methodologies for the environmental and social planning, review, approval and implementation of subprojects to be financed under the ZUSP Additional Financing Project;
- Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to ZUSP-AF;
- Determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF;
- Establish the Project funding required to implement the ESMF requirements; and
- Provide practical information resources and guidelines for managing and monitoring environmental and social concerns related to subprojects once their nature and locations are known.

## **1.2 SCOPE OF THE ESMF**

The Environmental and Social Management Framework identifies the general potential impacts and mitigation measures of yet-to-be identified investments in solid waste, urban upgrading as well as institutional strengthening activities, in order to screen subprojects and guide preparation of ESIA's of subprojects once they are known. The ESMF includes practical, operational set of guidelines and procedures that will be used by the ZMC and Pemba Town Councils to guide future ESIA preparation, including the ESIA for waste management activities at Kibele site.

This ESMF is specifically designed for the ZUSP-AF activities thus will further guide the next phase of implementation of the ZUSP. The ESMF will also cover all other sub-projects that may be identified in future for financing under the project. Although it is designed as a tool to guide overall environmental and social management procedures in the ZMC and PTCs, the framework is relevant for other urban areas of Zanzibar (including Pemba).

The ESMF strives to conform to relevant RGoZ policies and legislation and consistent with the World Bank Safeguard Policies, including consultation and disclosure practices for Category A projects. Where there are gaps in the RGoZ policy and legislation, the standards and procedures in the Safeguard Policies will be the prevailing guidance.

The document draws from existing standards and guidelines on environmental management, cultural heritage conservation as well as existing environmental and social management plans, resettlement action plan etc. Specifically, the ESMF contains subproject screening guidelines; guidelines for impacts identification, evaluation and mitigation; guidelines and best practices for mitigation implementation supervision & monitoring as well as identification and implementation of consultation processes, , and a description of the grievance redress mechanism for the ZUSP-AF.

### **1.3 USERS OF THE ESMF**

The ESMF shall aid the objectives of the ZUSP by facilitating ZMC project teams and other project participants aware of environmental and social requirements for assessing ZUSP financed activities, thus enhancing their capacity to effectively manage environmental and social issues during the preparation (designing, planning) and implementation of the individual sub-projects. The tools and guidelines are tailor-made and suited to the needs of ZUSP, ZMC, Participating Pemba Town Councils, Stone Town Conservation & Development Authority (STCDA) and relevant Ministries, Departments, Agencies and Authorities (MDAAs) and services providers, specifically:

- ZUSP PMT, Department of Urban and Rural Planning (DoURP), ZEMA and others responsible for developing support strategies / activities of implementation.
- Project Teams at ZMC and PTCs, and staff in target sectors (roads, sanitation, environmental management, cultural heritage etc.) who are responsible for application/planning, review, approval, and supervision of the sub- projects;
- Statutory committees at the urban authorities, and local management committees overseeing environmental and social aspects;
- Leaders and representatives from sub-project host communities;
- Consulting engineers, Contractors and service providers involved in subproject planning / design, construction and installation works.
- Environmental and social assessment consultants and development services providers who provide services to ZMC in non-core functions such as management training or technical support;
- Respective Regional and District Offices

### **1.4 APPROACH AND METHODOLOGY FOR DEVELOPMENT OF THE ESMF**

#### **Overall Approach**

The approach used to develop the framework document took two forms: 1) identification of impacts, mitigation measures and monitoring procedures for the overall ZUSP-AF; 2) provision of guidance to Implementers (of sub-projects to be identified in the future) on how to overcome the specific and cumulative impacts arising from implementation of individual or clusters of the investments. Each of these two is explained below.

#### **Identification of impacts and mitigation measures and monitoring procedures for the overall ZUSP AF**

Since ZUSP is an on-going project, the assessment put emphasis on gap analysis by undertaking evaluation of the general implementation status of the current environmental, social and resettlement activities under the ZUSP in order to draw out practical lessons happening on the ground. The ZUSP existing safeguard instruments and implementation reports related to environmental and social management were reviewed to determine prevalent conditions /trends and to establish the extent of achievement of the set targets against key result elements and performance indicators. Also observations at representative sites and meeting with various Participants and key informants to assemble evidence / lessons on impacts encountered, measures undertaken and their roles and responsibilities etc. The results of the situation analysis were augmented by experts' knowledge of activities likely to cause impacts mitigation and measures and best alternative approaches conventionally associated with similar programmes.

The ESMF was prepared and provided to some selected key ZUSP implementation units (Departments, Divisions and Sections) to verify the impacts and actions taken. The areas of assessment included but not limited to:

1. Component(s) of ZUSP-AF associated with environmental, social and resettlement implications and hence requiring safeguard;
2. Nature of infrastructure investments (subprojects) anticipated under ZUSP-AF;
3. Identification of general environmental, social and resettlement impacts associated with development of the infrastructure in general and specifically from subprojects of the nature to be funded under ZUSP-AF;
4. Identification of general avoidance, minimization and mitigation measures and management controls for ZUSP- AF and specific for the type of anticipated subprojects;
5. Identification of general parameters / indicators to be monitored to track trend of impacts and to ensure mitigation performance.
6. Consolidating of key findings into a ZUSP- AF Environmental and Social management Plan (ESMP) as well as implementation and monitoring arrangements.

An analytical framework was used to guide the assessment and address evaluation questions under each of the 6 areas.

### ***Provision of Guidance to Implementers on managing safeguard issues emanating from sub-projects***

Framework of analysis for determining guidelines required by subproject Planners / Implementers is based on identification of the nature of the safeguard assessment and management process applicable to ZUSP AF followed by determination of the nature of management tool needed by the various actors at each stage of subproject implementation. The tools include:

- Subproject specific ESIA process which implementers shall follow;
- Sub-project screening guidelines;
- Guidelines for impacts identification and evaluation;
- Guidelines for impacts mitigation;

### **Methodology**

Desk Reviews: of relevant literature was undertaken during initial preparations and continued throughout the assessment phase and preparation of the frameworks documents. Information sources include documents from World Bank; relevant Ministries, Departments, Agencies and Authorities (MDAAs) of the Revolutionary Government of Zanzibar (RGoZ); Participating Local Government Authorities: Zanzibar Municipal Council (specifically ZMC Division of Sewerage, Drainage and Solid Wastes) and Pemba Town Councils. Other sources include national and local data and information centres and web-search. Documents reviewed are listed under the bibliography section.

Stakeholders Consultations were conducted by visits to overall ZUSP team, relevant MDAAs ( Departments of Environment, Roads, Urban and Rural Planning, Land and Registration, Forests, Surveys) and ZMC (Divisions of sanitation, environmental management and community development, physical planning) and relevant Council Management Committees. Activities involved gathering available documents (i.e. environmental / economic / social data, land use plans and materials from previous planning sessions); conducting interviews/discussions with Focal Persons and staff directly responsible or involved in ZUSP project implementation and implementers, persons in-charge and beneficiaries, extension officers, community leaders and representatives at subproject level.

Site visits to selected representative sites within the councils include sites under construction i.e. drainage channels at Mnazi Mmoja; potential new /upgrading subprojects including Kibele damp site and septic

sludge treatment/disposal site (at Central District, South Region), and site for proposed solid waste materials recovery facility at Maruhubi. Other areas visited include the Michenzani central road corridor, cultural heritage sites in Stone Town, sample infrastructure earmarked for expansion / upgrading in ZMC including roadside drainage systems, public spaces, markets etc.

#### Development of guides and management instruments

Subsequent to the field visit, the Consultant compiled data gathered and will prepare checklists, guidelines, good practice guides, procedures and mechanisms according to the needs of the various entities implementing the investments financed under the ZUSP Additional Financing, prior to project appraisal.

## **2. ZUSP AND ZUSP ADDITIONAL FINANCING PROJECT DESCRIPTION**

### **2.1 BACKGROUND OF THE OVERALL ZUSP**

#### **Rationale for ZUSP**

The Zanzibar Urban Services Project (ZUSP), effective in 2011, was prepared in a response to a request from the RGoZ to assist with the financing of an investment operation that would provide finance for critical infrastructure in key urban areas of the Zanzibar Municipal Council (ZMC) and Pemba Towns and support for improved management capacity for urban development and management. ZUSP recognizes the strategic importance of Zanzibar urban centers as the engines for the country's structural transformation, economic growth and nationwide improvements in welfare. Zanzibar Municipal Council has strategic importance to Zanzibar Island and the country in terms of its physical location, importance for local and international trade and tourism, demographic weight and contribution to the national economy.

#### **Project Objectives and Outcomes**

*The Development Objective:* is to improve the quality of and access to basic urban services in the ZMC and PTCs.

*The Purpose:* rehabilitation and expansion of urban infrastructure and institutional strengthening activities aimed at improving the fiscal and management capacities of the Participating LGAs.

*Project Outcomes:* the ZUSP will improve the welfare and capacities of the ZMC and PTCs to identify their key problems, determine the appropriate solutions in the form of sub-projects, plan their implementation and assume full responsibility for their maintenance and management.

#### **ZUSP Components**

The current ZUSP activities are under three main components with several sub-components.

*Component 1: Institutional Strengthening and Infrastructure Development in the Zanzibar Municipal Council Area (US\$31.2 million):* Component 1 focuses on the ZMC on Unguja Island through six subcomponents which include: (i) institutional strengthening of the management and operational capacity of the Zanzibar Municipal Council (ZMC), (ii) preparation of a diagrammatic indicative structure plan for the ZMC and its immediate periphery, (iii) construction of storm water drainage in the ZMC urban periphery to reduce flooding, (iv) design and installation of street lighting in the ZMC, (v) solid waste collection and transport, including construction of waste collection points and equipment, (vi) construction of the Mizingani sea wall and promenade in Stone Town to restore the remaining segment of the historic sea front.

*Component 2: Support to Town Councils on Pemba Island (US\$3.8 million):* Component 2 assists the three Town Councils on Pemba Island (Chake Chake, Mkoani and Wete) with: (i) institutional strengthening through technical assistance and equipment and vehicle procurement, and (ii) investment projects, including small-scale civil works and equipment.

*Component 3: Project Management (US\$3.0 million):* Component 3 provides support to the ZUSP Project Management Team (PMT) located within Ministry of Finance for project management, supervision of environmental and social safeguards, project monitoring, and reporting. It also facilitates other implementing ministries and departments responsible for specific subcomponents to implement and coordinate their activities.

### **Current Status: Completed and On-going Works**

ZUSP is currently strengthening the institutional capacity of ZMC coupled with developing infrastructure in 3 main sub-sectors: waste management; urban upgrading; and support for cultural heritage investments in the World Heritage City location of Stone Town. Activities have involved improvement or development of selected infrastructure sub-projects at various locations within the ZMC and three Pemba TCs aimed to improve the environmental quality of the urban areas. Most of the infrastructure on the list of the first batch of prioritized subprojects are on-going or in final stages or complete and in use. ZUSP contains a set of other interventions designed to meet the management and institutional needs of the participating urban local governments and communities within as well.

#### ***Waste management in ZMC***

The solid waste management subcomponent is implemented by ZMC's Division of Sewerage, Drainage and Solid Waste. The current project's support has enabled the department to substantially improve collection and transportation of solid waste through infrastructure improvements coupled with Institutional support. Activities achieved or ongoing include construction of new or improvement of existing solid waste collection centres including concrete slabs where waste is deposited and stored temporarily: 193 in total out of which 56 skip pads are complete and in operation. ZUSP has made improvement of the existing disposal site at Kibele, now operated on an interim basis as a managed solid waste disposal site.

Institutional support coupled with infrastructure development involving:

- Procurement of new collection equipment including push carts (75), skip containers (193), Dust bin (1000), skip trucks with skip loaders (5), open tipper trucks and compactor trucks (2);
- Implementation of an Equipment Operations and Maintenance Strategy and;
- Improvement of enforcement of municipal solid waste regulations and by-laws related to municipal solid waste.

#### **Challenges and gaps identified**

Facilities for solid waste and septic sludge remain inadequate, and there is no formal site for waste disposal. Solid waste and septic sludge has always been indiscriminately dumped at informal dumping areas wherever space is available in the municipality including environmentally and socially sensitive sites such as wetlands, sites in close proximity to residential areas, significant cultural heritage areas, and mangrove forests. Inadequately managed collection and disposal points have resulted in community complaints and severe environmental degradation and health risks. The Kibele site though now is being operated on an interim basis as a managed solid waste disposal site, (an improvement over open dumping but still inadequate), but the current practice remain unsustainable as a long-term solution for waste management on the island. Septic sludge to date is still disposed informally in a mangrove area near a protected heritage site.

#### ***Urban upgrading in ZMC***

The urban upgrading activities are implemented by Department of Urban and Rural Planning (DURP). Works has involved construction of storm water drainage systems at location prone to flooding. The current support for infrastructure improvement has involved:

Drainage canals construction:

**Table 1: Current ZUSP drainage works**

S/No.	System name	Name of street/Shehias	Drainage Lengths
1	C	Amani, Nyerere, Sebleni, Kwa-mabata, Mwantenga, Kwamtipura, Shaurimoyo, Saateni, Mianzini	9147m
2.	D	Muungano, Mwembenjugu, Magomeni, Sogea, Kidongochekundu	767m
3.	E	Jangombe, Botanical garden, Migombani, Kilimani, Kiungani, Binti Amrani, Mpendae, Meya	4629m
4.	F	Mnazimmoja playground	810m
5.	G.	Kwa-mzushi, Darajabovu, Karakana, Mtopepo	
6.	I	Kwa-mtipura - Saateni	

Street lighting for Shangani area, Kiponda area, Victoria garden, Jamuhuri garden, African house garden, Kaunda road (0.5km), Mwembeladu-Amani road (1.9km), Amani-Mwanakwerekwe road (1.3km), Mwanakwerekwe-Kariakoo road (2.7) and Mapinduzi road (0.69km).

Rehabilitation of 340 meters of Mzingani sea wall. This involve backfill and foundation work; refurbishment of underground infrastructure (water, sewer, storm sewer and electrical and telecommunication lines below the roadbed); resurfacing of the road and introduction of traffic calming measures; and creation of a pedestrian promenade such as landscaping, street lighting and street furniture along the sea side.

Challenges and gaps identified

Roadside drainage ditches or underground drains are absent; therefore the roads themselves become drains during rains which clearly reduces the economic attractiveness of these road corridors and the buildings along them.

***Capacity building and infrastructure development in Pemba Island.***

Infrastructure works in Pemba have been small scale in existing sites. This has included improvement of movements to/through low-income areas by rehabilitating existing footpaths and neighborhood drains, town council facilities such upgrading a small market and rehabilitation of existing Town Council office buildings. These subprojects have posed no significant environmental and social impacts. The main challenges have been due to rehabilitation of older buildings and needed design improvements of footpaths.

Specifically infrastructure at the 3 TCs are: Chake-Chake: 3 selected subprojects are (a) improvement/construction of footpaths (b) rehabilitation of the slaughterhouse (abattoir), and (c) improvement of the TC office building; Wete: 3 selected subprojects are (a) rehabilitation of the market, (b) rehabilitation of the bus stand, and (c) improvement of the TC office building; and Mkoani: 3 selected subprojects consist of (a) footpath improvements, (b) drainage improvements, and (c) rehabilitation of the TC office.

## **Environmental and Social Safeguards for On-Going ZUSP**

The ongoing ZUSP has triggered the following World Bank safeguard policies: OP 4.01 on environmental assessment; OP 4.11 on physical cultural resources, and OP 4.12 on involuntary resettlement. At the commencement of the ZUSP in 2011 there was no Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) prepared for the original project. In order to manage impacts emanating from project activities, the on-going implementation of the ZUSP had in place for ZMC and the Pemba TCs Environmental and Social Impact Assessment (ESIA) reports (including Environmental and Social Management Plans) for the sea wall, urban upgrading and Pemba works, and one Abbreviated Resettlement Action Plan (ARAP) for the drainage subproject. All ESIA, ESMPs and the ARAP were cleared by the World Bank and disclosed in Zanzibar and the World Bank InfoShop prior to project appraisal.

Over the life of the project, the ZUSP Project Management Team (PMT) has used these reports in supervising construction works and implementation of ESMPs.

## **2.2 ZUSP ADDITIONAL FINANCING PROJECT**

### **ZUSP-AF Project Description**

The AF would primarily be used to scale up Project activities in four areas: (i) developing a sanitary landfill and small sludge treatment facility, with equipment and training, (ii) urban upgrading and cultural heritage conservation, (iii) scaling up investments for small-scale infrastructure in Pemba, and (iv) support to Public Private Partnership (PPP) initiatives and developing a Local Government Revenue Collection and Information system (LGRCIS).

Proposed activities under each area include:

1. *Sanitary landfill and sludge treatment facility*: The ZMC has identified an interim disposal site at the Kibele (a former quarry) that is the best available option to use as an interim solution and upgrade to a sanitary landfill. Relevant authorities for environmental and waste management have approved the site, and it has been accepting waste as a managed dumpsite since early 2014. Site options for a small sludge treatment facility – able to accommodate waste from trucks - would be assessed as part of AF appraisal. The design of these facilities would not be completed by appraisal.

In addition to infrastructure, the AF would take a comprehensive approach to waste management and support strengthening policy frameworks, provide intensive technical assistance and training, equipment, assess the potential for material recovery and recycling, and promote community-level engagement and awareness raising. As part of AF appraisal, options will be assessed to either prepare a feasibility study for the complete solid waste management system (collection, transfer station cum materials recovery facility, transport, and landfill) and sludge treatment facility or an initial design build for only the landfill.

2. *Urban upgrading and cultural heritage conservation*: The RGoZ has outlined several priorities for urban upgrading that will promote economic development and promote conservation of Zanzibar's urban cultural heritage. The ZMC Development Strategy and Structure Plan identifies the Michenzani area (in the buffer zone of the Stone Town UNESCO site) as a new mixed-use

corridor given its strategic location, wide road network, housing density, historic sites, and opportunity for economic development. The Department of Urban and Rural Planning is creating an area development plan and is proposing low-impact urban upgrading (including improvements to existing roads, drainage, pedestrian amenities, landscaping and open space, market area improvements etc.) along the existing central road corridor.

Other potential sub-projects include roadside drainage improvements, implementation of the Stone Town traffic management plan, improved pedestrian connectivity, upgrading public spaces, and updating the Zanzibar Stone Town Conservation Master Plan. These options, along with other institutional strengthening and technical assistance activities, will be appraised as part of the AF preparation, and include environmental and sociocultural considerations consistent with the ESMF and RPF.

3. Scale up small-scale infrastructure investments in Pemba: Pemba's small infrastructure investments have yielded positive benefits to communities in a short amount of time. Footpaths and stairs on steep slopes in Chake Chake and Mkoani have significantly increased mobility and accessibility for communities for example. The three Town Councils have requested scaling up pedestrian facilities and installation of street lighting similar to the investments in the ZMC.
4. Public Private Partnerships (PPP): Strengthening capacity for developing PPPs underlies scale-up activities in waste management and economic development, as well as other sectors. The objective would be to ensure that the waste management system is financially sustainable and that private sector investment, skills and organizational capacity support ongoing operations. These activities would also support the operationalization of the PPP Department for key priority investments in Zanzibar. The feasibility studies will include due diligence requirements for the Safeguards.

Revenue collection: The MoF and RGoZ have requested the AF to develop a Local Government Revenue Collection and Information System (LGRCIS) for ZMC and the three town councils in Pemba, modeled after the system piloted under the Tanzania Strategic Cities Project.

## **Coordination and Implementation Arrangements For ZUSP-AF**

The implementation of ZUSP-AF will continue to use existing staff structures and government systems. The key implementers will be Ministry of Finance through the ZUSP PMU and the ZMC and PTCs.

Ministry of Finance will continue to be responsible for the overall management of Programme activities, providing overall coordination and technical support to ZMC and PTCs. The Ministry of Finance has established a dedicated Project Management Team consisting of its own personnel for the implementation of all World Bank supported projects under ZUSP.

Participating local governments and Beneficiary Institutions: ZMC, PTCs and the Department of Urban and Rural Planning (DoURP) will take the primary responsibility of implementing own sub-projects including fiduciary, environmental and social safeguards, and reporting requirements. The ZMC has bestowed responsibility for coordinating project funded by ZUSP under Division of Sewerage, Drainage and Solid Waste (DSDSW). The DSDSW will continue to work with other experts within or outside the ZMC. Similarly in PTCs, subproject related to waste management are under the TCs Sanitation Department. The Department of Urban and Rural Planning (DoURP) will continue to take responsibility of planning and overseeing implementation of prioritized and approved urban upgrading infrastructure. Collaborating institutions include ZEMA, Ministry of Land and Department of Forestry. Specific roles and responsibilities in implementing the ZUSP-AF include:

- Overall responsibility
- ZUSP-AF planning and budgeting: including overseeing development of sub-project concept, sub-project design, sub-projects ESIA, RAP preparation.
- Review of plans and budgets
- Approval of plans and budgets
- Procurement of services of Contractors/ Consultants
- Project implementation
- Supervise of implementation, monitoring and reporting
- Review of project implementation reports
- Reporting to MoF

### **3. BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS**

#### **3.1 KEY VALUED ENVIRONMENTAL COMPONENTS IN ZUSP-AF AREA OF INFLUENCE**

The identification, appraisal, management and monitoring of environmental and social impacts emanating from implementation of the overall ZUSP-AF project (and subsequent sub-projects) starts with a focussed process to identify the key Valued Environmental Components (VEC) including physical, chemical, biological, social, economic, archaeological and cultural heritage and any other receptors that are likely to interact with project activities. Below is a description of the VEC relevant to ZUSP-AF including aspects likely to have cumulative implications related to waste management and urban infrastructure development and services.

##### **BIO-PHYSICAL FEATURES**

###### **Air Quality**

On the legal and at the policy level, the Zanzibar Bureau of Standards is preparing a set of air quality standards that are expected to be operational in the immediate future. The Ministry of Health is also preparing Regulations on Landfill Management that are expected to stress on compliance with the atmospheric emissions limits.

Overall, there are no specific or officially sanctioned quantitative measurements to assess the level of CO, NO<sub>x</sub>, SO<sub>x</sub> or even SPM, neither in the Zanzibar Municipality. There are no competent laboratories inside Zanzibar that are dedicated to air quality monitoring while only have managed to only address qualitative analysis of the ambient air in their specific spatial boundaries. There is an urgent need to establish permanent air quality monitoring stations around urban areas. Without such facilities and monitoring instruments, it will be difficult for the project to accurately implement the Environmental Monitoring Protocols with scientific data.

The ambient air quality around the ZMC areas and the whole Unguja island appears to be deteriorating rapidly. Major sources of air pollution include burning of woody biomass, production of charcoal, slash-and-burn practices, quarrying, dust emissions from unpaved roads, and the traffic pollution which is increasing in great proportion. Most of the imported vehicles are used cars which would have almost certainly failed general emission testing criteria from their point of origin. The Zanzibar Bureau of Standards has already adopted the Tanzanian Ambient Air Quality and Stack Emissions Standards but their implementation is yet to be enforced.

The effect on air quality of the increased traffic flow is considered to be significant if no controls are enforced. Under good maintenance schedule, traffic exhaust emissions will be intermittent and atmospheric dispersal of exhaust emissions will maintain the sound ambient air quality. However, concerted effort to check engine performance is needed so as to deter vehicles not road-worthy from using the roads. Improved roads and is critical in addressing the air quality situation.

###### **Climate**

The islands of Zanzibar are characterized by an equatorial Monsoon system (Hot and Wet seasons). The long Masika Rains from March to May come before the onset of the South-West Monsoons also known as the Kusi (which blow from April to November) while the short Vuli Rains (September to November) come before the onset of Northeast Monsoon winds known as the Kaskazi which blow from November to

April. The rainfall pattern is bimodal in nature. During Masika contributes to 50% of the annual rainfall rain while Vuli contributes between 25% and 30%. On average, Pemba receives more rainfall (1900mm) than Unguja (1600mm). The distribution of rainfall is such that there is more rainfall in the western halves of each island than in the east.

The hot and humid season is between the months of December to March while the cool and dry season is between the months of June to September. Temperatures range between 25 degrees Celsius to 35 degrees Celsius. But, with higher humidity levels, temperatures can be felt to range above 40 degrees Celsius in some occasions. The relative humidity is high, with a monthly average ranging between 75% to 85%.

**Table 2: Annual climate patterns on Unguja Island**

Items	Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Precipitation (mm)	1,561	87	86	127	403	249	54	48	37	33	105	187	145
Mean. Temp(°C)	26.0	27.2	27.8	27.5	26.9	26.1	25.3	24.4	24.3	24.5	25.2	25.8	26.8
Max. Temp(°C)	30.2	31.4	31.9	31.9	30.3	29.4	28.3	28.3	28.9	29.9	30.4	30.4	31.2
Min. Temp(°C)	21.8	23.0	23.7	23.1	23.5	22.8	21.7	20.6	19.7	19.2	20.1	21.3	22.5
Humidity(%)	79	78	76	81	83	81	76	75	75	76	77	83	81
Wind(m/s)	2.0	1.9	1.8	1.8	1.6	2.2	2.3	2.3	2.2	2.2	2.0	1.6	2.0
Sunshine(%)	62	60	65	60	48	59	63	61	71	70	67	60	64
Daylength(h)	12.1	12.4	12.3	12.1	12.0	11.8	11.7	11.8	11.9	12.1	12.2	12.4	12.5

## Climate Change

Zanzibar's economy is very dependent on climate but recent studies have confirmed that the islands' climate is changing negatively<sup>1</sup>. Recent decades have seen rising temperature, increased rainfall variability, higher wind speeds, rising sea levels, and extreme weather events. Currently Zanzibar has been experiencing droughts and municipal floods which have had economic costs in terms of GDP. In this case, Zanzibar is not yet adequately adapted to the current climate change impact and the Government needs to address adaptation deficit to lead to immediate benefit as well as providing resilience to future climate change.

As a least developed country, or part of the contracting party to the United Nations Framework Convention on Climate Change (UNFCCC) Zanzibar produces negligible carbon emissions that do not necessarily or directly impact the global effects of the carbon emissions. According to the study on Economic Impacts of Climate Change in Zanzibar (2012), the total CO<sub>2</sub> emissions for Zanzibar in 2010 was 763 Gq CO<sub>2</sub> equivalent or 0.6 tCO<sub>2</sub> Emissions per Capita Equivalent. Wastes take up a small share of total CO<sub>2</sub> emissions (4%). Energy sector is the leading source of CO<sub>2</sub> emissions (39%) followed by Agriculture (28%), and LULUCF (29%). The projected CO<sub>2</sub> emissions by 2030 in Zanzibar are expected

<sup>1</sup> Paul Watkiss (2012) Economic Impacts of Climate Change in Zanzibar. UK Department for International Development

to climb to 2200 Gg CO<sub>2</sub> equivalent with LULUCF, Agriculture and Transport sectors leading in these emissions.

### Noise Emissions

No official ambient or occupational noise pollution data for Zanzibar is available. It is more likely that there hasn't been any organized collection of regular or periodic data for ambient or occupational noise levels. Abstract analysis of noise levels indicate that ambient noise levels exceed human threshold during day time especially around the municipal zone and arterial roads exceeding 90 to 120 dB. The Zanzibar Bureau of Standards has already adopted ambient and occupational noise standards whose implementation and enforcement is yet to be activated. Community consultations have indicated a rising scale of public nuisance caused by increased garbage trucks traffic flow through the locality. Such a highly audible flow needs a regulated standard procedure in order to avoid environmental and public health challenges

Overall, and in the context of the Zanzibar Municipality, major sources of noise pollution in Zanzibar and typically around the zone of influence include motor vehicles which have proven to be a big source of noise pollution. Increasing traffic has given rise to traffic jams in congested areas where the repeated hooting of horns by impatient drivers pierce the ears of all road users. Moreover, noise from airplanes using the Zanzibar International Airport has been affecting a portion of the municipality situated in the vicinity of the Kisauni Airport. Public Address System and the use of loud speakers contributes heavily in its own way towards noise pollution while other miscellaneous sources such as automobile repair shops, construction-works, stone crushing etc. are other sources of noise pollution that are worth considering in preparing environmental monitoring protocols.

Noise assessment, i.e. more in situ measurements are required to develop a monitoring baseline. The significant issue is the frequency of garbage trucks passing through residents areas. Another point of interest in addressing the sensitivity of fauna to noise levels.

### Surface Fresh Water Quantity and Quality

#### *Overall Assessment*

According to the Zanzibar Water Authority (ZAWA) Strategic Plan 2013-2018, natural resources for drinking water in Zanzibar are restricted to groundwater, which is considered to be in abundance, whereas surface water resources are modest. Past studies of available groundwater resources have tended to agree on a possible upper abstraction limit of 339 million cubic meters annually (Mm<sup>3</sup>/a), as shown in the table below. The present actual abstraction is estimated to be 71 Mm<sup>3</sup>/a, while ZAWA abstraction is estimated to be 33 Mm<sup>3</sup>/a. The data and forecasts prepared by Halcrow in 1994 and projected forward to 2015, arrive at a water inflows and resources for each island (in million cubic meters per annum, Mm<sup>3</sup>/a) as follows:

**Table 3: Annual water budget in Unguja and Pemba**

Description	Unguja	Pemba	Total
Average annual Rainfall	2,445	1,525	3,970
Estimated groundwater recharge	565	121	686
Acceptable aquifer yield	293	46	339
Estimated actual abstraction	60	11	71
Estimated ZAWA abstraction	23	10	33
Irrigation & private wells	n/a	n/a	n/a

In the 2008 – 2013 estimated abstraction by ZAWA is 33 M m<sup>3</sup>/year has been mentioned, but without bulk water meters this figure cannot be confirmed. Attempts to estimate a correlating figure by using power consumption records from the electricity meters and the pump rating have been unsuccessful so

far. This is partly due to lack of on-going records and partly due to the application of substantial meter reading factors by ZECO all of which are not known.

#### *Surface Water Terrain and Morphology on Unguja*

According to KOICA Feasibility Study on Zanzibar Irrigation Master Plan (2010), almost all surface water streams in Unguja have several flooding outputs with peak discharge in a short time in rainy season, but have low or no discharge in the dry season. These streams are divided into those that reach the sea and those that do not. The four systems flow to the sea in the northwest sector of island, and there are smaller streams along the western coast, such as at Bububu and Mtoni, but they do not represent a significant economic resource, apart from channeling heavy flow of rain water downstream and into the sea during the heavy rainy seasons.

A number of other streams disappear into the coral rag limestone or sink holes known locally as Pokezi or Kibonde. Three examples of such streams are the Kinyasini, Pangeni, and Mwera. While the project site is not known to have any surface water body in the vicinity, the characteristics of these surface runoffs in Unguja between during annual period and heavy rainy season are given in the following table:

**Table 4: Features in River Flow in Unguja During Annual Period**

Name River	Catchment Area( km <sup>2</sup> )	Length (km)	Annual Specific Discharge (m <sup>3</sup> /sec/100km <sup>2</sup> )	End of outflow
Mwera	28.0	20.0	1.70	Pokezi
Kipange	15.0	9.0	1.67	Indian Ocean
Mwanakombo	10.0	9.2	1.78	Indian Ocean
Zingwe-zingwe	9.0	25.5	0.77	Indian Ocean
Bwabwaja	3.6	6.0	1.33	Pokezi
Mawe	4.5	5.3	1.07	Pokezi
Kinyasini	7.6	9.7	1.10	Pokezi
Pangeni	8.6	23.0	1.07	Pokezi

**Table 5 Features in River Flow in Unguja During Masika Season**

Name River	Record Length (2010)	Average Daily Flow	Estimated Yield ('000m <sup>3</sup> )	Period Rainfall	Runoff potential
Bububu	20 Apr to 8 Jun	0.2m <sup>3</sup> /s	700	571mm	30 to 40%
Zingwe-zingwe	31 Mar to 9 Jun	1.6m <sup>3</sup> /s	9,800	938mm	30 to 50%
KitopeMchanga	30 Mar to 9 Jun	0.4m <sup>3</sup> /s	2,600	938mm	40 to 55%
Mchanga	30 Mar to 8 Jun	0.4m <sup>3</sup> /s	2,300	938mm	30 to 40%
Mwanakombo	24 Apr to 8 Jun	1.7m <sup>3</sup> /s	6,700	670mm	40 to 55%
Kinyasini	30 Mar to 12 May	0.7m <sup>3</sup> /s	4,500	880mm	45 to 60%
Mwera	25 Apr to 7 Jun	5.7m <sup>3</sup> /s	20,300	736mm	40 to 50%
Kipange	22 Apr to 12 May	1.6m <sup>3</sup> /s	3,000	448mm	40 to 50%

#### *Recent Studies on Water Quality in the Zone of Influence*

ZAWA does not keep regular track of the baseline data on the percentage (%) of Water Samples Passing Bacteriological Quality Tests or the percentage (%) of Samples of Supplied Water Passing Physical Chemical Quality (Turbidity) Test. There are series of external peer reviewed studies from various locations of the island that provide an indicative picture of the state of fresh water quality.

For example, Abdul A.J. Mohammed et al (2013)<sup>2</sup> assessed the level of total hardness and heavy metals (hexavalent chromium and copper) in springs and underground water sources in some areas of Zanzibar. Levels of copper, hexavalent chromium and total hardness in the studied samples ranged between 1.38 - 11.0 mg/L, 0.05 - 0.4 mg/L and 32.02 - 1009 (as mg/L CaCO<sub>3</sub>), respectively. About 77% of all samples had total hardness values higher than the World Health Organization (WHO) guidelines, while the proportion of samples with dangerous concentrations of copper and hexavalent chromium were 70% and 96.6%, respectively. The levels of most of the studied parameters in the drinking water samples exceeded the permissible limits of the WHO drinking water quality guidelines. The results show the urgent need to take immediate mitigation measures and continue the water quality monitoring in Zanzibar, as well as establishing drinking water treatment plants.

Another recent peer-reviewed physical-chemical and microbial analysis study by Abdul A.J. Mohammed et al (2014) reveals the effect of rainfall on pH and electrical conductivity (EC) of Zanzibar groundwater sources<sup>3</sup>. In June 2012, thirty water samples were collected from spring and underground water sources for fecal coliforms (FC), total coliforms (TC), alkalinity, phosphate (PO<sub>4</sub>-P) and ammoniacal nitrogen (NH<sub>4</sub>-N) analysis. The levels of PO<sub>4</sub>-P, NH<sub>4</sub>-N, and alkalinity in water samples were in the range of 0.08-5.15 mg/L, 0.03-6.71 mg/L and 47- 430 (as mg L CaCO<sub>3</sub>) respectively.

During dry period, the lowest and the highest EC levels were 181.02 µS/cm and 6180. µS cm respectively, while 167.36 µS/cm and 7985.03 µS/cm were the respective lowest and highest EC levels measured during wet period. The variation of pH levels during dry and rainy period were in the range of 6.31- 8.30, and 7.13 - 8.44, respectively. During dry and wet period, 40% and 17% of the samples respectively had EC level beyond the guideline recommended by World Health Organization (WHO). FC and TC contaminated 43% and 67% of the water sources respectively. The presence of FC, TC and elevated levels of EC in some of water samples show how groundwater quality has been deteriorating with the physical growth of the municipality. Ground water quality at Kibele, the laboratory tests carried by ZAWA in July 2015 shows excessive levels of Calcium, Manganese, Phosphates, and contamination by Fecal and Total Coliforms<sup>4</sup>.

### **Groundwater Quantity and Quality**

In recent years there has been a major increase in private well drilling as demand exceeded supply from the ZAWA networks, and as expansion of agricultural irrigation abstraction continued. So far there is no data to give an estimate for these abstractions. ZAWA states that this will be subject of potentially future research. Although there is no immediate risk of depleting the groundwater aquifer, certain areas, particularly in the Eastern areas of Unguja around tourist resorts, have experiencing intrusion of sea water into the aquifer, reportedly due to excessive abstraction of groundwater. This has affected supply in adjacent villages – both in quantity and quality.

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<sup>2</sup> Abdul A. J. Mohamed, Ibrahim Abdul Rahman , Sadri A. Said , Lee H. Lim , Islam S. Mchenga (2013). Levels of Hexavalent Chromium, Copper, and Total Hardness in Springs and Underground Water in Zanzibar Island. Asian Journal of Applied Sciences (ISSN: 2321 – 0893) Volume 01– Issue 05, December 2013.

<sup>3</sup> Abdul A. J. Mohamed , Ibrahim Abdul Rahman , Lee H. Lim (2014). Effect of Rainfall Variability on pH and Electrical Conductivity of Springs and Groundwater in Zanzibar Urban West Region. Asian Journal of Applied Sciences (ISSN: 2321 – 0893) Volume 02 – Issue 01, February 2014 .

<sup>4</sup> ZAWA Laboratory Report taken during the Environmental Scoping of the Kibele Landfill Site in July 2015.

Other areas experiencing constraints and possible saline intrusion include the Urban West part of Unguja. Due to the increasing variability of rainfall made worse by climate change as well as normal drought cycles, raises the level of risk of saline intrusion as the aquifer limit is approached. On the other hand, pollution of water resources from human settlements with ineffective pollution control measures and from human encroachment in the rainwater catchment areas is imminent. If bacteriological contamination becomes established this will raise ZAWA's cost of treatment of groundwater.

The annual rainfall in the South Region, where Kibele is located, is 392 M m<sup>3</sup>/year while the annual recharge is 130 M m<sup>3</sup>/year. The annual acceptable yield is 92 M m<sup>3</sup>/year while the amount of ground water flow to the sea is 38 M m<sup>3</sup>/year<sup>5</sup>.

## **Geology and Morphology**

Unguja's geological profile is composed of Miocene sediments as considered country rock, overlain by Quaternary sediments derived from Miocene rock. The Miocene sediments are divided as three Miocene (M) layers which are classified as M1, M2 and M3, respectively, from bottom to top. Quaternary sediments also are divided as Q1, Q2 and Q3 due to record periods of higher sea level, marine erosion with wave-cut cliffs and platforms, reworked marine and fluvial sediments.

The M3 strata consist of poorly consolidated but well-bedded calcareous sandstones, detrital limestones, clayey sands and sandy clays. The limestones are soft, chalky, and marl rocks with irregularly calcified hard patches. They are generally pale colored, with buff and light brown colors predominant at the surface, passing down into blues and blue-grey, below the weathering to bright red and reddish brown colors.

The M2 strata consist of sands and sandstones, forming distinct characteristic horizons throughout the Miocene in the corridor or channel system. The sands are coarse clean and siliceous, distinctly angular and sometimes sugary, white, opaline, glassy and pearly grey. They are friable usually lacking any cementing material. Though they form distinct stratigraphic horizons, they are rather more likely to occur as lenses or deltaic sandbanks and levees. Their average thickness is from 10 to 15 meters, and within the outcrop expression of the M3, they produce distinct landforms of locally open elongated treeless, grassy and water logged depressions.

The sandstones have a similar lithology of sands, but calcite and siliceous cements occur irregularly. Some siliceous bands are extremely hard and difficult or impossible to drill with small weights of drilling tools. Most deep M2 intersections occur on eastern side of the island from Cheju through to Upenja, Kibokwa, Chaani and Matemwe. Surface outcrop and shallow intersections are confined to the western side of Zanzibar.

There are three limestones in M1: 1) crystalline limestone which is mainly found in the south east area, 2) sandy limestones and reef limestones which are mainly formed as fringing reefs of the east coast, 3) detrital limestones, which being colluvial in origin and crushed in part by wave action, are a re-cemented rock of calcic clays, broken limestone with crushed shell, corals and shark's teeth. Typically, all the Zanzibar limestones are somewhat detrital, sandy and of marl characteristics. They are regarded as being of a shallow marine origin. The interstratified lenses and continuous limestone horizon are found as subordinate strata in the M3 sediment material, on the north western parts of the island with the main Miocene sequence and in the Makunduchi regions<sup>6</sup>.

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<sup>5</sup> Revolutionary Government of Zanzibar (2014) Ministry of Lands, Housing, Water and Energy. Zanzibar Water Authority Report: Zanzibar Water Supply and Sanitation Project - Water Resources Management Component: Water Resources Assessment

<sup>6</sup> KOICA (2010) Feasibility Study: Zanzibar Irrigation Master Plan.

## Soils

The soils of Zanzibar fall under three main groups depending on the geological feature of parent rocks; 1) sandy soils, 2) calcareous red soils, 3) clay soils. The sand soil group derived from non-calcareous sediments, the sandy group varies from very deep sandy to rather heavy reddish through brown, yellowish grey, to grey shallower types. The calcareous red soils are the free draining soils derived from limestone. The clay soils derived from clays and mudstone. There are five main soil categories called Mchanga, Kinongo, Uwanda, Maweni and Kinamo in Unguja.

Maweni soil is located in the coral rag limestone that forms the extensive eastern and southern portion of the island. This soil covers more than 40% of arable land and supports traditional shifting cultivation. Mchanga soil is found on the western part of the island covering 20% of land area. This soil is suitable for both tree and annual crops. Uwanda soil forms the interface between the plantation area and coral rag zones covering 17% of the area. This soil is generally open grass area for unimproved grazing. Kinongo soil is the most fertile in the island and provides high potential for food crop production. Kinamo soil covers only 5% of the land area and is found in the north and small patches in central and south zones. This soil is suitable for rice cultivation.

The following table shows Zanzibar soils comparing to the FAO classification of soil:

Soil type	FAO Classification
Reddish Mchanga	Haptic Acrisols & Eutric Gleysols
Greyish Mchanga	Umbric Gleysols, Dystric Fluvisol, Mollic & Eutric Gleysols
Sandy Mchanga	Cambic Arenosols, Umbric Gleysols, Calcaric Regosols, Areni Haptic Acrisols
Deep Kinongo	Haptic & Ferric Acrisols, Rhodic Ferralsols
Shallow Kinongo	Rhodic Ferralsols, Calcaric Cambisols
Kinamo	Calci Vertisols, Areni Gleyic Cambisols, Haptic Nitisols
Maweni	Rendzic Leptosols, Lithic Leptosols
Uwanda	Mollic Leptosols

## Vegetation

Generally, vegetation in Zanzibar falls under regional formations and can be classified into four main physiognomic types encompassing:

- Secondary Grassland
- Secondary Bushland
- Cultivated lands with settlements
- Restoration vegetation

Secondary Grassland covers various opportunistic grass species which are frequently cleared or slashed. The common grass species seen throughout include *Heteropogon contortus*, *Cynodon dactylon*, *Dactyloctenium geminatum*, *Digitalia ciliaris*, *Eleusine corocana* and *Hyparrhenia filipendula*. Secondary Bushland covers an assemblage of woody shrubs and dwarf trees exposed to constant clearing and pruning. Dominant small trees throughout the island include *Blighia unjugata*, *Albizia lebbek*,

*Annona senegalensis*, *Ziziphus mucronata*, *Balanites aegyptics*, *Flueggea virosa*, *Millingtonia hortensis*, *Trema orientalis*, *Sorindeia madagascariensis*, *Suregada zanzibariensis*, *Dryopteris natalensis*, *Syzygium cumini*, *Antidesma venosum*, and *Mallotus oppositifolia*. Dominant herb climbers include *Acalypha claoxyloides* and *Perquetina nigrescens*

Cultivated Lands with Settlements covers various agricultural crops such as Plantains, Cassava, Yams, Coconut, Mangoes, Oranges, Papaya, Almonds, Bread fruit, and other vegetables, etc.

Restoration vegetation include Acacia and Casuarina Trees.

The project area survey shows the presence of the following wild species:

- Kikwayakwaya (*Stachytarpheta indica*)
- Mchongoma (*Flacourtia indica*)
- Mjenga ua (*Gliricidia spp*)
- Mkeshia (*Acacia auriculiformis*)
- Mkwamba (*Flueggea virosa*),
- Msina (*Leucaena leucocephala*)
- Mtopetope (*Annona senegalensis*)
- Mvinje (*Casuarina equisetifolia*)
- Mwarobaini (*Azadirachta indica*)

## **Land Use Land Cover**

An analysis conducted by SMOLE project 2004, indicates that, current landuses is rapid ongoing expansion of the city, sprawling and intruding into agricultural lands; rapid decline of unoccupied open space with large tracts either being developed or brought under cultivation. Indeed if the trend continues it is reasonable to expect that very large tracts will become peri-urban over the coming generation. The vast bulk of the landmass in the Urban district remains undeveloped although combined built areas now extend slightly over 100 km<sup>2</sup> or some 36% of the landmass. Residential uses, including local services, infrastructure and public space, account for fully 81% of the built areas with public services and limited public space (combined 9%), economic (4.7%) and infrastructural uses (>5%), accounting for the balance.

In Zanzibar Town today there are over 840 ha. dedicated to public services, and 54 ha. dedicated to public open space. Combined these are equivalent to 9% of the built area and <3% of the SA. Of these, approximately 200 ha. in total are located in the Inner City.

## **Biodiversity**

A detailed inventory of terrestrial ecosystems and Zanzibar's biodiversity is included in Annex A. The islands include diverse flora and fauna, with notable endangered and threatened plant and animal species. This includes 276 bird species, endangered and threatened mammal and amphibian species, and coral reefs in surrounding waters. Protective measures for ecosystems and biodiversity include a network of Marine Protected Areas and forest reserves. Many of these assets are under threat, for example due to deforestation to fuel charcoal consumption and poor water quality due to pollution discharges into waterways.

Relevant for the project is the Jozani Forest Reserve - located about 35 km south of Zanzibar town in the island of Unguja, Jozani is the largest forest reserve in Zanzibar. The potential environmental sanitation

activities would take place in the buffer zone of the forest reserve. Two IUCN listed species, the Black and Rufus Elephant Shrew (vulnerable) and the red colobus monkey (endangered) are found in the Jozani forest. While in the forest reserve, it is unclear if these species are found in the buffer zone and the Kibele site specifically. This will be examined in the subproject Environmental and Social Impact Assessment.

## **3.2 SOCIAL, ECONOMIC, CULTURAL CONDITIONS**

### **Population and Demographics**

#### Urban community's characteristics in Zanzibar

The project Appraisal Document for ZUSP (2010) highlighted that by 2002, population in ZMC was 206,292 persons and West District had 13,611 persons. The Zanzibar urban communities bear most of the important features found in other urban of the developing world. It is a cosmopolitan society made of multicultural and multi-ethnic originated from as far as India, Middle-east, Mainland Tanzania and other areas around the coast of Indian Ocean. However, despite its social heterogeneity, Zanzibar urban have less problem of homelessness as compare to other cities in the world. Many middle and low income people have (though insufficient) accommodation. In addition, Zanzibar urban is also a home for extremes cases, i.e. the richest as well as the poorest people; The best and the worst forms of ethical behaviour; Superior creativeness and chronic unemployment all are found in urban Zanzibar. However, the insanitation, high population and congestion, pollution and unhealthy environment that affect the health of the inhabitants is almost everywhere in Zanzibar urban.

#### Local labour force: employment opportunities; health and safety of workers

According to the Integrated Labour Force Survey (ILFS, 2006), the employment to population ratio in Zanzibar at 78.4% (84.8% for males and 73.3% for female). In urban areas the employment ratio was below national average which is only 68% i.e. (78.1% for males and 58.9% for female). The MKUZA II targeted to reduce youth unemployment rate to 11.4% by 2015 which was to be achieved through creation of enabling environment including imparting entrepreneurship skills and provision of Labour Market Information to youth. Petty trade, hand craft, construction sector and fishing are the largest employers in urban areas. Most of these activities are carried out informally and uncoordinated. The uncoordinated activities not add little in national wealth because they are not adequately captured in national accounts but also a threat to environment.

With respect to formal employment, the public sector dominates the formal employment in Zanzibar Town with 20% in public administration, 19% in education, over 5% in health and 2% in electricity<sup>7</sup>. While, Communications (14%) and Accommodation and Food including tourism (13%) are the largest employer among the private sectors in this area. Wages in Zanzibar are low averaging only \$850 p.a in 2011.

### **Urban facilities and services**

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<sup>7</sup>POFEDP (2013) Technical Assistance for the Preparation of a Diagrammatic Indicative Structure Plan for Zanzibar Municipality and Its Immediate Periphery and Urban Development Policy for Zanzibar Town Review Report October 2013

### Potable Water.

The supply and distribution of portable water in Zanzibar is done by the Zanzibar Water Authority (ZAWA). Any development project that will use water during establishment and or operation should be approved by ZAWA. For instance part seven, section 84 (1) of Zanzibar Water Regulation 2007 state that:

*“No water supply project or part of it shall be undertaken until (a) Surveying of the proposed project area, (2) Drawings,(3) Bill of Quantity, and (4)Project write-up are done and approved by the Authority”:- While Section 84 (2) state that: “No person or institution shall initiate water project and or supply equipment and or materials for water supply project without the technical recommendation and corporation of the Authority in advance”*

However, very often the water supply lines get damaged leading to leakage of water which does not only reduce community access to this important resource but also (and more importantly) may be contaminated by waste water drain from houses, overflow storm water and blocked drainages system thereby increases the risk of Gastrointestinal infections that cause diarrhea, vomiting, and abdominal pain. It is not clear yet about the actual demand of portable water in urban district but what is clear is the district have not been adequately supplied with this service. Expanding the coverage is also a big challenge given the increasing population and business establishments in stone town and peri-urban areas that require water and other services. The current challenges in supply of potable water is the ongoing degradation of surface and ground water resources is ongoing due to encroachment into water retention areas, deforestation of the catchment zones, sewage contamination and climate changes,(SMOLE, 2012)

### Access roads

The network of access roads of in the Urban District was (as of December 2013) made up of 68km of urban roads of which 55km are paved and 12 km are unpaved. Among the paved roads, 29km were in very good conditions, 14 km were good, 7km fair, 3 km were poor and 2km were in very poor condition. Zanzibar Town’s main and most important road is Creek Rd. This four-lane road with bi-directional sidewalks is surrounded by commercial activity and major institutions such as: Darajani Market, Central Dala-Dala Terminus, city council and schools, etc. The narrow streets of the Stone town makes most part of the town in accessible by cars. The ZMC cleaning staff use push carts to take solid waste to the areas that can be taken by trucks for disposal to the dumping sites. Though the current road network in Zanzibar Town may seem sufficient to support current traffic volumes, but with the increasing population and motorization growth rates, in the near future it will not be enough. The in-adequate repair and cleaning of drainages leads to spilling of waste water around access roads and streets. In order to improve and sustain clean environment there is a need to construct more drainages, regular removal of sand and other solid wastes so as to allow easy flow of storm water.

### Urban transportation

The concentration of social services in the Stone Ttown area resulted into increased traffic movement in this part of the Urban District. All essential services such as hospital, high court, birth and death registration offices, banks, Zanzibar Port, warehouses, main fish landing site and actions, Government ministries and departments, tourism hotels and restaurants are available in Stone Town. There are also more shops that attract more customers than any other area in Zanzibar. The Stone Town Conservation Authority is controlling (though without success) the movement of vehicles inside Stone Town by limiting the weight of car that can be allowed in this area. The increasing number of vehicles entering Stone Town is a big threat to not only the life of buildings but also to the environment and serenity of the Stone Town. The largest volume of bus pre-load area is located along the main roads at the entrances to Zanzibar Town. Malawi and Karume roads are the main PT corridors. Usually of the commuter buses start in five main routes (Kinanzini, Magomeni Amani and Kilimani) and thereafter splitting into

various roots in the West District. Minibuses (15-20 passenger seats), Haiss (popularly known as *Chai Maharage*) of 20 seat capacity and Ford Convoys with 17 seats are the most common commuter bases for public transportation service in Zanzibar.

### Waste disposal sites

With increasing population and peoples' incomes in many cities, local governments are hard-pressed to collect and dispose wastes that could cause higher methane emissions. Globally, landfills and dumpsites are the third largest sources of methane (World Bank 2016). In Philippines example given in the above report about 60 percent of greenhouse gases from waste are generated by towns and cities. The rest is from municipal wastewater (14%), industrial wastewater (13%), and human sewage waste 13 percent (World Bank 2016).

The Zanzibar Municipal Council is responsible for collection and disposal of waste from the Urban District. Currently the council is expected to generate around 220 tons of solid waste per day; however, its current collection capacity is only 100 tons per day which is about of the total waste generated in the district per day (ZUSP PAD, 2010). The remaining 65 percent of the waste is not properly collected and therefore accumulated and haphazardly dumped in various places near people's houses. The old Stone Town area as well as the western part of Zanzibar Town is given priority in waste collection services by the Municipal Council by allocating about 80 percent in this areas of workforce due to its importance for the tourism.

The case is almost akin to solid waste management in which stagnant water ponds covering more than 173 hectares are very common and directly affect around 3,645 households (ZOSP PAD, 2010)

Within the ZMC area, the sewer network is concentrated in and adjacent to the old Stone Town areas, covering a total area of 96 Ha. The sewer network is also available to a limited extent in some parts of some of the surroundings of Stone Town, including Michenzani Flats, the Police Barrack, and beyond Creek Road in areas as Mchangani and Mlandege (POFEDP 2013). Domestic wastewater often combines with storm water and gets disposed into the sea since Zanzibar has no wastewater treatment plant. The rest of Zanzibar Town has no sewerage system and therefore liquid waste discharged haphazardly into the immediate environment. The above report also indicated that, the direct exposure to raw sewage, particularly during the rainy season make the health of residents in Stone Town (including of visitors) endangered. The area often suffer from sewer odours, negatively impacting upon living conditions and the tourism experience. According to Zanzibar Sanitation and Drainage Program 1 (2005), all landfills in Zanzibar are of open dumping types in which, waste is disposed with sorting and without meaningful consideration of health standards.

There have been some community initiatives in waste collection and management. For instance, the CBO known as Labayka was operating waste collection points within their communities to avoid crude dumping within the settlements. There are also some private individuals who collect waste from some hotels outside the Zanzibar Municipal Council. These private companies usually use open trucks to collect and dispose waste somewhere in the forest or farms. Similarly, Vikokotoni Environment Society in Zanzibar Town close to the main market was engaging in cleaning up the streets every morning before they go to work. The Zanzibar Scrapers Environment Association (ZASEA) is a registered NGO in Zanzibar Town established in 2008 to handle recyclable waste fractions. The organization is recognized by the Department of Environment as registered association with around 100 members.

However, the sustainability of this activity is questionable, as the organizations are relying on external aids for financial resources while the ZMC itself is ill equipped to promote and support this kind of community initiatives.

## Economic Activities and Livelihoods

### Urban Agriculture.

Urban District is by far the most important urban centre in Zanzibar. The district receives an average annual precipitation of between 1,500 to 2000mm mostly from two main rain seasons. i.e. *Masika* (long rain season) which rain from March to May and *Vuli* (short rain season) from October to December). Urban agriculture is a practiced in open places and fairly low density areas in town owned by private individuals or public institutions such as military camps. Such are found in Migombani, Bomani, Maruhubi and Mpandae.

Collectively, there are about **360 acres** of different short term crop in Urban District (*Conversation with Urban District Agricultural Officer*). Leafy vegetables particularly spinach and *Matembele* occupying larger part of the agricultural land in this district. The crops that are grown in negligible quantity are; tomato, sweet pepper, Chinese cabbage, okra, eggplant, onion, cassava and rice.

In most cases farmers rely on tap water from ZAWA supply lines or produce rain-fed conditions. The main challenges with this agricultural land is that some of these areas have become important storm water drains which may flood the area, pollute and contaminate the farm with waste chemicals and harmful microbes and eventually make the harvests unsafe for human consumption. In addition, the existing weak enforcement of laws to control air, water and soil pollution, sewage that discharged untreated into land and is the main concern of urban agriculture in Zanzibar. In addition, the land for agricultural production has been declining because of increasing urbanisation, through horizontal expansion of buildings.

### Livestock keeping and business activities

Currently there is no official statistic on the amount and types of animal kept in urban district. However, the biggest beef and chicken markets in Zanzibar are found at Darajani in this district. On average about 19,606 cattle and 3,329 sheep & goats (table xxx) are being slaughtered annually at Kisakasaka in urban west region most of this meats are sent to Central Meat Market at Darajani for wholesaling and retailing. There is no specialised abattoir for chicken in Zanzibar. Chicken are mostly slaughtered at Darajani and Mwanakwerekwe Markets. The challenge here is a lack of appropriate infrastructures and regular maintenance services of the market place. For instance, Darajani market drain its waste to the Central sewage system of the Stone Town, but very often the market lack potable water, inadequate cleaning leading to the blockage of the drainage to create unhygienic condition in the market.

**Table 6**

#### **Cattle, sheep&Goat and Chicken slaughtered annually (2011- 2014)**

Year	Animal slaughtered		
	Cattle	Goats	Chicken
2011	17,341	3,996	300,228
2012	19,569	4,845	330,658
2013	20,501	3,001	251,185
2014	18,747	2,142	5,009,311

**Sources: Ministry of Livestock and Fisheries (no date)**

Unfortunately both agricultural Sector Policy (2002) and Livestock Policy of 2011 are silent on the vital issues pertaining to urban agriculture and livestock keeping in urban respectively; and the land for such production activities.

### Fishing and Fisheries activities

Like all other districts in Zanzibar fishery is an important economic activity in Urban District. The district houses the largest fish landing sites and auctions at Malindi, Darajani, and Maruhubi and Kizingo. Malindi, Darajani are also the largest retail markets for fish in Zanzibar. There are also small but formal fish markets (such as Kwa Haji Tumbo and Mikunguni). Some informal markets exist in Magomeni, Jangombe, Saateni and Makadara.

These activities and functions are performed by different actors including; Fishers (2,129) who do the actual fish catching, 84 foot fishers (they fish without using vessels), 324 fish mongers and 138 gear repairs. (Table 7): There is high risk of fish contamination with chemical and biological agents discharged from households and industries at various stages of value chain starting from the surrounding sea, landing sites, at auction and retailing sites.

**Table 7 Key Actors in Fisheries Value Chain in Urban District and types of service**

District	Fishers	Foot fishers	Fish mongers	Gear repair	Fish fryers
Urban	2129	84	324	138	20
<b>Zanzibar Total</b>	<b>27187</b>	<b>7384</b>	<b>2141</b>	<b>2061</b>	<b>127</b>

Sources: Frame Survey 2010.

The existing markets generally lack essential infrastructures required for proper maintenance for hygiene and food safety. The insufficient water supply, poor drainage system can be seen vividly in virtually all fish markets in the district. The waste water in Darajani market is directed to the Central Drainage System of Stone town. But very often they get blocked by solid waste and sand deposits. Whereas, in markets that are close to the sea such as Malindi and Maruhubi the drain is directed to the sea. Sometime, wastes in these markets stay longer and produce smell leading to air pollution.

Fishing is not only provides a good source of protein but also a good source of employment and income. The previous Frame Survey (2010) indicated that about 3097 individuals were directly employed in the fisheries subsector in urban district (Table 8). Out of this, 392 were vessels owners, 2,129 fishers, 84 foot fishers, 324 fish mongers, 238 gear repair and 20 fish fryers who fry fish within landing sites. The sustainability of fishing industry requires among other things maintenance of a healthy environment of both in shore and offshore water.

**Table 8 Fisheries as a source of Employment in Urban District**

Types of employment	Vessels owners	Fishers	Foot fishers	Fish mongers	Gear repair	Fish fryers	Total
Number	392	2129	84	324	138	20	<b>3087</b>

Source: Extracted from Frame survey (2010)

### Petty Trade

Despite the contribution of petty trade to the employment and income in Zanzibar, petty traders themselves have become a nuisance to motorists and pedestrians. They are obstructing the walking pavements along the famous streets in Stone Town such as Mchngani, Darajani, Kiponda and Gizenga Street. Large part of these streets have been occupied by the traders causing unnecessary jam to vehicles and pedestrians. They claim that they have no alternative livelihood or place to do their businesses.

Several attempts have been made to remove petty traders popularly known as 'Machingas' or Jua kali, from Zanzibar, Darajani area. The RGoZ established Machinga Complex at Mpigaduri (popularly known as Pinda Mgongo) but most of them decided to continue business as usual. All of these attempts have hit a snag due to boldness of the petty traders. This is evidenced by the statement made by State Minister Dr. Mwinyihaji Haji Makame said in the House of representative "Our Municipal council staff are beaten and threatened by stubborn hawkers. We need to educate the traders so that they can shift to new place put aside for them," (13 October 2012 Daily News)

These traders drop huge litter of solid waste every day. They sometime throw in solid waste into the drainage system and cause blockage. They don't even provide adequate space and time for ZMC staff to clean up the area properly.

### Business and trade

With the exception of agriculture, Zanzibar Town is a centre of all other activities: commercial, administration, social and cultural. The presence of harbour, central fish market, and fish landing, referral hospital, tourist of tourist hotels and restaurants make the Urban District as the business centre for Zanzibar. The area contains the main harbour in Zanzibar for importing and exporting passengers and Cargo. There are also a number warehouses around port and Saateni areas. Some street of stone is full of shops, tours operators and airline; office banks and the likes.

### Tourism

Tourism in Urban Zanzibar is mostly done in Stone Town area which is categorised in Tourism Zoning, as Zone 1 (The Zanzibar Commission for Tourism (as cited by RGoZ (2009c). Most of the visitors to the island spend one or two nights in Stone town before or after staying at the beaches in north or east coasts of the Island. According to the Zanzibar Commission for Tourism, there are about 140 tourist hotels in Stone Town that provide accommodations to tourists (ZCT, 2010). The main tourist attractions in this zone are the Old Fort, The Palace Museum, the Anglican Cathedral with old slave market and other historic sites and museums. Others are dhow harbour and Forodhani Garden.

Despite the importance of Stone Town as an impotent tourism product in Zanzibar, the hygienic and sanitary requirements to support this sector has not been encouraging. The spread of litters of solid waste and spread of liquid waste in the streets due to blockage of drainages system are the normal occurrences in this area. The effort to develop tourism industry in Zanzibar should give more emphasis on town cleanliness; since mismanagement of solid waste can lead to pests, odor and disease which may dramatically deter tourism.

Zanzibar has many exciting recreation areas to cater for the need of locals and visitors. This includes; Palace Museums, Forodhani park, white sand beach at Forodhani, Ngome Kongwe, Anglican Church Mkunazini, Botanical Gardens, open places for sports and recreation at Maisara, Mnazimmoja, Kariakoo Recreation Park, Mao Zedong and Amani football stadiums. The Challenges is however on to keep these area green and clean, and install and maintaining drainage infrastructures for better management of liquid waste and storm water in these areas.

### **Cultural Heritage**

With respect to historic buildings /structure, the Stone Town of Zanzibar is a typical example of the Swahili coastal trading towns in East Africa. It retains its prominent historical and artistic importance in East Africa, and retains contains many architectural buildings that reflects diverse influences underlying the Swahili culture, with a unique mixture of Moorish, Arab, Persian, Indian and European elements

dating back to the 19th century. It occupies the most western edge of the Town of Zanzibar with a total area of 96 hectares and buffer zone area of 84.79 hectares which make about 5.4 % of the total area of Zanzibar Town. The Stone Town was declared as World Heritage Sites by UNESCO in 2000. Considerable efforts have been taken by both government (Stone Town Conservation Authority) and non-governmental Organization to work with communities within Stone Town in preserving its heritage and culture. The rehabilitation of Forodhani Park in line with the requirement of Stone Conservation regulations and reconstruction of Mzingani Sea Wall as an iconic sea face of the Stone Town is some of the recent example of these efforts.

### **3.3 EXISTING ENVIRONMENTAL AND SOCIAL CHALLENGES**

Zanzibar is an Island within the United Republic of Tanzania, but the environmental problems that the islands have are reminiscent of the similar issues faced by other islands. Therefore the urgency to engage regional and international environment related conventions, protocols and agreements and seek support in enforcing the Climate Change, ICZM, environmental and conservation of natural resources; energy, and pollution control and waste minimization in the context of sustainable development has never been more critical.

There is a growing number of environmental and social challenges faced by the Zanzibar Municipality and are affecting the country's environment, social and economy of the urban inhabitants in the island. Zanzibar finds itself in the midst of emerging environmental and social challenges of the current times, mostly caused by the increase of urban population with less urban infrastructure development. These environmental challenges compelled the Government to institute a new policy of 2015, towards an environmental governance framework that focuses upon the island's environmental and social protections. The Revolutionary Government of Zanzibar recognizes the need for an urgent action to address these challenges in a multi pronged approach for the benefit of present and future generations.

The current environmental pressures affecting the country relate to:

- i. the adverse effects of climate change and sea-level rise;
- ii. a surge in intensity and frequency of abnormal weather patterns, drought conditions, strong winds, indecisive rains and floods;
- iii. environmental pollution aggravated by inadequate management of solid waste, wastewater.
- iv. increasingly depleted fresh water resources, deforestation and destruction of catchments and wetlands.
- v. increased demands in land resources, and combating land degradation and pollution.
- vi. inadequate of reliable and alternative of energy supply.
- vii. loss of biodiversity and destruction of habitat both from terrestrial and marine environment.

## 4. POLICY, LEGAL AND INSTITUTIONAL REQUIREMENTS

All sub-projects implemented under ZUSP-AF shall comply with relevant national environmental and social management requirements as well as the World Bank Safeguards Policies applicable to ZUSP-AF, namely OP 4.01 on environmental assessment; OP 4.04 on natural habitats; OP4.09 on pest management; and OP 4.36 on forests; OP 4.11 on physical cultural resources; OP 4.12 on involuntary resettlement. The legislations and institutions relevant to environmental, social and resettlement management and infrastructure development are presented in order for the users of the ESMF to know the minimal legislative requirements and key actors involved in approving, enforcing, implementing or coordinating the requirements.

### 4.1 ZANZIBAR ENVIRONMENTAL AND SOCIAL MANAGEMENT REQUIREMENTS

In recognition of the importance of natural resources to Zanzibar economy and way of life, the country has a comprehensive body of environmental law. The detail of the law is contained in a number of important Acts and Regulations, many of which have been recently promulgated as older laws in the country are being revised to reflect the relatively new privatization policy and following the general global trend for greater focus on environmental protection, particularly in relation to natural resources utilization and loss of biodiversity; and to energy production and global warming.

Infrastructure investments under the ZUSP programme may be established in all sectors of economy. As such several sectoral legislations will have bearing on the development and operations of the individual project. The majority of the sectoral legislations require the project proponent<sup>8</sup> to respect the environmental integrity and recommend that environmental impacts should be carried out in order to achieve that. The Zanzibar Environmental Management Act No. 3 of 2015 is the principle Act that establishes and sets out environmental and social management instruments, permitting requirement and bestow enforcement powers and coordinating roles and responsibilities for institutions and bodies at all levels. Authorities relevant to sector specific environmental and social management, aspects are prescribed in the various laws. The Zanzibar Environmental Management No. 3 of 2015 supersedes other Acts in this regard with the exception of the National Constitution. Below is outline of key policies and laws applicable to ZUSP- AF.

#### **Policies Relevant to ZUSP**

##### Zanzibar Environmental Policy (2013)

The Zanzibar Environmental Policy (ZEP) was officially launched in 2013 (replaced the old ZEP of 1992). All economic and development sectors including Water, Forestry and non-renewable natural resources, Tourism, Energy, Fisheries and Marine Resources, Health, Agriculture and Livestock, Lands, Industries, Infrastructure, Disaster Management, and Local Government are implemented in accordance with the top priorities laid down in the ZEP of 2013. Other cross cutting sub-sectors considered in the policy include climate change, gender mainstreaming, education, NGOs, private sector, and collaboration with international development partners.

Other key policies include:

- Zanzibar Vision 2020

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<sup>8</sup>Proponent refers to an institution or investor who is responsible for promoting or investing in a project

- Zanzibar Poverty Reduction and Growth Strategy (MKUZA-II)
- Zanzibar Environment Policy (2013)
- Zanzibar Land Tenure Related Policies
- Zanzibar Forest Policy
- Zanzibar Water Policy
- Zanzibar Disaster Management Policy.
- Zanzibar Tourism Policy
- Zanzibar Transport Policy (2008)
- Zanzibar HIV/AIDS Policy.
- Zanzibar Information Policy.
- Zanzibar Local Government Policy.
- Occupational Safety and Health Policy.

## **Laws Relevant to ZUSP**

### Environmental Management Act (2015)

The Zanzibar Environmental Management Act (ZEMA) No. 3 of 2015 was recently assented to on 27<sup>th</sup> March 2015 (replaced the former Environmental Management for Sustainable Development Act (EMCDA of 1996). The Act was established to address the environmental management priorities set in the ZEP, 2013. The Act, among other key legal powers, focuses on the implementation of the key environmental management tools namely: Environmental and Social Impact Assessment process, Environmental Audit, Strategic Environmental Assessment, Pollution Prevention and Waste Management, Biodiversity Conservation, Environmental Education and Research, Integrated Coastal Zone Management, Climate Change Adaptation, Non-Renewable Natural Resources, and other matters of environmental emergency. These above management instruments are supposed to be mainstreamed in all pertinent sectors and cross cutting sub-sectors targeted by the ZEP (2013)

The ZEMA requires an Environmental and Social Impact Assessment (EIA) to be carried out for the development of any proposed project which is likely to have a significant impact on the environment. The ESIA provides the institution responsible for environment sufficient information to justify, on environmental, social and community development grounds, the acceptance, modification or rejection of the project and its implementation. More importantly, the ESIA is targeted to provide the basis for guiding subsequent actions of the project life cycle which -through management and monitoring plan - will ensure that the proposed project is carried out taking into account the environmental, socio-economic issues, and resettlement initiatives identified along with requirements for compliance throughout the project's life cycle.

The Act makes it mandatory for any person to comply with the environmental and social impact assessment requirement of the Project which includes environmental screening, scoping, preparation of the Environmental Impact Statement and its review before the decision on environmental clearance is made. As per the Act, there is EIA screening, scoping and the review process, while the preparation of the EIS is carried out by the consultant forwarded by the project proponent and only after having been approved by the Zanzibar Environmental Management Authority. The project has to conform to all requirements of environmental clearance and safeguards and they include EIA, Auditing, Monitoring, and implementation of the environmental and social management plans for the project.

### Zanzibar Land Tenure Act, 1992

All natural land within the islands of Zanzibar occupied or unoccupied is declared to be public land is vested in, and at the disposition of the President, to be held by him, for the use and common benefit, direct or indirect, of the people of Zanzibar. Riparian occupiers along non-navigable waterways are

required to accord the right of passage over a strip ten (10) meters in width on each bank. Compensation is to be paid to the persons or communities concerned, the compensation shall be equal to the fair market value of the land. All affected people whose houses, properties or farm plots are to be demolished or converted should be compensated accordingly.

#### Regional Administration Act.

The Act specifies powers and function of the Regional, District, and Shehia Government administrators. It covers all matters related to the social, economic, and environmental governance in the lower administrative units such as in the Shehias. Section 22 (1) (d) of the Act states that Regional development committees established under this Act have been given a responsibility to mobilize people to participate, contribute, and if possible assist in the use and management of natural resources, protection of environment for sustainable development and in all activities of national development. The project proponent should ensure full cooperation towards the Act, collaborate with the regional, district and Shehia governments in the implementation of social and environmental safeguards of the proposed project, and coordinate with the community in the implementation of the corporate social responsibility.

#### Local Government Authority Act.

The Act specifies on establishment of the Local Government Authority structures with their jurisdictional areas, powers and functions. It covers all matters related to the social, economic, and environmental governance within the defined boundaries of the local government authorities. In the context of environment, the Act has emphasized on the local powers prevent and control public nuisance and ensure sustainable management of land and natural resources. Section 26 (1) of the Act specifies general functions of the council which include maintenance of environmental sanitation, promotion of tourism and other investment opportunities available in their areas, keeping record of land and marine transport vehicles and vessels within their jurisdictional areas, control environmental pollution and prevent private nuisance.

Others include supervising and ensuring measures to combat epidemic diseases; control extraction of stone, sand, wood, and other forms of natural resources, undertake afforestation and urban forestry initiatives, implement the land use plan, and deal with cross cutting issues of climate change, disaster management, and population issues. Section 63 provides powers to enter any premise and check if the development has been approved with a permit. Sections 83 and 84 of the Act specify offence under Nuisance and unauthorized land use, respectively. The project proponent should comply with all the requirements within the jurisdiction of the local government council in terms of land acquisition, necessary public works and permits, environmental clearance, prevention of public and private nuisance, and other activities that require certification and permits, etc.

Other key laws include:

- Zanzibar Forest Resources and Conservation Act
- Zanzibar Water Act
- Zanzibar Land Tenure Act, 1992
- Zanzibar Fisheries Act.
- Zanzibar Maritime Act. , 2009,
- Regional Administration Act.
- Local Government Authority Act.
- Zanzibar Investment Promotion and Protection Act, 2004,

### **Environmental Management Tools Applicable in Zanzibar**

Besides the ZEP and ZEMA several environmental management tools prescribed in the ZEMA and/or other environment-related Acts of Zanzibar which are in use include:

#### Strategic Environmental Assessment (SEA)

Established under Part X of the ZEMA No.3 of 2015 and in accordance to Section 48 of the ZEMA, SEA is primarily designed to engage the implementation of the strategy, program, and planning for oil and gas exploration and production industry. There are no Regulations as yet or officially recognized procedures or guidelines to implement the SEA.

#### Environmental and social impact assessment (ESIA)

Established under Part IX of the ZEMA No. 3 of 2015. Initially ESIA was part of the now defunct EMSDA of 1996. The ESIA Regulations of 2002 were established under the old EMSD Act and later supported by the ESIA guidelines, checklists and other tools all developed under the auspices of the Sustainable Management of Lands and Environment -II (SMOLE-II) Project. These tools have not been amended with the advent of ZEMA of 2015. Identification of the sectors and programs subject to ESIA were developed under the Schedules of the now defunct Environmental Management for Sustainable Development Act. These were later strengthened under the implementation of the SMOLE-II project. According to Annex of the EIA Guidelines and Procedures, these included Agriculture and Aquaculture; Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc.

#### Social Impact Assessment (SIA)

This is part of the overall ESIA process as already explained in the previous sections of this table. There is no legal tool so far dedicated to SIA in the context of EIA. Most of the time the SIA is done in accordance with methodologies and best practices under the International Finance Corporation methods. The SIA focuses on the social aspects of the programs sectors mentioned in the previous section. There are no detailed guidelines dedicated to SIA but most of the time issues concerning land acquisition, involuntary resettlement, direct and indirect benefits, direct and indirect recruitment, community health and safety, information disclosure, occupational safety and health; and communicable diseases.

#### Health impact Assessment (HIA)

Still under drafting process from the Ministry of Health Zanzibar as of 2015. The Environmental Health Unit, Department of Preventive Services and Health Education of the Ministry of Health – Zanzibar is formulating HIA procedures under the Zanzibar Public and Environmental Health Act No. 11 of 2012

#### Environmental and Social Management Plan (ESMP)

It is part of the procedures under ESIA guidelines, checklists, and other tools developed under the Sustainable Management of Lands and Environment -II (SMOLE-II) Project in 2009. According to SMOLE-II Annex of the EIA Guidelines and Procedures, ESMP must be presented in all ESIA Report for all the programs and projects related to Agriculture and Aquaculture; Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc.

#### Environmental and Social Management System (ESMS)

ESMS for Zanzibar in the Drafting process under the Zanzibar Bureau of Standards. The system is fully adopted from the ISO series in mainstreaming and applying environmental safeguards development activities and services. Various sectors, programs and activities with significant impact on environment in accordance with Part IX of the Zanzibar Environmental Management Act No 3 of 2015 pertaining to Environmental Impact Assessment; and Section 50 of the Zanzibar Environmental Management Act No 3 of 2015 pertaining to powers of the Director of Environment to propose environmental standards to the

Zanzibar Bureau of Standards related to noise, water, air, wastewater and in augmenting the quality of environment in general.

#### Environmental Audit (EA)

Established under Part IX of the Zanzibar Environmental Management Act No. 3 of 2015. (Section 46). Could be used interchangeably as the ESIA in accordance with Section 46 (1) (a) of the Act or for programs and projects operating for more than five years after securing ESIA clearance in accordance with Section 46(1)(b) of the Act. Both these Sections function under the workings of the ESIA part of the Act.

#### Environmental Standards (ESt)

Environmental Standards for Zanzibar are in the Drafting process under the Zanzibar Bureau of Standards in accordance with the arrangement defined in the Zanzibar Environmental Management Act. Various sectors, programs and activities with significant impact on environment in accordance with Part IX of the Zanzibar Environmental Management Act No 3 of 2015 pertaining to Environmental Impact Assessment; and Section 50 of the Zanzibar Environmental Management Act No 3 of 2015 pertaining to powers of the Director of Environment to propose environmental standards to the Zanzibar Bureau of Standards related to noise, water, air, wastewater and in augmenting the quality of environment in general.

#### Economic Instruments (EI)

No specific economic instruments related to environment have been legislated under the Zanzibar Environmental Management Act No.3 of 2015. However, the Concessions Project Act of 2015 on means an exclusive right granted by a Public Authority to a Private Partner for the purpose of building, setting up, owning, operating, renting, leasing, financing, modernising, managing, maintaining, developing, or transferring an Infrastructure Facility for a specified period of time in accordance with a concession agreement; has been formulated. This is a legal empowerment of a public-private partnership on collaboratively implementing the means, activities or any combination, such as the design, construction and development of new infrastructure facilities, rehabilitation, modernization, and expansion of existing infrastructure facilities; or administration, expansion or other services pertaining to new or existing infrastructure facilities.

#### Environmental and Social Management Frameworks (ESMF)

There is no specific ESMF established under the Environmental Law even though most of the ESMF mechanisms from larger internationally financed projects apply the IFC HSE Guidelines. For example, the RGoZ has developed Environmental and Social Management Framework (ESMF) (and Resettlement Policy Framework as stand-alone document) as a tool to be used by the ZUSP and ZMC Project Management Teams (PMTs) and others responsible for project design and implementation. These tools are yet to be integrated into the Environmental Authority's enforcement requirements. Various sectors, programs and activities with significant impact on environment in accordance with Part IX of the Zanzibar Environmental Management Act No 3 of 2015 pertaining to Environmental Impact Assessment; and according to SMOLE-II Annex of the EIA Guidelines and Procedures, on Agriculture and Aquaculture; Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc.

#### Resettlement Policy Framework (RPF)

There is no specific RPF established under laws of Zanzibar even though most of the RPF requirements from larger internationally financed projects apply the IFC RAP Framework. There are procedures under the Land Tenure Act of 1992 (Amended various times) that guides how compensation is to be paid to the persons or communities concerned, compensation being equal to the fair market value of the land under the established rules. The framework should in principle be applied to programs and projects mentioned in the SMOLE-II Annex of the EIA Guidelines and Procedures, e.g. Agriculture and Aquaculture;

Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc. However, the compensation and relocation procedures practiced by the sectors do not necessarily have to follow the principles of the ESIA process.

#### Resettlement Action Plan (RAP)

There is no specific RAP legislation established under laws of Zanzibar. There are procedures under the Land Tenure Act of 1992 (Amended various times) that guides how compensation is to be paid to the persons or communities concerned, compensation being equal to the fair market value of the land under the established rules. These procedures are sometimes deemed not compatible with the World Bank and IFC's standards and practices for the affected parties. The framework should in principle be applied to programs and projects mentioned in the SMOLE-II Annex of the EIA Guidelines and Procedures, e.g. Agriculture and Aquaculture; Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc. However, the compensation and relocation procedures practiced by the sectors do not necessarily have to follow the principles of the ESIA process and this creates more challenges in adequately implementing the principles of World Bank RAP standards given the policy gaps.

#### Environmental Monitoring and Reporting

Established under Part IX of the Zanzibar Environmental Management Act No. 3 of 2015. (Section 43). Monitoring is required for all the major projects and programs such as e.g. Agriculture and Aquaculture; Extractive Industry; Energy Industry; Production and Processing Factories and Industries; Chemical Industry; Food Industry; Textile, leather, paper & wood industry; Infrastructure projects; tourism development projects; etc.

#### State of Environment Report

Established under Section 13 (f) of the Zanzibar Environmental Management Act No. 3 of 2015. (Section 43). The Director of Environment is required to develop the State of Environment for Zanzibar every 5 years and to be submitted to the Minister responsible for Environment. The last State of Environment of Zanzibar Report was made in 2004.

#### Public Awareness and Participation

This is ingrained in Part VIII of Zanzibar Environmental Management Act No. 3 of 2015. (Sections 37 and 38). For ESIA review process, Section 42 of the Zanzibar Environmental Management Act No. 3 of 2015 empowers the Zanzibar Environmental Management Authority to conduct a public hearing in accordance with the procedures that are to be formulated by that Authority. Access to environmental information and environmental research in various key areas prioritized in the Zanzibar Environmental Policy of 2013 have been made mandatory under the Act.

#### Information Communication and Education (ICE)

This is covered under the theme of "Access to environmental information and environmental research" in which all prioritized areas in Zanzibar's Environmental Policy of 2013, ICE has been made mandatory by the Zanzibar Environmental Management Act No. 3 of 2015. (Sections 37 and 38).

### **Permitting Requirements for Project Development**

To establish and operate a sustainable project that is environmentally suitable, socially/culturally acceptable and economically feasible the ZUSP-AF project implementers need to adhere throughout project cycle to the requirements stipulated by the principal policies and legislations. The below are ESIA approvals for project establishment and operations:

*Environmental approval for new development projects* is a requirement under Environmental Management Act No. 3 of 2015. This is backed up by the established ESIA Guidelines and Procedures of 2009. EIA Certificate is issued by ZEMA

*Environmental clearance for existing projects* is a requirement under Section 46 of the Environmental Management Act No. 3 of 2015. Environmental Audit Certificate is issued by ZEMA

*Conduct of ESIA & Audit by ESIA Experts or Firms of experts* is a requirement under Section 41 of Environmental Management Act No. 3 of 2015. The Certified individual and firms are registered and issued an EIA Expert Certificate by ZEMA

*Changes in existing EIA Certificate, Transfer of EIA Certificate, Change of name of EIA Certificate, Surrender of EIA Certificate and Cancellation of EIA Certificate* are all not defined under ESIA Guidelines and Procedures of 2009 or under Environmental Management Act No. 3 of 2015 2009. May be done administratively.

*Establishment of public facilities* such as waste disposal site, market, bus stand, slaughterhouse etc. require a number of permits as stipulated by relevant acts and issued by various departments at the Ministry of Lands and / or Zanzibar Municipal Council:

- Town Planning (TP) Drawing: required under Land Tenure Act No. 12 of 1992 and issued by Department of Urban and Rural Planning.
- Survey Plan: required under Land Tenure Act No. 12 of 1992. and issued by Department of Survey and Mapping .
- Rights of Occupancy: required under Land Tenure Act No. 12 of 1992 and Title Deed issued by Department of Land Administration ..
- Right of Way (for roads, water supply, sewage, storm water, electricity transmission lines, pipelines etc.) should be done in coordination with relevant utilities
- Building Permit: required under Municipal Act No. of 1995 and issued by the ZMC

*Valuation of land, property and assets* require a number of approved documents / reports as stipulated by relevant acts and issued by various departments at the Ministry of Lands and / or Zanzibar Municipal Council

- Valuation Report: survey / measurements of property (land, buildings, structures) undertaken by Certified Surveyors; valuation and report prepared by a Certified Valuer and approved by the Chief Valuer at the Ministry of Lands
- Compensation Schedule: Prepared by Valuer, approved by Chief Valuer and payments issued by Ministry of Finance

## **Legal Requirements by Project Phase**

### Mobilization phase

*Extraction of construction materials* from existing borrow pits is carried out under Part VII of the Environmental Management Act No.3 of 2015. Section 33 prohibits any excavation and exploitation of the non-renewable natural resources unless a permit in the form of Mining License, Surface Right (including fees / charges) are given by the institution responsible for non-renewable natural resources, the Department of Forestry and Non Renewable Natural Resources. Extraction is also done under the Zanzibar Regional Administration Act No.8. of 2014 under Section 22 (1) (d) and Local Government

Authority Act No.7 of 2014 empowers local authorities (Regional, District and Shehia administrator) to issue permits on excavations under Section 26 (1). Roads authority do not own quarries and rarely are they located on private land.

*Extraction of water from natural rivers, lakes, underground aquifers:* Water Right issued by ZAWA required under the Zanzibar Water Act No.4 of 2006 under Part IV on Water Resources.

*Connecting to Municipal water supply system:* permit issued by ZAWA required under the Zanzibar Water Act No.4 of 2006

*Connecting to nearby electricity supply system:* drawings submitted to ZECO required under Zanzibar Electricity Corporation Act of 2006

### Construction / Operation

*Emissions into the air:* in accordance to Air Quality Standards issued by ZBS, a requirement under Section 17 of the Zanzibar Standards Act of 2011 ; also a Discharge Permit issued by the Department of Preventive Services and Health Education of the Ministry of Health as a requirement under Zanzibar Public and Environmental Health Act No. 11 of 2012.

*Effluent (waste water) discharge:* in accordance to Water Quality Standards issued by ZBS a requirement under Section 17 of the Zanzibar Standards Act of 2011.

*Waste Water Discharge:* Permit issued by Department of Preventive Services and Health Education of the Ministry of Health, a requirement under Zanzibar Public and Environmental Health Act No. 11 of 2012

*Solid waste disposal at Municipal landfill:* Tipping Fees paid to facility operator, a requirement under Municipal by-law

*Disposal of hazardous substances:* Hazardous Waste Disposal Permit issued by ZEMA / DoE, a requirement under Section 56 of the Environmental Management Act No.3 of 2015.

*Disposal of Biomedical Wastes:* Disposal Permit issued by Department of Preventive Services and Health Education of the Ministry of Health Zanzibar a requirement under Public and Environmental Health Act No. 11 of 2012

*Noise emissions* in accordance with Environmental Standards on Noise Emission issued by ZBS a requirement under Section 17 of the Zanzibar Standards Act of 2011.

*Waste oil collection, transportation and disposal* Waste Oil Collection Permit issued by ZEMA/DoE; a requirement under Section 56 of the Environmental Management Act No.3 of 2015

*Sludge collection, transportation and disposal:* Sludge Collection Permit issued by Department of Preventive Services and Health Education of the Ministry of Health a requirement under the Zanzibar Public and Environmental Health Act No. 11 of 2012

*Collection of scrap metal and related transactions:* Scrap Metals Permit issued by Department of Trade; a requirement under the Zanzibar Trading Act No.14 of 2013.

*Moving extra weight, large loads / vehicles on main highway roads:* Permit a requirement under the Roads (Amendment) Act 2013

*Oil Spill:* Oil Spill Contingency Plan approved by Zanzibar Maritime Authority, a requirement under Zanzibar Maritime Authority Act No.3 of 2009; or ZEMA, DoE under Environmental Management Act No.3 of 2015.

*Occupational Health and Safety:* OSHA Certificate issued by Directorate of Occupational Safety and Health, a requirement under Occupational Safety and Health Act No.8 of 2005

*Fire:* Fire Safety Certificate issued by Fire Brigade, a requirement under Fire Brigade and Rescue Act of 1999

## **4.2 INSTITUTIONAL FRAMEWOK**

### Administrative Arrangements of the LGA

Given the above legal framework, currently there are three levels of Local Government in Zanzibar, namely,

- the urban local governments made up of the Zanzibar Municipal Council (ZMC) located in the Urban District of Unguja, and
- three Town Councils located at Chake Chake, Mkoani, and Wete in Pemba.
- District Councils of which are nine (9). Five (5) District councils are in Unguja and four (4) are in Pemba.

Administratively, Zanzibar is divided into five (5) Regions, three (3) of which are in Unguja, and two (2) are in Pemba. The Regions are sub divided into 10 Districts - six (6) in Unguja and four (4) in Pemba. Also there are two (2) sub-districts - one in Unguja (Tumbatu) and one in Pemba (Kojani). Below the Districts level are the Wards and they are 141 in total.

Under the central government governance structure, the Shehia is at the lowest level headed by a Sheha who is appointed by the Regional Commissioner upon advice from the District Commissioner. To date there are 332 Shehias established under Act number 1 of 1998.

Regional Commissioner- appointee of the President - heads each region assisted by a Regional Administrative Officer who is responsible for the day to day running of government business in the region. Districts are headed by District Commissioners assisted by District Administrative Officers. District Commissioners and Administrative Officers are Presidential appointees.

### Urban Local Government Authorities Specific Powers, Roles and Responsibilities

The Zanzibar Local Government Authority (LGA) refers to the government machinery that has an authority over a sub-national territory. A Local Government bodies operates within powers delegated to it by legislation from a higher legal authority, in this case, the House of Representatives. The Revolutionary Government of Zanzibar, through Article 120 of its 1984 Constitution has already committed itself to institute an efficient and effective Local Government system. It has further decided that for the Local Government system to be effective and involve the people at the grass root level, it should be based on the principle of Decentralization by Devolution meaning “the transfer of governance responsibilities for specific functions to sub-national level” (grass root level).

The implementation of the constitutional requirements led to the enactment of Act number 3 of 1986 on Regional and Local Government administration. The Act was repealed and replaced by Acts number 3 and 4 of 1995 together with Act number 1 of 1998. The 1995 Acts established the existing Local Government structure, while the 1998 Act established the Regional Administration structure.

### **4.3 WORLD BANK SAFEGUARD POLICIES**

The World Bank Safeguard Policies are approved by the Board for addressing environmental and social issues within the Bank's supported development projects. ZUSP has been assigned Environmental Category A and triggers the following World Bank Safeguard Policies: (i) Environmental Assessment (OP/BP 4.01); (ii) Involuntary Resettlement Policy (OP/BP 4.12); and (iii) Physical Cultural Resources (OP/BP 4.11). Subsequently, the same policies will apply to the sub-project activities under the proposed Additional Financing. In addition, the environmental sanitation project activities trigger three additional safeguard policies: (i) Forests (OP/BP 4.36), (ii) Natural Habitats (OP/BP 4.04), and (iii) Pest Management (OP/BP 4.09).

The below safeguard policies considered applicable to the ZUSP in general relate to environmental management, resettlement planning, cultural heritage conservation etc. and related aspects including consultation and disclosure practices for Category A projects.

#### Environmental Assessment (OP/BP 4.01)

The World Bank's safeguard policy OP 4.01 Environmental Assessment requires that all Bank-financed operations are screened for potential environmental and social impacts, a view shared by Zanzibar's National EIA procedures and processes (see above). Both policies emphasize that the required environmental assessment be carried out on the basis of the screening results. The World Bank's Environmental Health and Safety Guidelines also apply to projects such as those included in the ZUSP-AF, and are especially relevant guidance for the solid waste and sludge management investments.

The ZUSP-AF intends to finance a variety of types of infrastructure (e.g. urban upgrading roadside drains, waste disposal infrastructure etc.) that are intended to provide environmental benefits but can have adverse environmental impacts. The ESMF is designed to summarize these potential impacts, and direct project teams (at ZUSP PMU, ZMC, PTCs) and local leaders and management committees to evolve practical ways of avoiding or mitigating them through the ESIA and ESMPs. The ZMC and participating government authorities through the screening process will determine the safeguards policies triggered by a particular proposed investment/subproject and prepare appropriate safeguard instruments.

Regarding categorization of projects in terms of levels of environmental assessment, OP 4.01 requires:

- In the event that a subproject is categorized for detailed assessment, a full ESIA and ESMP will be required;
- A standalone ESMP will be prepared for subprojects with small impacts; and
- For sub-projects with minor impacts, environmental enhancement measures will suffice.

Thus, the proposed screening process under Chapter 6 of this ESMF will be consistent with the Zanzibari legislation and the WB policy on environmental assessment.

#### Physical Cultural Resources (OP/BP4.11)

Culturally, Zanzibar is extremely rich and diverse and is home to ancient civilizations: 300-year-old Arab settlements; 100-year-old European buildings; graveyards; sacred areas; mosques; churches; etc. To mitigate against the potential for adverse impacts on cultural property, training of LGA project teams and local leaders and management committees and the subproject planning checklist as well as other tools, will ensure that cultural property resources are identified during subproject planning, and appropriate measures are taken to avoid damaging them. Chance find procedures will be incorporated into civil works

contracts and buffer zones will be created to avoid damage to physical cultural resources, especially archaeological and subsurface ones

#### Involuntary Resettlement (OP/BP 4.12)

Involuntary Resettlement Policy OP 4.12 requires that all projects screened for potential environmental and social impacts be supported/guided by a Resettlement Policy Framework (RPF) that identifies involuntary resettlements under the planned project, identifies impacts i.e. severe economic, social and environmental risks and based on this defines the scope of the resettlement assistance programme (i.e. Resettlement Action Plan, RAP) for affected persons. However, in Zanzibar, there are no explicit requirements for a RPF or RAP. As regards compensation the Zanzibari laws require that only the rightful land or property owner (statutory or customary rights of occupancy) should be compensated for land, though tenants and encroachers are eligible for some assistance (e.g. tenants based on the rights they have for the land/assets and encroachers for disturbance and transport allowances, loss of profits etc). OP 4.12 on the other hand requires that any person (whether is rightful owner or not ) who loses or is denied or restricted access to economic resources – including tenants, encroachers, squatters - should be compensated. Although there are no significant discrepancies between WB requirements and Zanzibar government's requirements regarding compensation and resettlement of Project Affected People (PAP), as far as this ESMF (and RPF) for ZUSP infrastructure projects are concerned, the World Bank's safeguard policy will prevail.

The Project will support investments in various types of subprojects that may require small amounts of land for the construction or rehabilitation of infrastructure. To ensure that current landowners or users are properly compensated, a Resettlement Policy Framework (RPF) has been prepared to be used by LGA project teams and local leaders and management committees concurrently with this ESMF. The RPF provides the framework for determining the need for and content of a Resettlement Action Plan (RAP) for subprojects.

#### Forests (OP/BP 4.36) and Natural Habitats (OP/BP 4.04)

The Forests and Natural Habitats policies are triggered under the AF due to the environmental sanitation activities. The main site at Kibele is located in the buffer zone of a protected forest area, the Jozani Forest, which as mentioned earlier features two sensitive species in particular, the Black and Rufus Elephant Shrew and the red colobus monkey. The buffer zone, which is sparse coral rag forests, was already degraded due to an industrial quarrying operation by the Roads Department. The Zanzibar Environmental Management Agency and Forests Department have signed a Memorandum of Understanding with the ZMC to use the site for waste management and it will later be reclaimed back to forest cover per requirements of the Forests Department. The ESIA for the environmental sanitation activities will assess potential impacts on the forest reserve and biodiversity in the project's area of influence.

#### Pest Management (OP/BP 4.09)

Given support for waste management activities, the use of pesticides and rodenticides may be possible for control of pests and vermin at the landfill site. The ESIA for the environmental sanitation activities will include an assessment of pest management issues including if any pesticides would be procured with project funds. If so, the ESMP will include (i) recommendations for environmental methods of pest control, (ii) a negative list of products that are ineligible for purchase, (iii) measures for safe handling, use, and disposal of pesticides and rodenticides, and (iv) relevant training.

## **5. ZUSP ADDITIONAL FINANCING PROJECT ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION**

In this ESMF, environment is broadly defined to include natural environment (air, water and land) and human wellbeing, health and safety. The section below presents ZUSP-AF activities likely to cause environmental and social impacts albeit of varying degrees at different locations as well as the adverse and positive impacts that have to be explicitly managed when the specific subprojects and their location are known.

When, during the screening process undertaken by the ZUSP PMT (see Annex B) it is determined that a sub-project is likely to cause, and subsequently manage, potential adverse environmental and social effects, the ZMC Project Team/ EIA Consultants will use ESMF checklist and resources and participation sheets to support environmental planning and management. The Project Team (see Section 1.3) will screen each subproject and determine components / activities likely to cause impacts by filling in the “No” or “Yes” part of the ESMF checklist. This screening process will help to scope the ESIA and gain an initial picture of subproject impacts and safeguards triggered.

### **5.1 ZUSP-AF ACTIVITIES LIKELY TO CAUSE ENVIRONMENTAL AND SOCIAL EFFECTS**

The key activities under ZUSP-AF will include development of single or clusters of subprojects constituting infrastructure covering all elements of the solid waste and septic sludge management systems: collection, primary transportation, material recovery, pre-treatment, transfer, bulk transportation, potential centralized composting and bio-gas to energy as well as developing a sanitary land fill and sludge treatment facility. Urban upgrading infrastructure will cover roads and associated structures drainage, street lighting, landscaping etc.

#### **Land Acquisition**

##### Rerouting into new land

While all new projects would be implemented in existing rights-of-way, small amounts of land may be required for example to improve roadside drains or improve pedestrian connectivity, or avoid avoid sensitive / important natural or social / cultural or economic features.

##### Acquisition of additional land

Construction of some structures (i.e. roads and drainage channels) may require acquisition of additional land for expansion of diameters or extension of lengths of existing infrastructure or to achieve required construction standards. The necessity for increase the size of the way leave may extend into nearby land uses.

##### Acquisition of new land

Few ZUSP subprojects are “green field” developments but in some areas, landtake may be needed for establishment of new infrastructure or facility. Examples of subprojects falling into this category include transfer station development at Maruhubi as well as landfill and septic sludge facilities to be built at Kibele. It is confirmed that these facilities are on public land therefore there is no land acquisition.

#### **Mobilization of Resources**

Delivery of resources: construction materials (sand, gravels, stones and water), industrial supplies (cement, metals/steel, plastics, chemicals, etc.), equipment/machinery and crew/staff happens throughout

the life of a project with activity level tending to be high prior to construction phase and wane off and become routine during operation/maintenance phase. Mobilization extends the impact area to include offsite locations – i.e. transportation routes and sources of materials. Activities likely to cause impacts include (but is not limited to) extraction of materials and water, transportation, stock/piling and storage etc.

### **Construction Activities**

Construction entails the erection or laying down of structures on the project site – involving both new and maintenance / rehabilitation / upgrading /expansion works. Activities known to cause impacts include (but is not limited to) vegetation clearing, installation of the temporary support structures (i.e. fence, site office and materials storage yard), earth works (removal of structure remnants and top soils, digging and trenching, filling, trimming, leveling/grading and compacting, and draining), civil works (concrete, block/brick and steel/metal), installations works (plumbing, safety equipment, security system, electricity and communication services as well as landscaping services), operations of construction equipment and machinery, and finally demobilization (demolition and dismantling of temporary structures; general cleaning, construction waste collection and disposal; site rehabilitation and restoration, detainment of working tools, equipment and facilities) .

### **Infrastructure Operations and Maintenance**

These are long term activities related to the use of the developed infrastructure. Sources of impacts are commonly associated with deficiencies in management and monitoring procedures including inadequacies in waste management (collection, transportation and disposal) for some subprojects, inadequacies in supply of services and consumables, improper use of infrastructures, lack of resources for maintenance (equipments, inputs, manpower) and associated internal and external hazards and risks.

### **Decommissioning**

At the end of its life or rehabilitation or up-grading an infrastructure or its component may involve demolition/dismantling of structures and demobilization and site restoration. Activities known to cause impacts include disposal of demolition wastes and scrap building materials; termination of employment etc.

## **5.2 POTENTIAL DIRECT ENVIRONMENTAL AND SOCIAL IMPACTS OF ZUSP-AF AND MITIGATION MEASURES**

Potential direct environmental and social impacts will be a result of interactions between the ZUSP-AF activities with the relevant valued environmental and social receptors (physical, chemical, biological, built or human) outlined above (Chapter 3). Impacts may emanate from any of the Subproject infrastructure type funded by ZUSP – AF . About 20 impact areas have been identified associated with ZUSP-AF project including environmental impacts; resettlement impacts and consequent losses; socio-economic and cultural impacts including positive impacts; and risks and hazards existing in the environment that may affect project structures, cause disruption of operations or exacerbate maintenance costs. The mitigation measures below should be considered for subproject Environmental and Social Management Plans as relevant for specific subprojects.

Since many ZUSP-AF subprojects will entail small civil works with typical construction impacts, some of these measures have been compiled into general guidelines for contractors and the Project Teams, included as Annex D.

### **ENVIRONMENTAL IMPACTS**

### **Loss or degradation of remnants of natural areas and vegetation**

Some subproject funded under ZUSP – AF may affect natural areas particularly in peri-urban parts of the ZMC including land and water areas. Construction works may necessitate clearance of natural vegetation and storm water drainage over construction site loaded with wastes, oils, sediments etc. which may lead directly or indirectly into or cut across natural areas. Two broad direct impacts on such natural areas are possible: damage of natural vegetation; disturbance of contained fauna and direct pollution /contamination of the natural areas all subsequently causing loss or outmigration of affected species. However, such natural areas within boundaries or in near vicinity of ZMC occur albeit as small groves of natural vegetation or wetlands but whose ecological functions have already been essentially modified by human activities. Furthermore none of ZUSP activities are likely to involve total clearance of natural vegetation as they mostly involve improvements of existing structures and may constitute small land take extending into neighboring areas.

#### *✓ Mitigation measures for the ESMP/Proposed management actions for ZMC*

Mitigation measures in the ESMF checklist (to be adopted in subproject ESMPs) aim to minimize vegetation loss through i.e. avoidance strategies such as circumventing natural areas and implementation of pollution prevention measures. Proposed management actions for ZMC to minimize cumulative impacts are to establish / enforce land use plans taking into consideration the conservation of important natural areas within the Municipal boundaries.

### **Degradation of water resources and management**

Water resources in ZMC constitute fresh surface water found in natural water bodies (rivers, wetlands, ponds), man-made water retention structures in Bwawani Hotel, underground aquifers and the salt oceanic water. The temporary dams and ponds are mostly found in areas where there was illegal sand mines or where natural water ways have been obstructed, Such areas include, Uwanja wa Farassi, mwanakwerekwe, Kwa Biti Amrani and Sebleni. Some subproject supported under ZUSP-AF may be located close to or lead into natural water sources and likely to cause impacts on local fresh water resources. (i) Eroded soils from construction activities may obstruct natural drainage systems causing effects on the integrity of watercourses, drainage, and sedimentation regime; (ii) Paving of surfaces of some types of infrastructure such parking areas/stand etc.) could increase rain water catchment and exacerbating storm water management of an area; (iii) Construction activities requirement for water inputs e.g. for mixing, cleaning, dust dousing etc. and water for cleaning and ablution purposes for construction crew have potential to deplete water resources if obtained from a source under water stress.

On the positive side, ZUSP-AF infrastructure development is designed in many respects to improve water management of affected areas and reduction of associated risks i.e. flooding due to poor drainage systems.

#### *✓ Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in the ESMF checklist (to be adopted in subproject ESMP) include integration of infrastructures to balance the water flow regime, design for adequate drainage, channelling surface water from paved areas to storage troughs; adopt measures to prevent / manage deposition of eroded soils into water bodies (i.e. cut-off drains, silt traps, silt fencing, gabion structures, etc.); determination of water needs before extraction to determine available quantities (especially if involve underground water resources); adoption of alternative strategies to avoid/minimize extraction from natural water bodies such as sourcing water for any subproject purpose from authorized Municipal/community water supply systems.

### **Land / soil degradation and depletion**

Depending on type of subproject and nature of locality, construction works may involve some degree of land disturbance and/or movement of soils or export of soils and thus expose the soils to erosion by the elements (wind, rain) and lead to land degradation at construction sites and offsite quarry sites. Main manifestation of degradation of land and soils – is the formation of gullies and reduction of soil quality in

terms of nutrients, water retention and physical properties etc. below acceptable levels. Requirement of construction inputs, fill materials, cover materials for landfill management etc. may cause depletion of soils and mineral resources. Soils on hilly and undulating areas when exposed are more susceptible to erosion. Construction of new drainage systems, new bridges, waste disposal facilities, and recreational facilities may require more works and for longer periods. However, many of the additional infrastructure e.g. extensions of roads are very short length (less than 1km), road furniture and local structures require small to medium sized sheds or concrete buildings envisaged not to require extensive construction works and limited land disturbances. Secondary impacts at points of extraction of the construction materials may include depletion of local construction materials e.g. stones/aggregates, sand, gravel, cobblestones, and fill materials.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures focus in this ESMF checklist is on the need for prior planning by authorities and Contractor to undertake proper need assessment and to identify sustainable sources of materials required for the project. These measures should be coupled with sustainable materials usage procedures. Instructions to the Contractors shall include soil erosion control and land rehabilitation measures; supervision and monitoring during and after sub-project implementation. Contractor shall identify erosion prone areas, identify permanent erosion control measures (applicable for a particular site) and plan construction works and sites to limit quantity of material likely to be eroded and transported from the site.

Proposed management actions for ZMC are to: procure and use Contractors with requisite experience of land management and soil erosion control; develop management plans for existing quarry sites, and new sources of construction materials

### **Degradation of receiving media by discharged wastes**

ZUSP-AF component for improvement of waste collection and disposal infrastructure in the ZMC aim to increase wastes collection efforts in all areas; to increase the load destined to municipal disposal sites; and improve management of disposal sites in an environmentally suitable and socially acceptable manner.

Inadequacies in the waste management practices during construction and operation of infrastructure causing discharge of oil and lubricants from vehicle repairs and filling at car parking areas, discharges of eroded soils, seepage of leachate from the landfill, partially treated effluents from septic sludge treatment facilities, littering during waste collection, transportation and disposal, soils and wastes clogging drainage systems may lead to planned or accidental discharging of various types and quantities of solid and liquid wastes, spillage / leakages of materials directly into natural habitats and inhabited areas.

Haphazardly disposed wastes may impair qualities of receiving medium thereby altering the physical, chemical and biological characteristics: i.e. changing the pH of the receiving media, increase the organic matter content (BOD, COD) of surface water bodies and underground water sources and contaminate and reduce quality of land areas or soils. The effects will tend to be severe if discharged wastes are hazardous and/or will contaminate water sources used for domestic purposes or arable land. Discharges in a water habitat tend to reach further due to dispersion, but severity of contamination is reduced by dilution. The effects on land will tend to be concentrated and localized, not dispersed or diluted (unless by rain).

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in this ESMF checklist hinge on development and implementation of subproject – specific Waste Management Procedure / Plan that (i) identify what type of solid or liquid wastes and categories of wastes the subproject will generate or handle (biodegradable / organic wastes; packaging materials; non-biodegradable (metallic, plastic), construction wastes, and hazardous wastes i.e. medical wastes, fuels, oils, lubricants, vehicle / machinery fluids etc);(ii) identify ways to reduce the volume of waste by reusing or recycling initiatives; (iii) use best available mechanisms, practices and technologies

for waste collection, storage transportation, treatment and final disposal. The management measures are coupled with implementation of monitoring plan which set targets based on standards to ensure that proposed mitigation measures are correctly implemented or that adjustments are made to accommodate changes.

### **Reduced Air Quality and Climate Change**

Emissions emanate from fuel powered equipment i.e. vehicles engines and construction equipment etc. exhaust contain pollutants notably carbon-dioxide (CO<sub>2</sub>) plus small quantities of noxious gases such as nitrogen oxides (NO<sub>x</sub>), sulphur dioxides (SO<sub>x</sub>), hydrocarbons and particulate matters (PM). Operation of the sanitary landfill and anaerobic septic sludge facility will also release methane and CO<sub>2</sub> gases. These Green House Gases (GHGs) are known to interfere with temperature regime and cause climate change effects. Clearance of vegetation reduces vegetation cover thus reducing sink for carbon-dioxide and consequent climate change effects. On the other hand odours from putrefaction of organic matter in the landfill will also reduce air quality. Increase of air pollution from dust, odours, noise, etc. cause modifications to air quality.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in this ESMF and later adopted in subproject ESMP for managing air and noise pollution from transportation and working equipment hinge on avoidance strategies; transportation and training requirement, equipment operations and maintenance measures that minimize emissions of substances into the atmosphere. The measures also bank on establishment of gas collection and recovery systems from point sources such as landfill and anaerobic facilities. Proposed management actions for ZMC are requirement and instructions to designers of facilities such as landfill and anaerobic sludge treatment facilities to incorporate gas collection and recovery systems; and to Contractors and facility operators to institute procedures for preventive maintenance of equipment.

## **RESETTLEMENT**

### **Change or modification of existing buildings, infrastructure, services and access**

Taking land for linear developments (roads and drainage) will create new or extend existing Corridors of Impact (CoI). Infrastructure development, upgrade or rehabilitation aim at improving access and services during operation. However, construction works or infrastructure physical presence could cause physical damage or change of access to existing infrastructure & buildings/facilities. Damages or restricted access or delayed access to existing infrastructure (albeit temporarily) may affect existing roads, electrical installations (below ground and overhead lines), water intake and supply systems, homes, business and service institutions and other natural sites causing disturbances to local residents and users. Infrastructure being located in already developed areas invariably will operate using existing support facilities and associated services i.e. water supply system. Connection to existing utility facilities without considerations of available resource would increase pressure on the system depending on their carrying capacity.

The involuntary taking of land and other assets (permanent or temporary acquisition) owned and/or used by both individuals and by communities may result in a number of direct social and economic impacts of varying severity and consequences.

- Modification on residential areas, modifications in the access to buildings, fragmentation of property
- Expropriation of buildings

- Damage of homes
- Disruption of social sensitive areas (burial sites etc.) and institutional areas
- Direct encroachment causing loss, partial replacement or damage of indigenous vegetation and contained biodiversity.
- Disruption of business and trade and local income generating activities. Because urban agriculture and livestock keeping are widely practised affected land could also be agricultural land or grazing ground.

Four types of losses due to land acquisition are identified in this ESMF:

- i. Loss of shelter / relocation of shelter and consequent displacement or relocation of people, assets and property
- ii. Loss of Assets or Access to Assets including loss of Land Rights
- iii. Loss of income sources or means of livelihood of persons using the land or assets  
Involuntary restrictions of / delayed access to resources, property or asset and consequent disturbance and nuisance and conflicts related to restricted access

The ZUSP-AF on the overall is expected to have minimal resettlement impacts – greenfield developments have little encroachment, and all urban upgrading works will be in existing rights-of-way or rehabilitating existing infrastructure. See the RPF for additional details on potential resettlement impacts.

✓ *Proposed management actions for ZMC*

The ZUSP already has measures to minimize resettlement by focusing on rehabilitation and upgrading existing infrastructure that do not require taking of new land. The design Engineers will take further measures to minimise resettlement in accordance to best practices and recommendations from the ESIA process:

- Avoidance strategies such as circumventing settled areas, sensitive / important natural or social / cultural or economic features in order to avoid /minimize extensive resettlement
- Use of existing undeveloped areas available in the ZMC landuse plans
- Relax the required construction standards: in some cases expansion of diameters or extension of lengths of existing roads and drainage channels etc.
- Undertake construction / site clearance after harvest
- Add structures to design (e.g. walking slabs, culverst etc) meant to facilitate access and crossing over linear infrastructures such as roads and drainage channels
- Signage, filling pits and restoration of hazardous and disturbed areas.

The ZUSP-AF Resettlement Policy Framework (RPF) will guide preparation of Resettlement Action Plans, where determined necessary during the ESIA screening process. Please refer to the RPF for details.

## **SOCIAL AND ECONOMIC IMPACTS**

### **Induced developments and settlements**

Indirect negative impacts relate to improvements in infrastructure i.e. roads and associated social and economic services are induced settlements (that habitually sprout along new or improved infrastructure) and increased illegal developments due to new or improved access. Improved urban conditions inevitably attract new comers and/or new economic migrants (seeking employment, services provision, traders etc.) which may lead to impacts such as additional pressure and demands to local on local social services and

resources (increase water users); and social / health hazards due to interactions among new comers and with locals.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Proposed management actions for ZMC to minimize cumulative impacts are to establish and enforce landuse plans for all categories of land within the its boundaries.

**Public Health and Safety risks and hazards**

Users of land abutting or neighboring the project site and public safety and road/facility users in particular are exposed to and likely to be affected by sub-project activities specifically accidents during construction (open pits filled with water) and operation phases (speeding cars on improved roads) due to lack of appropriate /sufficient signage at construction sites and timely notification. Infrastructure located at public places or used by general or specific segment of population i.e. bus stands are associated with congregates of people. Several causes of hazards to public relate to design of infrastructure such as toilets without / inadequate water supply are predisposed to poor sanitation and hygiene; buildings without provisions for fire prevention or enough ventilation are risks to users. Lack of periodic maintenance of drains creates breeding grounds for water-borne vectors of diseases such as malaria mosquitoes and birhazhia snails and water-borne infections. The effects will be worse, especially at the waste management infrastructures (landfill and transfer stations), when local people engage informally engage themselves in picking recyclables materials out of the waste without any protective equipment. The health hazards for waste pickers are obvious: injuries caused by accidents with haulage trucks and compactor; injuries caused by sharp waste components; infections by direct ingestion of food waste; infections caused by insects and rats; poisoning by polluted water and gas, etc.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures: the design and implementation process take into consideration traffic management, best construction site and operation practices and institute prevention measures that curb health risks that are prevalent in the project area (e.g. guinea worm, malaria, meningitis, cholera etc.).

**Workers (Occupational) Health and Safety Risks and Hazards**

Table 9 presents some potential risks for labourers caused by exposure or negligence during subproject implementation.

**Table 9 Summary of potential risks to workers**

<b>Sub-project aspect / activity</b>	<b>Potential Risk</b>
Exposure to dust, noise	Disturbances / nuisance and discomfort
Using sharp objects, falling objects, working in high structures	Serious injuries
Exposure to water-borne infections from food, drinking water	Poisoning, loss of life
Exposure to sun/heat	Sickness and ill-health (reduced manpower)
Negligence due to fatigue / loss of morale	Loss of production time

	Loss of property
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✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in the ESMF and later adopted in subproject ESMP include measures for managing air and noise pollution; and safety measures and procedures are adequate and correctly implemented, particularly with regards to work procedures, supply of services, equipment, and materials and use of Personal Protective Equipment (PPE).

**Landscape Degradation and Reduction/loss of Visual Amenity**

Project aspects likely to affect landscape and visual quality are activities that cause modifications in the quality of the landscape features or erection of structures that do not blend with the natural setting of an area. These include land clearance that leaves bare areas or eroded areas in otherwise green surroundings. Haphazardly disposed wastes are an eye sore and result in loss of visual amenity of affected area. The effects will be more felt at areas designated as tourist destination.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in this ESMF and later adopted in subproject ESMP for managing landscape and visual amenity include avoidance and minimizing strategies merged with design considerations, specifications and provisions. Proposed management actions for ZMC establish: standards on shapes, height, color etc. of buildings and structures erected at scenic areas especially of touristic values.

**Physical damage, removal, demolition, restricting access to physical cultural resources**

In this ESMF the term “physical cultural resources” includes sites having archaeological (prehistoric), paleontological, historical, religious, and heritage buildings and unique natural values.

Zanzibar specifically ZMC areas are endowed with ruins, ancient/historical structures, archaeological sites and “sacred” forests and graveyards. Impacts of the construction activities on the cultural and natural heritage include physical damage, removal, demolition, restricting access by civil works.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

When during screening (ESMF checklist – Annex B) it is determined that there is a possibility that subproject construction or other activities may result in damage to cultural resources; the following are procedures for avoiding such damage:

- Consultations with the appropriate national and local authorities (Stone Town Conservation & Development Authority (STCDA), section at ZMC dealing with culture and local inhabitants to identify known or possible sites during subproject planning;
- Siting of subprojects to avoid identified sites; and
- Construction contract procedures for dealing with “chance finds”. These procedures should include cessation of work until the significance of a “find” has been determined by the appropriate authorities and local inhabitants, and until fitting treatment of the site has been determined and carried out.

**Positive Economic impacts**

Positive economic impacts of the project include reduction in expenditure on infrastructure investment and contribution to ZMC incomes. Other direct and indirect positive effects include increased employment opportunities at all levels; development of new services; improvements that accrue from improved access and management of wastes

## RISKS AND HAZARDS

### Damages / disruption from Physical Natural Factors and Processes

Natural factors and processes on site, in near vicinity or catchment areas could be external factors that pose risks on the developed infrastructure or sub-projects (Table 10).

**Table 10** Summary of potential risks to project due to natural factors

Natural process / aspect	Potential risk
Extremes of climatic elements: winds, rains, storms, hurricanes, lightening	- Damage of project structures - Disruption of project operations and schedules
Topography of the area: steep terrain cause erosion, stone dislodging; low terrain cause flooding.	- Injuries and fatalities to project personnel working on the site or visitors.
Surface drainage (streams, rivers) close to or cutting across subproject	- Damage of project structures - Discharges into project site - Water stagnation / flooding of project site
Storm water drainage – causing flooding and overflows.	
Height of hydro-geological conditions: high water table causing floods	
Soil movements (soil erosion)	Damage to project structures
Geology: seismic activities (earthquakes etc.)	

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in the ESMF and later adopted in subproject ESMP include risk assessment to determine conformity of sub-project in terms of: compatibility and timing of construction works.

### Influx of vermin, birds, pests and other invasive fauna species

The proposed ZUSP-AF component include the development of solid waste landfill and septic sludge treatment facilities for improvement of waste collection and disposal infrastructure in Zanzibar Municipality. Operation of these infrastructures is known to attract vermin, birds, pests and other invasive fauna species on the site and its neighborhood. Most of these are omnivores and scavengers that feed on wastes. Their presence causes problems in terms of nuisance to neighbours, flight safety, a threat to public health, and affecting the day to day site operation.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation measures in this ESMF and later adopted in subproject ESMP for managing influx of invasive fauna species on waste management infrastructures are centred on planning, operations and maintenance measures that minimize exposure of the waste materials including fencing of the infrastructures, provision

for small tipping areas, carry out immediate compaction of the solid wastes, immediate application of cover materials, etc. Proposed management actions for ZMC are requirement and instructions to designers of facilities to provide for an appropriate fence of the site, and to operators to institute and implement appropriate operation and maintenance procedures and practices.

**Damages / disruption from neighbouring anthropogenic activities**

These are anthropogenic activities and other external socio-economic factors on project site, in near vicinity that might affect the subproject (Table 11).

**Table 11** Summary of potential risks to project due to neighbouring socio-economic factors

<b>Socio-economic aspect / activity</b>	<b>Potential Risk to Project</b>
Land disturbances vibrations due to bulldozing during road construction	Destruction of infrastructure or subproject area Conflicts related to restricted access
Occupation, economic and social status of nearby residences	Theft of materials and portable items with ready-made market or for home use.
Unauthorized access to waste management facilities	Environmental health and safety hazards due to scavenging and/or unauthorized burning of waste
Security condition in neighbourhood to the project site	Vandalism of structures / equipment, theft of materials and portable items with ready-made market or for home use.

✓ *Mitigation measures for the ESMP /Proposed management actions for ZMC*

Mitigation actions in the ESMF and later adopted in subproject ESMP include risk assessment to determine conformity of sub-project in terms of: compatibility / co-existence of project within the neighbouring community and general public.

**Conclusion**

Most of the subprojects appear to pose no significant problem of technical nature or regarding safeguards management. However, new subprojects or rehabilitation of existing structures involving the relocation of the affected land-users or subproject causing degradation or pollution of receiving air, water or land such as landfill and septic sludge development, existing markets, new drainage systems cutting across settled areas will require more intensive preparations.

## **6. DEVELOPMENT OF SAFEGUARD INSTRUMENTS AND IMPLEMENTATION ARRANGEMENTS**

### **6.1 ZUSP-AF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

Project-specific ESMPs will take into account the generic mitigation measures described above and design specific, practical actions that will lead to mitigation of impacts emanating from implementing the planned activities. The ESMPs will indicate costs<sup>9</sup>, timeframe and assign responsibilities. ZUSP PMT and its Partners (ZMC/PTCs/DoURP) shall be responsible for overall implementation of the ESMPs.

#### **Development and implementation of Subprojects environmental and safeguard instruments (ESIA, ESMP, RAP)**

The key activities under ZUSP-AF will include development of single or clusters of subprojects constituting infrastructure covering all elements of the solid waste and septic sludge management systems: collection, primary transportation, material recovery, pre-treatment, transfer, bulk transportation, potential centralized composting as well as developing a sanitary land fill and sludge treatment facility. Urban upgrading infrastructure will cover roads and associated structures drainage, street lighting, etc. In accordance to Zanzibar regulations and World Bank requirements on ESIA (highlighted in this ESMF Chapter 7) in the event that a subproject is categorized for detailed assessment, a full ESIA and ESMP will be required (as determined in the Screening, Annex B); for subprojects with modest impacts a standalone ESMP will be prepared and for sub-projects with minor impacts, environmental measures will suffice.

Ministry of Finance through ZUSP PMT will be responsible for ensuring that these requirements are met. Preparation and approval of environmental and social management reports and/or plans and subsequent implementation of the Plans will include participation of a number of actors highlighted in this ESMF (next Chapters 7 & 8) notably, the necessary appraisals, approvals and implementation supervision which require by the law, involving the responsible government authorities and service providers (Contractors, Consultants), respective Municipal, Regional and District leaders, local authorized environmental, social and land management offices and committees and leaders in affected Wards and Shehias.

#### **Institutional development, training, technical assistance**

For the environmental and social assessment and management process to be effective the various project implementing institutions and collaborating institutions will require assistance and to become qualified for the tasks, the local officials and other actors will receive training. ZUSP PMT and higher level MDAA of the RGoZ such as the Department of Environment and the Zanzibar Environment Management Authority (ZEMA); the Ministry of Lands, and the likes have the requisite experience and qualified staff.

At the ZMC Division of Sewerage, Drainage and Solid Waste and Department of Urban and Rural Planning (DoURP), the Engineers and staff from the sector who are responsible for the technical aspects

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<sup>9</sup>The estimated costs for implementing the mitigation measures are usually indicative. Appropriate bills of quantities should provide actual figures for implementation of mitigation measures for individual subprojects.

and designs of sub-project might/are not conversant with principles of sound environmental management and the integration of the same and thus require induction / tailor-made training.

ZMC has bestowed responsibility for coordinating environmental and social management under the Departments of Environment and Sanitation. The ZEMA Environmental Officer and Community Development Officers and authorized Land Officers will work with other experts within or outside the ZMC to ensure ESIA's and management plans (ESMPs and RAPs) are implemented. To gain the requisite qualification and experience these require hands-on / on-job training and exposure.

The respective Regional and District Commissioners; LGA Environment and Social Committees; Executive Officers in Project Wards and Shehias; and local management committees for environment/ social / relevant sectors require continuous awareness and sensitization to ensure their continued support and participation in monitoring environmental and social performance of projects in their jurisdiction and ZUSP overall.

### **Reviews and evaluation**

Annual Reviews of the overall ZUSP-AF will be carried out as commissioned by ZUSP PMT. These are to be Third Party audits (by independent Local Consultant, NGO or Service provider) which will review the implementation of environmental and social management./ and performance of overall ZUSP-AF safeguards.

## **6.2 ENVIRONMENTAL AND SOCIAL MONITORING ARRANGEMENTS**

A number of indicators would be used in order to determine the status of infrastructure of beneficiary LGAs (ZMC and PTCs), affected people and their environment. Therefore, the ZUSP-AF sets three major socio-economic goals by which to evaluate its success:

- Project beneficiary institutions are able to maintain their pre-project capacity to plan, construct, and maintain their infrastructure and even improve on it;
- The pre-infrastructure development environmental state of physical and biological natural resources e.g. land, water, bio-diversity has been maintained or improved upon;
- The pre-infrastructure development social and economic state (livelihoods, health status Sub-project) of project affected people (PAP) has been maintained or improved upon.

The following parameters and verifiable indicators will be used to measure the ESMF process, mitigation plans and performance:

- Adopted of the specific EIA process by the ZMC / PTCs; evaluate the rate of adoption;
- Number of environmental resource persons within the LGAs who have successfully received EIA training in screening methods; evaluate the training content, methodology and trainee response to training through feedback;
- General standards of the roads and drainage compared to before, management of waste – solid, waste water, storm water compared to before, general sanitation of the urban area compared to before, and capacity and knowledge of environment and social management issues compared to before, level of participation of other stakeholders in project activities compared to before.

In order to assess whether these goals are met, the infrastructure projects will indicate specific parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities. From these the cumulative performance of the ZUSP-AF will be measured:

- Number of sub projects using the screening form and checklist.
- Number of sub projects having a Consultation Plan
- Number of Districts applying a Consultation Plan
- Number of sub projects with a soil conservation component/aspect
- Rating of improvements in the sustainable use of land resources.
- Number of sub projects with a large scale or medium scale component/aspect.
- Rating of sub projects maintenance and operating program.
- Compliance with the Environmental Guidelines for Contractors
- Savings in costs for resources and services required to maintain the infrastructure / subproject (water, energy, management of liquid and solid waste etc.)

### **6.3 ESMF DISCLOSURE**

Disclosure of the draft ESMF and RPF is planned for February 9, 2016 in Zanzibar and the World Bank InfoShop. Copies of the draft documents will be available for public review and comment at the following locations for a period of 120 days:

- Information center of the ZEMA;
- Offices of Regional and District Office within project area of influence;
- Offices of the Executive Director in respective District;
- Offices of the Ward Executive Officer (WEO) and Shehia with a sub project under the ZUSP-AF
- Info-Shop of the World Bank where the disclosure will precede appraisal of ZUSP-AF Project.

A public consultation will be held during the consultation period, planned for late February or early March 2016. The draft documents will be shared with invited stakeholders in advance of the consultation event. The views of the public and institutional stakeholders will be taken into account in the finalization of the documents.

## 7. PROCEDURE FOR SUB-PROJECT ENVIRONMENTAL AND SOCIAL SCREENING, APPRAISAL, REVIEW AND APPROVAL

Below is description of an environmental and social assessment and approval process specific for ZUSP Additional Financing sub-projects. The process is based on a simple screening and approval procedure including linkages with national procedure/institutions.

### 7.1 PURPOSE OF THE SUB-PROJECT ENVIRONMENTAL AND SOCIAL APPRAISAL AND APPROVAL PROCEDURE

The purpose of this process is to enable implementers of identified subprojects:

- To determine whether the sub-project investments are likely to have potential negative environmental and social impacts;
- To determine the magnitude of the impacts and their significance;
- To determine appropriate mitigation measures for activities with adverse impacts;
- To incorporate mitigation measures into sub-project design; and
- To review and approve proposed activities or sub-projects.

The extent of environmental and social work that might be required for sub-project prior to implementation will depend on the outcome of the screening process (Annex B). Main steps of the environmental and social assessment process including mandatory initial preparation leading towards approval of sub-projects under the ZUSP Additional Financing are described below. The salient aspects of the process to be established at ZMC and under each participating PTC and DoURP, shall include 10 main steps:

#	Step	Responsible
1	Preparation	Project proponent/PMT/PTCs
2	Initial screening	PMT
3	Application	PMT
4	Screening	ZEMA
5	Scoping and TOR	ZEMA
6	Appraisal	ZEMA
7	Review and approval of ESIA	ZEMA/World Bank
8	Incorporating mitigation measures into sub-project proposals / designs	PMT
9	Final approval of revised designs	ZEMA
10	Disclosure of approved sub-project	PMT/World Bank

As part of technical assistance to build capacity for safeguards management in the AF activities, the PMT is preparing a set of technical guidelines specific to the project activities, which will be a resource for the PMT, ZMC, DoURP, ZEMA and other actors beyond the ZUSP project. These guidelines will include:

- Subproject Screening guidelines
- Environmental and Social Impacts Assessment Checklist
- Consultation Guidelines and Good Practice
- Guide for Developing Mitigation Measures and Monitoring Plans
- Cultural Heritage Conservation Guidelines

- Taking of Land & Resettlement Management Guidelines and Good Practices
- Open Space/Greening Strategies

### **STEP 1: SUBPROJECT PREPARATION**

For the environmental and social assessment and management process to be effective, each Council Director of participating Councils (ZMC and PTCs) and Department of Urban and Rural Planning (DoURP), shall ensure that key staffs are included in the Project Team for any given subproject. Besides the infrastructure sector specialist i.e. Civil Engineer (for roads, drainage etc.) or Environmental Engineer (for sanitation facilities) minimally, the team will include<sup>10</sup> staff trained and with experience in environmental assessment and management, sanitation management, sociology/community development, economic planning, land and urban planning, etc.<sup>11</sup>.

Coordination and day-to-day activities related to subproject environmental and social management aspects will be delegated to an official responsible for overall environmental management of the Council<sup>12</sup> or DoURP henceforth referred to as Environmental Officer (EO). The EO shall remain as the main contact person for the national environmental management authorities (i.e. ZEMA& Department of Environment), the ZUSP PMU and other stakeholders in all matters related to environmental and social management.

The Council Director or DoURP, shall ensure team members are adequately qualified and registered as ESIA Experts at ZEMA. To become qualified for the tasks, the LGA and DoURP officials and other actors will receive training (Chapter 6 of this ESMF) specifically on the use of the ESMF checklist, tools, resource sheets and planning methods.

Identification and prioritization of sub-projects / selection of sites will be the function of recipient urban LGAs/ DoURP, who have developed their own funding proposals on a demand –driven basis. Priority urban infrastructures were drawn from consultations along with residents and other urban stakeholders. In some cases the selection was influenced by technical considerations provided by ZUSP and sector specialists.

Preliminary (and later detailed) designs shall be contracted to consulting firms. Procurement / contract awarding procedures shall include capability/experience in environmental and social impacts mitigation / integration into designs. The Council Director and DoURP shall ensure the Infrastructure Sector Engineers and Specialists (e.g. roads, drainage, waste management etc.) work with the design consulting team to enable transfer of skills and knowledge.

### **STEP 2: INITIAL SUBPROJECT SCREENING BY ZMC/PTC/ DoURP**

Screening is the classification stage to determine whether the sub-project investments is eligible for funding under ZUSP-AF, whether it conforms to RGoZ and World Bank requirements and determine the subproject components or activities that are likely to have potential negative environmental and social impacts that can be managed or not. While the determination of the level at which an impact assessment study will be carried out will remain the prerogative of ZEMA (see next Step 3) this initial screening will

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<sup>10</sup> The number and type of team members will depend on the nature and scope of the sub-project under consideration.

<sup>11</sup> Other opted specialists appointed by the Council Executive Director on need basis depending on nature of project

<sup>12</sup>10% of project funds are to be allocated to the EMO for environmental and social management activities and to cover monitoring, allowances, review costs, fuel and stationary (See capacity building chapter 7)

be undertaken by the Project Teams at ZMC, Participating PTCs and DoURP, using the screening form found in Annex B of this ESMF.

The qualified infrastructure sector specialists - Civil Engineer or Environmental Engineer responsible for the design and/or implementation of the proposed subproject (assisted by Environmental Officers and members of the Project Team) shall screen and make brief description of the infrastructure, defining its components and activities. The screening takes consideration of key factors specifically nature, magnitude/scale of potential impacts and concerns of the public that might be realized during sub-project implementation. The Project Teams shall carry out screening of the sub-project by using the checklist supplemented by field investigations as deemed necessary as well as screening criteria provided in the Zanzibar EIA Regulations and other sources for specific subproject such as landfill development.

### **Determine Category and World Bank's Safeguards Policies triggered by sub-project**

During initial screening the Project Team determine which of the World Bank's safeguards policies may be triggered by the sub-project and what the requirements are to comply with the triggered policy (Annex B). Further information on these policies is available on the Bank's website, [www.worldbank.org](http://www.worldbank.org). If any of the Bank safeguards policies are triggered by sub project, the ESIA will analyze these impacts in more detail and propose corresponding mitigation measures. Based on the results of the screening, the environmental category will be established and the level of ESIA determined according to OP 4.01 and ZEMA guidelines.

After reviewing the results of the initial environmental and social screening process, the Project Team at ZMC / PTCs / DoURP will then write a brief screening report defining the subproject components/activities likely to cause adverse environmental and social impacts including resettlement, outlining activities likely to trigger the safeguard OP, describing the potential negative (and positive) impacts, the extent of environmental and social assessment and management work (Environmental Category) that might be required and submit to the ZUSP-PMT for guidance / approval.

Time frame: initial screening at ZMC / PTCs / DoURP within 10 working days; approval by ZUSP-PMU within 5 working days.

The initial screening report will assist in the applications submitted to ZEMA (*Step 3*) and will be issued as part of the Terms of Reference to certified firm of experts commissioned by ZUSP to undertake the ESIA work (*Step 6*).

### **STEP 3: APPLICATION FOR EIA CERTIFICATE AT ZEMA**

For each subproject or clusters of subprojects, the Project Team at ZMC / PTCs / DoURP (assisted by ZUSP PMT) will fill in a EIA registration Form issued by ZEMA – availing information on:

- Particulars of Proponent
- Proposed project/activity
- Proposed site
- Infrastructure and utilities
- Environmental and social impacts
- Other environmental issues
- Mitigation of impact and environmental enhancement measures

The Project Team (assisted by EIA Consultant if already commissioned) will prepare project brief or other background information as necessary to accompany the application documents. **Error! Reference source not found.** is the type of information required for a standard project brief. The application tasks may entail review of initial screening report and other available information as well as field reconnaissance to determine status of key ecological and social components and consultation with project recipient communities and their leaders and relevant stakeholders.

Box 1 Content of a Standard Project Brief

*Project Description:* a description of the subproject pointing out the main components and activities with environmental and social impacts implications including clear definition of the location and areas of influence.

*Prevailing Baseline Condition:* a synopsis of the status of the subproject's operating conditions that will be affected by the proposed sub-projects / activities (including an outline of key environmental, social and compliance issues).

*Potential Environmental and Social Impacts and concerns:* identification of sources, nature and extent of key impacts, compliance and issues of concern covering but not limited to: pollution (changes to air quality, water and soil quality including accidental spills and disturbances); effects to local natural habitats, biodiversity and species of concern; land use changes and resettlement; use of resources and management of wastes workers health and safety; and community wellbeing, health, safety, and security.

*Mitigation Measures:* Recommendations to avoid, reduce, mitigate or compensate the impacts including estimates of costs and responsibility for implementation of the mitigation measures. Show commitment of funds to implement the proposed mitigation measures.

Environmental and Social Management Plan (ESMP) and Environmental and Social Monitoring Plan (ESMoP)

The Project Team will submit application documents including project briefs to the Council / DoURP Environmental Officer for review and necessary signatures. The respective EO assisted by Community Development officers / Sociologist will review the application documents for compliance with the results and recommendations from the initial screening process and would recommend approval to the ZUSP PMU.

The applicant (ZMC / PTCs / DoURP or the EIA Consultant on behalf) will submit dully filled-in and approved Application and support documents together with a prescribed fee for ZEMA to screen and determine the scope of environmental and social impacts assessment work required (**Step 4**).

#### **STEP 4: SUBPROJECT SCREENING AT ZEMA**

At this stage, ZEMA determine scope of environmental and social impacts assessment work required. Upon submission to ZEMA of the Proposed ZUSP infrastructure development activities, the environmental authority shall advise on the nature of information required for approval decision of the sub-project. Screening is based on screening criteria stipulated under ESIA Guidelines and Procedures of 2009 under the Zanzibar Environmental Management Act No.3 of. Two outcomes of screening at ZEMA are possible:

##### **1. No EIA required**

If the environmental and social screening results by ZEMA indicate the potential impacts will be sufficiently managed by application of proposed mitigation measures in project design, and the project would not cause significant negative impacts per World Bank OP 4.01; the subproject will not require a full ESIA. ZEMA will recommend approval of the subproject – with conditions. The applicant (ZMC / PTCs / DoURP) will be issued a Letter of Approval with conditions (instead of EIA Certificate) by ZEMA. This will apply automatically to any activity that pass the criteria stipulated under ESIA Guidelines and Procedures of 2009 and listed under Schedule 1 of the ZEMA and is in line with WB OP 4.01 on Environmental Assessment for sub-projects with minor impacts (see Chapter 4 of this ESMF). Box 2 clarifies the type of activities that do not require an EIA certificate.

**Box 2 Activities that do not require an EIA certificate**

<ul style="list-style-type: none"> <li>• Any domestic, private and non-commercial activity</li> <li>• Operating a small-scale shop</li> <li>• Operating a small-scale business employing fewer than 10 people</li> <li>• Operating tours, other than dives, and travel agencies</li> <li>• Engaging in rainfed agriculture over an area of less than 10 hectares</li> </ul>	<ul style="list-style-type: none"> <li>• Operating a small-scale warehouse for storage of non-hazardous substances</li> <li>• Providing commercial clearing and forwarding services</li> <li>• Providing office and professional services</li> <li>• Operating an air charter service</li> <li>• Maintaining roads if the work does not involve upgrading or expansion of road</li> </ul>
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**2. EIA required**

In the event that a subproject is screened and found to have potential to cause adverse impacts and the management measures do not suffice; it will be categorized for detailed assessment, and a full ESIA (involving scoping and development of TOR followed by detailed impact assessment study) will be required. According to the Zanzibar ESIA procedure, scoping for all project registered at ZEMA is undertaken by the environmental authority. Thus, if the screening results require a full scale ESIA, then ZEMA will decide whether:

**2(a) ZEMA conduct the scoping and the ToR:** the Project Proponent (ZMC/ PTCs / DoURP will incur the costs involved in undertaking the scoping study

OR

**2(b)The Project Proponent conduct the scoping and ToR:** in this case ZMC/PTCs /DoURP through a qualified Consultant undertake the scoping study and associated costs.

ZEMA then submits the screening results / statement to the Proponent within 10 days of submission of registration form and project report and the process proceed to **Step 5**

Approval of EIA experts by ZEMA

Upon receipt of the screening results/statement, ZMC/PTCs /DoURP will submits to ZEMA latest CVs of EIA experts (individual or firms)<sup>13</sup> within 10 working days. ZEMA approves/disapproves the experts with reasons within 5 working days.

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<sup>13</sup> Experts are required to register with ZEMA following a process similar to project registration and using the same registration form.

Between the screening done in Step 2 (which adheres to World Bank policy) and the screening done by ZEMA in Step 4, the more stringent of the two exercises will apply to ensure compliance on both ends.

## **STEP 5: SCOPING AND PREPARATION OF TERMS OF REFERENCE**

If the classification indicates that an EIA is required, ZEMA determines scope of the ESIA in agreement with Proponent on specific issues, persons to be consulted, methodology to be used during EIA study. Proponent should bear the cost of EIA study. The EIA report format is prescribed under ESIA Guidelines and Procedures of 2009 under the Zanzibar Environmental Management Act No.3 and should be outlined in the ToR.

### ***ZEMA conduct the scoping and the ToR:***

ZEMA conducts the scoping and approve the ToR and provide to the Proponent (ZMC/PTCs /DoURP) with 10 working days from date of completion of scoping procedures. The process proceed to **Step 6**

### ***The Project Proponent conducts the scoping and ToR:***

- The approved ESIA experts (commissioned by ZMC/PTCs /DoURP through ZUSP PMT) will undertake scoping study to determine scope (spatial, temporal and technically) and identify main issues for consideration in the impact assessment;
- The lead agency of experts assign responsibilities among key personnel / other agencies for undertaking the EIA study (ensuring integrated environmental, social and natural sciences); and work plan and schedules for the EIA study.
- Experts prepare the ToR to guide the impact assessment study and submit to ZEMA for approval.
- ZEMA approve the ToR and provide to the Proponent (ZMC/PTCs /DoURP) with 10 working days from date of submission of scoping report and ToR. The process proceed to **Step 6**

## Public Consultations

According to World Bank OP4.01 and international best practices public consultation is required as part of the ESIA and/or ESMP / RAP process specifically during the scoping and review stages. Stakeholders should be directly involved in the whole ZUSP-AF project cycle right from the design, to implementation and monitoring. ESIA public consultation also supports the existing participatory planning process at ZMC/PTCs that is exercised during sub projects identification. Thus, public consultation shall be mandatory when conducting an environmental assessment for a subproject financed by ZUSP-AF. At a minimum the subproject proponent ZMC/PTCs /DoURP must meet key stakeholders to solicit their views using standard participatory approaches and methodology (Box 3).

### **Box 3 ESIA requirements on public disclosure**

- |   |
|---|
| Publicizing the proposed project and its anticipated effects and benefits by-   |
| <ul style="list-style-type: none"><li>• Posting posters in strategic public places in the vicinity of the project site;</li><li>• Publishing a notice on the project in mass media i.e. newspaper, radio</li><li>• Making announcement of the notices in both Kiswahili and English languages</li><li>• Hold (where appropriate) public meetings with affected parties and communities to explain the project and its effects, and to receive their oral or written comments;</li><li>• Ensure appropriate notices are sent out at least one week prior to the meetings</li></ul> |

- Venue and times of the meetings are convenient for the affected communities and the other concerned parties

The below are generic guide to an acceptable public involvement process.

The first step is to conduct consultations with the local communities and all other interested/affected parties during the screening process for identification of subproject components/ activities likely to cause impacts. These consultations should identify key issues and determine how the concerns of all parties will be addressed in the Terms of Reference for the environmental assessment works / ESIA.

To facilitate meaningful consultations, the ESIA Consultants supported by ZMC/PTCs /DoURP Project Team will provide all relevant materials (e.g. draft ESIA, ESMP) and information concerning the sub projects in a timely manner prior to the consultation, in a form and language that are understandable and accessible to the groups being consulted. Depending on the public interest in the potential impacts of the sub projects, a public hearing will be done as part of project preparation to better convey concerns and seek inputs from stakeholders.

#### **STEP 6: CARRYING OUT ENVIRONMENTAL AND SOCIAL ASSESSMENT WORK**

The EIA Consultant will initiate environmental work in accordance to the scoping report and TORs issued / approved by ZEMA. The Consultant shall follow the steps as per provisions in the Zanzibar EIA procedure with ZMC/PTCs /DoURP input and participation. Upon completion of scoping procedures (whether scoping and ToR done by ZEMA or Proponent) the undertaking of EIA study (by registered EIA experts or firms of experts) is expected to take 2 - 6 months following approval of ToR. The ToRs are subject to review after 6 months. The study identifies likely impacts assess and evaluate their severity and magnitude and proposed mitigation measures to minimize potential negative impacts and enhance positive benefits.

Impacts identification and mitigation shall be based on this ESMF screening checklist (Annex B) and Guides (to be developed) complimented by other measures applicable to the particular infrastructure sector/situation. The Consultant will undertake assessment with involvement of certified staff at ZMC/PTCs /DoURP (coordinated by the Environmental Officer). The study may include field investigations - a site visit conducted to determine status of ecological and social receptors and engage with project recipient communities and stakeholders. The work shall culminate in production of ESIA report, which follows the ESIA format provided by ZEMA (included in Annex C). For situations where OP 4.12 applies, the ZMC/PTCs /DoURP will prepare a Resettlement Action Plan (RAP) consistent with the separately disclosed RPF.

The EIA Consultant shall complete the assessment work and submit the ESIA reports including an ESMP and ESMoP (Box 4) for review and approval by ZEMA (*Step 7*).

#### **Box 4 ZEMA requirements on Environmental Impact Statement**

An EIA report (prepared according to format prescribed under section 40 (a) – (f) of the Environmental Act which includes two separate documents: Social Impact Assessment (SIA) prepared first and submitted to ZEMA for review; followed by Environmental Assessment document.

The EIS shall be analytical, specific for project location, with high significant impacts given in detail, less significant mentioned briefly, concise, of necessary length (less than 100 pages), alternatives/ mitigations comply with legal requirements and facilitate decision on project. EIS

include project decommissioning.

Proponent submits to ZEMA four original copies of the EIS and an electronic copy and pay prescribed fee to for review costs.

## **STEP 7: ESIA REVIEW AND APPROVAL**

Upon ZMC/ PTCs /DoURP submitting the final EIS, ZEMA will undertake a review process of the EIA report based on criteria stipulated under ESIA Guidelines and Procedures of 2009 of the Zanzibar Environmental Management Act No.3 of 2015. The review includes ZEMA getting input from relevant stakeholders through:

- Circulation to relevant government bodies for comments;
- Public notification of time and place for review of EIS and submitting written comments;
- Soliciting comments (written) from people affected by project.
- Comment period from stakeholders is > 20 but < 30 days.

A preliminary hearing(s) will be organized by ZEMA to gather information for use in the statements as necessary. If more information is required (i.e. design plans, access to relevant sites etc.) ZMC/PTCs /DoURP will be informed after 5 days after the review meeting of the need for more detailed information to adequately assess the EIS. ZMC/PTCs /DoURP will submit the required information within 20 days. Once the additional information has been submitted, a further review may be necessary.

ZEMA obtain final staff recommendations and makes decision within 14 working days on issuing EIA Certificate or not. Time limit for review will completed within 30 working days after comments period.

### Environmental decision of the ZEMA

The outcome of the review could be:

- EIS approval:***if the review of the ESIA Report by ZEMA indicate the potential impacts and application of mitigation measures in projects design are sufficient; ZEMA will recommend to the Minister responsible for the environment to issue the EIA Certificate for the subproject.  
OR
- EIS approval (subject to specified conditions)*** and issued with EIA Certificate;  
OR
- More information is required*** (with reasons and within specified period);  
OR
- EIS not approved*** based on criteria stipulated ESIA Guidelines and Procedures of 2009, no EIA certificate issued and recommend to licensing institution to stop project from proceeding.

### Appeals

Any party who is aggrieved: proponent or licensing institution have the right to appeal within 7 working days to the Minister responsible for Environment. If there is dissatisfaction of any decision reached, the Proponent has the right to appeal to the Environmental Appeals Committee whose decision shall be final.

### World Bank No Objection

All ESIA's and RAPs prepared for subprojects must also be submitted to the World Bank for review and no objection prior to project implementation.

## **STEP 8: INCORPORATING MITIGATION MEASURES INTO SUB-PROJECT PROPOSALS / DESIGNS**

Upon receipt of the approval, the infrastructure sector specialists at ZMC/PTCs /DoURP - Civil Engineer or Environmental Engineer (assisted by Design Consultant, EIA Consultant as necessary) shall incorporate the mitigation measures into the proposals or designs of the sub-project development activities and update the approved ESMP. The sector specialist shall submit the revised designs to the Project Management Team as appropriate for review and approval (*step 9*).

## **STEP 9: FINAL APPROVAL OF REVISED DESIGNS**

The Environmental Officer (Project Teams and including community representatives) shall review and make recommendation on the revised designs. The review assesses to ensure considerations of land take / land acquisition and resettlement impacts, discharge of pollutants (i.e. sediments and oils in storm water / wash-down waters) into sensitive habitats, additional modifications, alternatives routes etc. The Teams shall carry out review using the environmental and social screening Checklist as well as field investigations as deemed necessary. The generic mitigation measures provided in this ESMF provides guidance for all possible identified impact that the Team will use to check if the ESMPs address the negative impacts or enhance positive ones. ESMPs should include mitigation measures specific to the subproject activities and the area of influence.

### EO Recommendations

If the sub-project environmental assessment and project documentation have satisfactorily addressed all key issues and satisfied that the sub-project designs are environmentally and socially compliant, the EMO will clear the sub-project through to the ZMC/PTCs /DoURP Project Team.

ZMC/PTCs/DoURP will provide review results to design consultant for final incorporation into design and/or subproject ESMP and proceed through standard project authorization by ZUSP-AF / RGoZ.

Any proposed infrastructure project that ZEMAs not comply with the requirements of RGoZ environmental policies and legislation and World Bank Safeguard Policies will not be cleared for approval. This process is designed to ensure that the environmental and social assessment process is part of and conducted during the design process thereby ensuring that the infrastructure development activities are environmentally and socially sound and sustainable.

## **STEP 10: FINAL DISCLOSURE OF APPROVED SUB-PROJECT INSTRUMENTS**

Upon final clearance of the sub-project, ZMC/PTCs/DoURP through Project Teams will disclose the approved sub-project information (ESIA, ESMP) to the public. More than one avenue can be used as most suitable to the project area however at the minimum the Team shall ensure that the key findings of the environmental and social impacts and mitigation process are:

- Presented and discussed at least one meeting of relevant Shehia and Ward Management Committees
- Presented and discussed at least one meeting of Council Environmental Committee and ZMC Full Council
- Accessible in a public place i.e. notice board, public information point /center/ library, Shehia, Ward, District and Regional offices etc.
- Presented in an understandable form, manner and language by using the non-technical summaries of the ESMP that is in both Kiswahili and English.
- Review and approval by the World Bank and disclosure in World Bank InfoShop.

## **8. PROCEDURE FOR SUB-PROJECT IMPLEMENTATION, MONITORING AND REPORTING**

Below is description of procedure for implementation of mitigation measures and management controls of environmental and social impacts identified during impacts assessment process for the proposed sub-project. The process hinges on implementation of the ESMP and ESMoP by different actors including Contractors and their supervisors; environmental management authorities at local and higher levels; and local management committees and communities at large.

### **8.1 PURPOSE OF THE SUB-PROJECT IMPLEMENTATION PROCEDURE**

The purpose of this process is to enable the various subprojects / ESMP implementing entities to:

- ensure that the implementation of the sub-project ESMP is part of the Contractor's contractual obligations
- ensure the ESMP is implemented and approval conditions are observed during the mobilization, construction and operation of the sub-project including preparation and execution of environmental and social decommissioning plan in case the project or its component reaches the end of its life.
- monitor compliance to laws, regulation and standards including local by-laws
- monitor performance and report on all aspects articulated in the ESMP and ESMoP including record of and responding to grievances.

Main steps of the environmental and social management and monitoring process including mandatory initial preparation and implementation supervision are described below. The salient aspects of the process to be established at ZMC and under each participating PTC and DoURP shall include 4 main steps with substeps:

1. Preparations
2. Implementation Supervision
  - RAP Implementation
  - Sub-project ESMP Implementation
3. Monitoring and Reporting
4. Subproject Review and Audit

### **STEP 1: PREPARATION**

#### **Procurement of Contractors**

The Project Teams will ensure that all relevant resources (human and financial) for proposed mitigations are complete before initiating subproject implementation. Execution of infrastructure development works and operation of some facilities (e.g. landfill) will be undertaken by ZMC/PTCs/DoURP through Contractors. Working with the Procurement Section (responsible for supervising the tendering process) the Project Team will ensure environment and social issues are taken onboard and incorporated in the contracts.

*Construction phase:* ZUSP-PMT shall award the development of entire sub-project to Contractor through one turnkey construction contract. ZUSP PMU, through the ZMC / DoURP Project Team and Design Consultants (with requisite capability/experience in environmental and social impacts mitigation / integration) shall develop the Scope of Work (SoW) including choice of location, technology, layout etc.)

while the Subproject Contractor shall execute the SoW including detailed engineering and implementation of ESMP components relevant to mobilisation and construction/installation in accordance to international and Tanzania/Zanzibar specifications and standards.

Construction supervision consultancies experienced in environmental and social management will be procured to work with ZMC/PTCs /DoURP EOs to supervise construction of subprojects and to transfer skills to technical staff.

*Operation & maintenance:* Infrastructure, once complete, will be maintained by respective LGAs (ZMC / PTCs/DoURP) including implementation of operations aspects of the ESMPs linked to sub-projects. These tasks are long-term and will be done by infrastructure sector specialists. Depending on the nature of the subproject ZUSP shall award one contract for operations and maintenance of the facility such as landfill and septic sludge treatment facility. LGA/DoURP Environmental Officers shall undertake monitoring of operations aspects of the ESMP while coordinating input and involvement of local management committees and communities.

*ZMC /PTCs /DoURP contributions:* will continue to make in kind contributions in the form of staff time. ZUSP PMU will continue to provide support to assist ZMC in the implementation and monitoring of both the construction and operation aspects of the infrastructure sub-projects including organizing technical assistance and training to ZMC/PTCs/DoURP as relevant.

### Permits and Notifications

The sub-project implementation shall be carried out in accordance to international and Tanzania/Zanzibar environment, health, safety and security requirements, standards and best practices including all conventions ratified by the RGoZ. The equipments and materials used will have all necessary certification/registration and fully compliant with specific requirements for subproject size and purpose.

ZUSP and ZMC/PTCs/DoURP will seek and obtain the necessary permits and / or MOUs from relevant authorities and undertake notifications as per environmental management regulations (Table 12). The Project Teams will ensure that all relevant project approvals including ESIA Certificate, OSHA etc. are in place. Most of the authorities listed have been working with ZUSP and were visited by the ESIA Consultant and provided with information introducing the ZUSP-AF. ZUSP and ZMC/PTCs/DoURP will carry further the consultations before commencement and during the implementation of individual sub-project.

**Table 12 Permit Requirements and Notification to Relevant Authorities**

Type Of Permit / Notification	Relevant Authority / Stakeholder
Use of existing Right of Ways ( e.g. road way-leaves)	- Roads Department Road fund (main roads)
Other users of roads Right Of Ways	- Electricity transmission lines (ZECO) - Water supply system Znz water authority (ZAWA) - Transition cables ( eg. fibre optics) - Gas pipeline (future projects)
Notification to HSSE authorities	- SUMATRA( for ZNZ?) - ZMA (Zanzibar Marine Authority) - Lands and surveys - OSHA - Fire and rescue - Sources of construction materials
Notification of key stakeholders in Unguja and Pemba	- DoURP - ZEMA (Director General and Directors of EIA and Enforcement).

	<ul style="list-style-type: none"> <li>- Ministry for Environment (Minister &amp; PS)</li> <li>- Department of Environment)</li> <li>- Regional and Local Government Authorities (Regional Commissioners, District Commissioner, Municipal /Town Directors; Chairpersons of Council Environment Committees.</li> <li>- District environmental officers, District health officers</li> </ul>
Building permits	<ul style="list-style-type: none"> <li>- Building permits – Stone town conservation development authority (STCDA)</li> <li>- ZMC- Building permits department (For Zanzibar Municipality)</li> </ul>

### **Community / Public Mobilization and Sensitization**

Community financial contributions (as condition of construction commencement) are not a requirement under ZUSP because, in urban settings, it could lead to delays.

Stakeholders should be directly involved in project implementation and monitoring however. Public awareness and mobilization shall be mandatory before commencement and throughout implementation of a subproject financed by ZUSP-AF. Affected people and stakeholders shall be informed about the outcome and decisions on the ESIA approval process, schedules of project implementation and who, how, where, when they will participate.

## **STEP 2: IMPLEMENTATION SUPERVISION**

### **Implementation of RAP**

Subprojects will be mostly sited on the current location of existing infrastructure. Where land is required, i.e. rerouting, expansion or extension, or establishment of new infrastructure, the subproject will utilize land designated by LGA or land acquired from individuals. Compensation procedures and payment of compensation costs by ZMC/PTCs/DoURP will be in accordance with RAPs prepared and approved for respective subprojects in accordance with the Resettlement Policy Framework which is a separate document that has been developed in parallel to this ESMF, as required by World Bank Op 4.12. Support will be provided to assist LGAs in the implementation of the RAPs prior to commencement of construction contracts including payment of compensation costs. (See Resettlement Policy Framework for details)

### **Implementation of Subproject ESMP**

The preparation of an Environmental and Social Management Plan (ESMP) is a requirement of the Zanzibar EIA Regulations / Procedure and World Bank OP 4.01 The plan should provide guidance for implementation of the identified mitigation measures, and indicate costs<sup>14</sup>, timeframe and assign responsibilities. ZUSP and its Partners (ZMC/PTCs/DoURP) shall be responsible for overall implementation of the ESMP.

### **Management Controls by ZUSP / Partners (ZMC/PTCs/DoURP)**

<sup>14</sup>The estimated costs for implementing the mitigation measures are usually indicative. Appropriate bills of quantities should provide actual figures. The ESIA consultant must use informed judgement to determine the figures.

Implementation of the ESMP is solely the responsibility of the sub-project proponent. ZUSP shall supervise and monitor all components implemented by the Contractor(s). ZUSP shall provide the necessary supervisory oversight to ensure the mitigation measures are implemented. All aspects of the proposed subproject development and operation will be managed to comply with ZUSP's ESMF and Zanzibar's environmental regulatory requirements and standards (see above)

During the construction and operation of the subproject, ZUSP will apply a systematic approach to optimize the Health, Safety, Security and Environment (HSSE) performance for the project and ensure that its HSSE objectives and management standards are achieved. The project will continuously undergo a comprehensive planning process to ensure that the management requirements identified are implemented on site through clear designation of roles and responsibilities. The management requirements will be incorporated into implementation strategy for the project via the following key procedures and plans:

- ✓ Pre-tender HSSE qualification process including development of environmental specifications
- ✓ Contractual and procedural controls on the selected subproject Contractor (i.e. inclusion of environmental conditions in contractual documents)
- ✓ General Management Programms and ZMC/PTCs/DoURP management plans to guide the subproject Contractor include:
  - Waste Management Plan
  - Health, Safety and Security Plan
  - Stakeholder Management Plan
  - Emergency Response Plan (ERP)
- ✓ Direct project supervision
- ✓ Review/auditing and reporting of environmental performance/improvement of implementation.

### **Management Controls by Sub-project Contractor**

The Contractor shall ensure that those mitigation measures that are to be implemented during mobilisation and construction and operation are attended to according to ESMP and specific work plans. The Contractor shall simultaneously undertake monitoring and reporting of environmental performance/improvement of implementation. Mitigation implementation shall specifically entail:

- ✓ Development of sub-project specific work plans to include:
  - Waste Management Plan
  - Health and Safety Plan
  - Stakeholders Engagement Plan
  - Emergency Response Plan (ERP)

Basic environmental and social guidelines for contractors and the Project Teams are included in Annex D.

### **Environmental Induction**

The purpose of the induction is to encourage environmental and social responsibility among all personnel and ensure that the personnel are made fully aware of the measures required to be implemented to minimize the potential impacts on the environment, prior to the commencement of the project. The personnel with responsibilities in specific environmental practices will be adequately trained to ensure effective implementation of the works instructions and procedures for which they have responsibilities. This induction should address the subproject Health Safety, Security and Environment Plan (use of PPE, fire fighting facilities); good site practices and housekeeping; sound waste management (handling/clean-

up of contaminating spills, storage, use and disposal of hazardous materials/wastes); and interactions with local community.

### **Participation and Involvement of Stakeholders**

Taking cognizant of the fact that much of the sub-project activities will take place within urban local government authority (ZMC/PTCs/DoURP) sub-projects are likely to interact with a number stakeholders currently known and unknown. It will be the responsibility of ZMC/PTCs/DoURP EOs working with the sub-project Contractor's Environment Liaison Officer to coordinate the involvement of relevant government authorities and service providers and meet related costs.

#### ***Stakeholders Engagement Plans For Sub-project***

The Stakeholder Engagement Plan (SEP) developed during ESIA and RAP preparations identifies the roles of key stakeholders that should be further elaborated in the relevant sections of the ESMP. These would include government authorities at all levels responsible for Environmental and social impacts monitoring as well as community mobilization and awareness<sup>15</sup>; infrastructure and utilities authorities (for water supply, wastewater disposal services, electricity power supply services (if relevant), connection of access road to highway) as well as local communities and their leaders and committees in area of influence. Other stakeholders include private and public entities providing support and facilities for waste disposal, materials supply etc.

### **Environmental and Social sensitization and awareness**

The purpose of the awareness and sensitization programme developed by ZUSP and Partners and implemented with participation of the subproject Contractors is to ensure continued project acceptance by the stakeholders groups, manage expectations and minimize conflicts. The programme shall be developed mindful of type of communication information, awareness creation tools, communication channels and messages fit for specific targets/audience. The key aspects shall include but are not limited to:

- Sub-project development and operation schedules and activities
- Management of expectations – employment services provision; access to Project facilities and services (water supply, reusable items etc.)
- Defining issue of land take, user rights and access
- Project's health, safety, and security procedures and requirements concerning the communities (site hazards during construction; vehicle movements and traffic accident; interactions with project personnel; exposure to disease and transmissions (HIV/AIDS).

### **Grievances Redress Procedures**

Grievance redress mechanisms are essential tools for facilitating project affected people (PAPs) to voice their concerns about the resettlement and compensation process as they arise and, if necessary, for corrective action to be taken promptly. Such mechanisms are fundamental to achieving transparency in the acquisition and resettlement processes, as well as provide a clear way for PAPs to voice concerns about overall project activities. Greater detail on grievance procedures specific to resettlement can be found in the RPF. This section outlines general grievance procedures applicable for any PAPs with concerns about broader project activities.

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<sup>15</sup> RC's Office, Municipal and Town Councils office: Environment Management , Community Development, Health, Natural Resources, Human Resource, Land Management, Civil Works Engineers, Water Engineer

First, three committees are being established to address grievances:

**Table 13 Committees for grievance redress mechanisms**

<b>Resettlement Committee</b>	<b>Compensation Committee</b>	<b>Grievances Redress Committee</b>
<ul style="list-style-type: none"> <li>• ZUSP - AF- Coordinator (Chair)</li> <li>• Representative of District Commissioner</li> <li>• Representative of ZMC</li> <li>• Representative of Ministry of Lands</li> <li>• Consultant</li> <li>• Representative of a local Administrators / Shehia</li> <li>• Representative of PAPs</li> </ul>	<ul style="list-style-type: none"> <li>• Principal secretary of Ministry of Finance (Chair)</li> <li>• Representative of District Commissioner</li> <li>• Representative of ZMC</li> <li>• Representative of Ministry of Lands</li> <li>• Consultant</li> <li>• Representative from the ZUSP - AF of the Ministry of Finance</li> <li>• Valuer</li> <li>• Representative of PAPs</li> </ul>	<ul style="list-style-type: none"> <li>• District Commissioner (Chair)</li> <li>• Representative of ZMC</li> <li>• Representative of Ministry of Lands</li> <li>• Valuer</li> <li>• Representative from ZUSP – AF of the Ministry of Finance</li> <li>• Representative of PAPs</li> <li>• Representative of a local NGO</li> </ul>

#### Resettlement Grievances

All attempts would be made to settle grievances. Those seeking redress and wishing to state grievances would do so by notifying their Sheha who is the government representative at the village level. For resettlement issues, the Sheha will inform and consult with the Resettlement Committee for compensation issues, to determine claims validity. If valid, the local Sheha will notify the complainant and s/he will be settled. If the complainants' claim is rejected, then the matter will be brought before the Regional Administration for settlement. The decision of the Regional Administration would be final and all such decisions must be reached within a full growing season after the complaint is lodged.

If a complaint pattern emerges, the ZMC, Regional Administration and the Department of lands will discuss possible remediation. The local leaders will be required to give advice concerning the need for revisions to procedures. Once they agree on necessary and appropriate changes, then a written description of the changed process will be made. The ZMC, the Regional Administration and Sheha will be responsible for communicating any changes to future potential PAPs when the consultation process with them begins.

#### General grievances

A Grievance Redress Committee will be constituted to register the grievance raised by the PAPs and address the grievance forwarded by the PAPs representative committee. The Grievance Redress Committee will try as much as possible to arrive at a compromise for the complaints raised. This may be obtained through series of conciliations, mediations and negotiations exercises conducted with the PAPs.

If PAPs accept the recommendations made by the committee, the committee along with PAPs who are willing to take part in these proceedings may hold mediations at the appointed places. In situations where PAPs are not satisfied with the decision of Grievance Redress committee, the PAPs can approach the Tribunal/ court of law. The response time for cases handled in both committees will depend on the issues addressed but it should be as short as it is possible.

### **STEP 3: SUBPROJECT MONITORING AND REPORTING**

#### **Objectives for Monitoring**

The objectives for monitoring are: (i) to alert project implementing institutions and to provide timely information about the success or otherwise of the EIA process as outlined in this ESMF in such a manner that changes to the system can be made, if required; (ii) to make a final evaluation in order to determine whether the mitigation measures designed into the infrastructure projects have been successful in such a way that the pre-infrastructure project environmental and social condition has been restored, improved upon or worse than before.

#### **Monitoring Indicators**

In order to assess whether these goals are met, the infrastructure projects will indicate parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities. Monitoring indicators which should be included in the Project Monitoring Manual include:

- Environmental indicators
  - Efficiency of infrastructure projects maintenance and operating performance;
  - Water quality and soil quality at site and outlet (e.g. final exit of storm water drains) of infrastructure sub-project meets local standards
  - Compliance with the Environmental Guidelines for Contractors
  - Safe disposal of hazardous wastes
- Social indicators
  - Number of people provided with environmental training to implement the ESMF
  - The number of local workers used during implementation of the works
  - Savings in costs for resources and services required to maintain the infrastructure (water, energy, management of liquid and solid waste etc.)

### **STEP 4: SUBPROJECT REVIEW AND AUDIT**

After a period of implementation the ESMPs of sub-project should be subject to annual reviews / audits. Annual Reviews of the ZUSP sub-projects will be carried out using external / independent reviewers /auditors as commissioned by ZUSP PMT. These are to be Third Party audits (by independent Local Consultant, NGO or Service provider) which will review the implementation of environmental and social management in the project.

## 9. SUBPROJECT IMPLEMENTATION ARRANGEMENTS

### 9.1 ESMP IMPLEMENTATION

A number of stakeholders will come into play during implementation of the ESMP. It will be the responsibility of ZUSP and Partners (ZMC/PTCs/DoURP) to oversee the performance of the sub-project Contractor and service providers and coordinate the involvement of relevant third party: government authorities and communities and meet related costs. The Environmental Officer shall be designated manage the ESMP and to make day-to-day follow-ups (supervision and liaising with stakeholders).

#### **ZMC/PTCs/DoURP Roles and Responsibilities for Key Personnel**

The roles and responsibilities for managing environmental and social issues associated with the proposed sub-project will rest principally with the Project proponent, ZUSP and Partners (ZMC/PTCs/DoURP) (and sub-project Contractor engaged) with certain aspects assisted by ZEMA.

***Environmental Officer at (EO)*** at ZMC/PTCs/DoURP - overall responsible for oversight of environmental compliance and project environmental management, including overall responsibility for ESIA compliance and all project issues along the entire lifecycle. The EO shall provide day-to-day supervisory role during the entire construction period. The EO is the principal interface to the governmental regulatory bodies, local administration and other interested stakeholders. The EO will ensure that the mitigation measures that are to be incorporated in the designs are completed before the implementation of the project.

***Community Development Officer (CDO)*** at ZMC/PTCs/DoURP) – will be responsible to conduct direct project engagements with stakeholder as well as participate in engagements conducted by the project contractors. Will document all engagements which stewards the engagement information. Actively involved in the assessment and closure of grievances.

***Land Acquisition and Resettlement Officer*** at ZMC/PTCs/DoURP) – overall responsible for ensuring that the ZMC/PTCs/DoURP) complies with national requirements as relates to land acquisition and resettlement while attempting to influence, advise and support their efforts to comply to international best practice and requirements. The Land officer will also ensure that all relevant engagements and consultations are conducted with the affected households as relates to the subproject.

#### **Contractor Roles and Responsibilities for Key Personnel**

##### ***Environmental Liaison Officer (ELO)***

The sub-project Contractor shall designate among its staff /appoint an officer to act as Environmental Liaison Officer (ELO) and he/she will be responsible to ensure the environmental and social management mitigation measures are implemented during the contract period. The ELO will report to the EO at ZMC/PTCs/DoURP). The ELO after being provided with the required capacity shall be responsible for:

- Establishing contacts, procedures, memorandum of understanding (MOU), where applicable, for interaction with relevant authorities and communities

- Keeping record of materials and technologies used and actions performed and reporting on the same (environmental monitoring and reporting).
- Documenting all complaints/conflicts/disagreements with details of the persons involved and the subject matter.
- Coordinating necessary studies/inspections of environmental performance (self-audits).

## 9.2 MONITORING AND REPORTING

Environmental monitoring needs to be carried out during the mobilisation, construction as well as operation and maintenance phases of the infrastructure sub-project in order to measure the success of the mitigation measures implemented earlier under ZUSP, the responsibilities for monitoring and evaluation of the mitigation measures adopted would be assigned as follows:

- The sector specialists (Engineer) is responsible for the day-to-day monitoring of the sub-project ESMP including supervising aspects implemented by the Contractors and resolving grievances specifically the monitoring of (i) the environmental and social assessment work to be carried out by service providers; (ii) overseeing the implementation of the Resettlement Action Plans; (iii) monitoring of environmental issues and the supervision of the civil works contractor during the construction process (iv) monitoring of environmental issues during operations and during maintenance of the infrastructure facility (iv) submission of monitoring reports to ZMC/PTCs/DoURP Environmental Offices/ZEMA. The monitoring and reporting will be done by the Municipal sector specialists who will be trained. He/She shall bear the overall responsibility of supervision of the infrastructure projects and shall report to the Project Team at ZUSP.
- The Environmental Officer at ZMC/PTCs/DoURP will have a supervisory monitoring role to ensure that the mitigation measures indicated in the ESMP are actually being implemented and reporting on all environmental and social management issues within the LGA and to ZEMA throughout the project life-cycle as required. Specifically EO will undertake compliance monitoring to check whether prescribed actions have been carried out. In close collaboration with the infrastructure project implementers (sector specialists / Engineer) the EO will ensure that the monitoring plan as contained in the individual infrastructure project proposals is implemented as stated therein. EO will consolidate the project-specific monitoring report into one common report and submit the report Project Team at ZUSP and ZEMA.
- Members of the Community: Will undertake - after awareness raising - effects monitoring (which records the consequences of activities on the biophysical and social environment). This will be done throughout the infrastructure project cycle: (i) During planning phase - participate in the identification of indicators for monitoring the mitigating measures; (ii) During implementation (construction) phase, monitoring the execution of works with respect to environmental aspects, e.g. verify the compliances of the Contractors with their obligations; (iii) During operation and maintenance phase, the overall environmental monitoring and alerting on any emerging environmental hazards in conjunction with the ongoing infrastructure project activities. The communities will be enabled to pass on their observations and concerns through the existing administrative structure of the local governments i.e. Shehia/Ward councils and environment committees to Municipal Environmental Officers who will have direct link with ZEMA/ZUSP.

- ZEMA will perform an enforcement monitoring role supported by ZUSP based on submissions and recommendations from the EIS/ EO. The ZEMA will ensure that the monitoring plan for the overall monitoring of the entire ZUSP –Additional Financing requirements is implemented with particular focus on monitoring cumulative impacts of the infrastructure projects on a municipal level and to ensure that individual infrastructure project mitigation measures are effective at the cumulative and municipal level. ZEMA would primarily achieve this objective through periodic field visits, coordinating and implementing the Training Program and through technical assistance and backup services to the ZUSP.
- ZUSP will perform monitoring functions for the entire ZUSP – Additional Financing. Monitoring and Evaluation guidelines developed to monitor the entire project will include parameters for compliance to proposed measures to safeguard the environmental and social impacts. Monitoring activities by the Implementers, Environmental Officers/ZEMA will be performed periodically through performance surveys/audits.

### 9.3 TRAINING

#### Training Needs Assessment (TNA)

Cost estimates are for payment in the form of consultancy services to private or public environmental and social practitioners. The estimated costs for these needs assessments are to cover all ZMC, PTC and DURP.

#### Technical Training of Designated Staff in Environmental Management/EIA

About 20 designated staff from the implementing institutions will be trained. This could include sub-project sector specialists (i.e. Municipal Engineer), EO and staff from departments responsible Social planning/Community Development, Economic Planning, Urban Planning, Land and Health. This training would be provided in the form of a 5-day course. Cost for the course would include: per diem, food, transport, accommodation, conference hall, incidentals for participants, trainers and support persons.

#### Workshop for Decision Makers

About 20 people from the Participating institutions will participate in the workshop. This will be a one/two days workshop costing include: per diem, food, transport, accommodation, conference hall, incidentals for participants, resource persons and support person).

#### Preparation of ESIA's / ESMPs / RAP

A number of environmental assessment work will be carried out. However, it is not known at this time where (exact location) and how many of the subprojects proposed for additional financing will be screened by ZEMA and determined to require specific more detailed full-scale ESIA. The assessment work and development of ESMP will be undertaken by private certified environmental and social practitioners (individuals or firms).

**Table 14 Budget Estimates for ESMF Implementation**

ACTIVITY	PARTICULARS	USD ('000)
INSTITUTIONAL DEVELOPMENT	Policy Workshop (Decision Makers )	7
	Regulatory and Administrative changes	5

TRAINING	Training Needs Assessment		40
	LGA Review and approval authorities	Training and sensitization	25
		ESMF review workshop	20
	Project Teams	Training and sensitization	50
		ESMF review workshop	60
Community leaders awareness raising and sensitization		20	
TECHNICAL ASSISTANCE	General TA		45
	Specific TA		60
SUBPROJECT ESMPS, RAPS	Risk Assessment		15
	ESMPs		115
	RAPs		90
ANNUAL REVIEW			20
TOTAL			562

## 10. REFERENCES

The following resources were consulted in drafting the ESMF.

- Consultancy Services for Environmental and Social Impact Assessment for The Development of Solid Waste and Septic Sludge Management / Disposal Systems For Zanzibar Municipal Council Zanzibar Urban Services Project (ZUSP) - Terms of Reference (TOR); has already been submitted to ZEMA. Based on the understanding between ZEMA and ZUSP Project Unit, the Scoping Study will be carried out to strengthen the key environmental and social issues that will then be incorporated into the final ToR for ESIA study.
- Emmanuel Kasimbazi (2009) Compliance With Safeguard Policies of The World Bank And African Development Bank. At the 'IAIA09 Conference Proceedings', Impact Assessment and Human Well-Being 29th Annual Conference of the International Association for Impact Assessment, 16-22 May 2009, Accra International Conference Center, Accra, Ghana ([www.iaia.org](http://www.iaia.org)).
- Environmental Impact Assessment Guidelines for Zanzibar, 2009.
- <http://www.coastalforests.tfcg.org/pubs/Protected%20Area%20Spatial%20Planning%20Unguja%20and%20Pemba%20WCS%202012.pdf>
- [http://www.gfdrr.org/sites/gfdrr.org/files/Chapter\\_21\\_Safeguard\\_Policies\\_for\\_World\\_Bank\\_Reconstruction\\_Projects.pdf](http://www.gfdrr.org/sites/gfdrr.org/files/Chapter_21_Safeguard_Policies_for_World_Bank_Reconstruction_Projects.pdf)
- [http://www.gfdrr.org/sites/gfdrr.org/files/Chapter\\_21\\_Safeguard\\_Policies\\_for\\_World\\_Bank\\_Reconstruction\\_Projects.pdf](http://www.gfdrr.org/sites/gfdrr.org/files/Chapter_21_Safeguard_Policies_for_World_Bank_Reconstruction_Projects.pdf)
- <http://www.iucnredlist.org/details/19708/0>
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- JICA Environmental Impact Assessment Guidelines and Format.
- Protected Area Spatial Planning for Unguja and Pemba Islands, Zanzibar: A Consultancy to the UNDP- GEF: Extending the Coastal Forest Area Protected Area Subsystem in Tanzania; Final Consultancy Report Submitted to World Wide Fund For Nature (Wwf) From Wildlife Conservation Society (WCS); Prepared by Kirstin S. Siex; Zanzibar Project Director, WCS Africa Program, 2300 Southern Blvd, Bronx, NY 10460, December 2011.
- Revolutionary Government of Zanzibar (1995) National Land Use Plan; Analysis of Potentials and Issues; ZILEM Project & FINNIDA.
- The United Republic of Tanzania (2003) Zanzibar – The Land Husbandry Improvement Program: Strategy and Action Plan; Report No.03/007 CP-URT; Ministry of Agriculture, Natural

Resources, Environment, and Cooperatives; Food and Agriculture Organization; and Investment Center Division – FAO/World Bank Cooperative Program.

- Project documents for the current ZUSP; appraisal documents for the ZUSP – Additional Financing Project
- Recent studies, appraisal/ performance assessments documents related to ZUSP including those on sanitation and solid waste and septic sludge management systems for ZMC / Unguja Island (listed under Para 1.6 & 1.8 of the ToR),
- Previous Scoping and ESIA reports, RAPs, Environmental and Social Audit reports for completed / on-going subproject under ZUSP and related sectors.
- Background literature of the environmental and social conditions (i.e. Zanzibar Sanitation and Drainage Programme of 2005); as well as land acquisition and compensation in Zanzibar, conditions at target LGAs, and conditions at representative subproject sites.
- Existing environmental and social management frameworks and plans resettlement action plan in use within ZUSP area of influence and Zanzibar in general.
- RGoZ policies, legislation and guidelines on environment, social, cultural heritage management and land acquisition and compensation; National Spatial Development Strategy; specific ZMC Development Strategy and Structure Plan (i.e. ZMC Indicative Diagrammatic Structure Plan); and the World Bank safeguard policies applicable to ZUSP Additional Financing (i.e. OP 4.01 on Environmental Assessment; OP 4.12 on Resettlement; and OP.. on Physical Cultural Resources; OP 4.36 on Forest; and OP 4.11 on Natural Habitats)

## Consultations

Consultation with key stakeholders for the Kibele site thus far have included ZEMA, the Forest Department, the Zanzibar Water Authority, Department of Roads, Central District, and local authorities. Together these institutions developed a Memorandum of Understanding **in 2014** for interim site management, including environmental and social management. Additional stakeholder consultations with affected communities are planned during the ESIA.

For the Michenzani corridor, the DoURP has had a continuous process of stakeholder engagement for several years including the ZMC, Stone Town Conservation and Development Authority, *shehias*, and local NGOs. The design of the corridor upgrading has not yet been undertaken, but the design process will continue this consultation process and engage with the identified stakeholder groups.

The ESMF and RPF have drawn from the mitigation measures under the existing project ESIA and RAP, which underwent extensive consultation during their preparation in 2010, as well as the RAP update which included consultation with PAPs in 2015. Preparation of the ESMF and RPF has benefitted from consultation with the Zanzibar Environmental Management Agency, ZMC, and agencies involved with the Kibele site (see above). Public consultation in Zanzibar will be undertaken during the 120-day disclosure period of the ESMF and RPF.

## ANNEX A: Detailed biodiversity inventory

Following is a detailed inventory of biodiversity in Zanzibar in order to determine any vulnerable, threatened or endangered species that might be present in the project area.

### *Floral Diversity*

Zanzibar consists of a mosaic of vegetation ranging from short coral rag bushes and thickets to higher, closed forests. Like many tropical forests, closed forests of Zanzibar have a bottom layer of herbaceous species, a network of climbers and upper layer of perennial species. Key variety of dominant species include Coconut (*Cocos nucifera*), *Areca catechu* (Mpopoo), *Elaeis guineensis* (Mchikichi), *Raffia palm* or *Raphia farinifera* (Muwale), *Phoenix reclinata* (Ukindu), and many more. There are also many species of medicinal significance, some with ornamental value, and others available for a multitude of uses.

In general, dominant exotic species in Zanzibar include pines or conifers such as *Pinus patula* (Misonobari), various species of Eucalyptus or Mikaratusi (e.g. *E. zanzibarica* and *E. modernii*, *Casuarina equisetifolia* (Mvinje), *Acacia ingusetefolia*, *Terminalia catappa* (Mkungu), *Terminalia everensis* (Mkungu wa Kihindi), Teak or Msaji (*Tectona grandis*), and *Callophyllum inophyllum* (Mtondoo). These tree species have been planted in most forests as well as in different places in Zanzibar such as along the roads and surrounding other building complexes.

Jozani Forest Reserve - located about 35 km south of Zanzibar town in the island of Unguja, Jozani is the largest forest reserve in Zanzibar. There are also isolated pockets of natural and established forest stands which are found in the following locations: *Masingini* – Located a few kilometers north-east of Zanzibar town, which is maintained by the forest sub-commission. *Masingini* and the adjoining *Mwanyanya* have both natural and established forests. A nursery located at *Mwanyanya* is instrumental in afforestation activities in Zanzibar. *Kichwele* - located in northern part of Unguja island is popular for its rubber plantation (about 600 ha) but the neighboring areas of *Pangeni* have a good stand of natural forest. *Kiwengwa* - north-east of Unguja Island has only recently been recognized as an area in need of a well-planned conservation scheme.

### *Fauna Diversity*

#### Mammals

Zanzibar's mammal population is very small with only 54 terrestrial species, out of which 23 species are bats. Most of the mammals are found on Unguja Island. Key mammals of conservation concern include:

**Red Colobus Monkey (*Procolobus kirkii*) – IUCN Status – ENDANGERED:** This species is endemic to Zanzibar Island where it occurs at elevations of 0-110 m. It is found mainly in the south-eastern part of the island in Jozani-Chwaka Bay National Park, the adjacent agricultural areas to the south, and the coral thickets and mangrove swamps of Uzi Island 10 km to the south-west. Also found at low densities in isolated populations in the coral thickets along Zanzibar's eastern coast from Kiwengwa in the north to Mnyambiji in the south, and on the west coast there is a small isolated group in the mangrove swamps of *Maji Mekundu*. A small translocated population of ca. 56 individuals also occurs in *Masingini* Forest Reserve.

The remaining populations are severely threatened by habitat destruction resulting from timber felling, charcoal production, clearance for cultivation, and bush-burning. This species is occasionally shot for food, sport, or as a supposed crop pest, but habitat loss remains the most serious threat. In Jozani Chwaka Bay National Park, habitat degradation occurred in the past mainly from commercial logging, agriculture, tree-cutting for fuelwood, and charcoal production, but this has now stopped. There are occasional deaths due to road kills south of the park.

**Bush Tailed Mongoose (*Bdeogale crassicauda*) – IUCN Status – LEAST CONCERN:** The nocturnal and shy mongoose inhabits the coral rag forest of the south-eastern area of Unguja island but in Pemba it is found in the deep soil areas on the western side of the island. The local name in Pemba is "*Chonjwe*" and hobby hunters usually encounter this mongoose when hunting for the Small Indian civet.

**Zanzibar Tree Hyrax (*Dendrohyrax validus*) - IUCN Status – NEAR THREATENED:** also nocturnal, this tree hyrax is common in Jozani and its habitat comprises trees and caves in coral rag forest. It is believed to be the earliest hyrax species adapted to forest life and possesses the characteristic of having four digits on its front feet and three on its hind feet. The main threats to this species are severe forest loss, degradation, fragmentation (mainly due to logging and burning), and hunting, logging, including selective logging of large trees, removal of shelter trees, destruction of arboreal pathways.

**Zanzibar Slender Mongoose (*Herpestes sanguineus*) – IUCN Status – LEAST CONCERN:** This is a common resident of coral rag forest. Present in a wide variety of habitats and occur on forest fringes, and may penetrate into forests along roads and are sometimes found around villages. Slender Mongooses are generally carnivores, their diet primarily comprising of small vertebrates and invertebrates

**Zanzibar Suni or Dwarf antelope (*Neotragus moschatus*) – IUCN Status – LEAST CONCERN:** This is also a coral rag animal and commonly found in Jozani forest especially among *Psiadia arabica* and *Todalia* spp trees. Usually found near water sources. Lifelong pairs protect a territory of 3 ha in which they raise one fawn per year under favorable conditions.

**Zanzibar Leopard (*Panthera pardus*) – IUCN Status – NEAR THREATENED. LIKELY EXTINCT in ZANZIBAR.** Its existence is debatable but believed to inhabit some areas of Unguja Island. The population size is totally not known, however, it is associated with witchcraft and is believed to be employed by evil-doers who keep the animal to scare others off their homes.

**Zanzibar Giant Rat (*Cricetomys gambianus*) – IUCN Status – LEAST CONCERN.** This is a species inhabiting the coral rag forest, common in Jozani forest but rare in other areas of Zanzibar. It reaches up to a meter in length, including the tail. The burrow sites are changed in two weeks to reduce the risk of predation.

**Four-Toed Elephant Shrew (*Petrodromus tetradactyla*) – IUCN Status – DATA DEFICIENT –** This is a species that inhabits primarily coral rag areas of Unguja Island in low canopy forests; under dry leaves, and non-flooding areas. It is rarely seen and survives because of its nocturnal lifestyle.

**House Shrew or Indian Musk Shrew (*Suncus murinus*) – IUCN Status – LEAST CONCERN.** This is abundant in Unguja Island. Its habitats are coral rag forest and non-flooding areas. It is an important food source for omnivores and carnivores. It is an exotic species from south Asia with a body length of 19 - 20 m.

**Black and Rufous Elephant Shrew (*Rhynchocyon petersi adersi*) – IUCN Status – VULNERABLE SPECIES – FOUND INSIDE THE KIBELE PROJECT SITE PERIMETERS.** The project zone provides a sanctuary to *Rhynchocyon petersi* (or Black and Rufous Sengi, Black and Rufous Elephant-shrew, Zanj Sengi). According to the International Union for Conservation of Nature (IUCN), the species is considered as VULNERABLE. The local population density of the Black-Rufous elephant shrew may be affected as the species is already under the IUCN list of vulnerable fauna. The Department of Forestry and Non-Renewable Natural Resources will provide environmental protection guidelines including compliance with the Zanzibar Forest Act<sup>16</sup>.

**Lesser Bushbaby (*Galago senegalensis zanzibaricus*) – IUCN Status – LEAST CONCERN.** This is a common species of Zanzibar and Africa as a whole. Its habitats are ground water forest, coral rag forest possibly mangrove forest. The lesser bush baby is distinguished from greater bush baby by its noticeable white patch stretching from forehead to nose. It is nocturnal.

**Greater bush baby (*Otolemur garnetti garnetti*) – IUCN Status – DATA DEFICIENT.** This is a common species in Zanzibar and Africa as a whole. In Zanzibar, its habitat includes the ground water forest, coral rag forest and possibly mangrove forest. It possesses a muscular body for its arboreal lifestyle. It is nocturnal.

**Syke's monkey (*Cercopithecus mitis albogularis*) – IUCN Status – LEAST CONCERN -** This is a common species in Zanzibar as well as in Africa. Its habitats are ground water forest, coral rag forest and mangrove forest. The species is seen daily foraging with Red colobus monkeys in plantation and ground water forests of Jozani forest.

**African civet (*Civettictis civetta*) – IUCN Status – LEAST CONCERN.** African Civet is listed as Least Concern because the species has a wide distribution range, is present in a variety of habitats, is relatively common across its range, is present in numerous protected areas, and has a total population believed to be relatively stable. It may, however, be undergoing some localised declines through hunting, including the off-take of wild animals (males) for the production of civetone, which is used as a fixing agent in the perfume industry.

**Small Indian civet (*Viverricula indica rasse*) – IUCN Status – LEAST CONCERN.** This is an exotic species and its secretions were used in perfume. Locally known as "ngawa", it is common throughout Zanzibar (i.e. Unguja and Pemba). Its habitat ranges from Ground water forest during the drought, coral rag forest and grassland. It is solitary except during breeding.

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<sup>16</sup> <http://www.iucnredlist.org/details/19708/0>

**Zanzibar Duiker or Ader's Duiker (*Cephalophus adersi*) – IUCN Status – CRITICALLY ENDANGERED.** Aders' Duiker occurs on the main island of Unguja, Zanzibar, as a near endemic. In Zanzibar, Aders' Duiker inhabits tall, undisturbed coral rag thicket known locally as msitu mkubwa of the Zanzibar-Inhambane regional mosaic (XIII). It is usually found singly, sometimes in pairs or trios and often, when encountered, may be following a troop of Sykes (Cercopithecus mitis albogularis) or Kirk's Red Colobus (Procolobus kirkii) monkeys feeding on discards and dislodged edibles from the canopy above.

Aders' Duiker appears to be loosely diurnal with a very acute sense of hearing and possibly smell. Aders' is a browser selecting for dicotyledenous leaves, seeds, sprouts, buds and fruits. Territories are maintained by facial gland secretions on prominent twigs and faecal heaps. In Zanzibar there has been a substantial amount of deforestation and forest degradation over the last 30 years. This has led to loss of habitat for Aders' Duiker, but also severe habitat fragmentation. Firewood is the primary source of income for a significant proportion of people living near the forest. Habitat destruction is probably the most significant threat to Aders' Duiker survival on Zanzibar.

**Red-Legged Sun Squirrel (*Heliosciurus rufobrachium dolosus*) – IUCN Status – LEAST CONCERN.** Its habitats range from coral rag forest to plantation forest. It differs from Red Bush Squirrel by possessing a black, ringed tail. It is absent in Pemba island

**Red Bush Squirrel (*Paraxerus palliatus frerei*) – IUCN Status – LEAST Concern.** It is a common species of Zanzibar and Africa at large, which in Zanzibar resides in coral rag forest and ground water forest. Its ecology is not well known. It is absent in Pemba island.

#### Birds<sup>17</sup>

Avi-base, the World Bird Database has listed a total number of 276 bird species found in Zanzibar. About 6 species are categorized as endangered while 9 are exotic or introduced species.

#### VULNERABLE species include:

Cape Gannet (*Morus capensis*)  
Pemba Scops-Owl (*Otus pembaensis*)  
Southern Ground-Hornbill (*Bucorvus leadbeateri*)  
Java Sparrow (*Lonchura oryzivora*)

#### NEAR THREATENED species include:

Eurasian Curlew *Numenius arquata*  
Great Snipe *Gallinago media*  
Fischer's Turaco *Tauraco fischeri*  
European Roller *Coracias garrulous*  
Fischer's Lovebird *Agapornis fischeri*

#### ENDANGERED species include:

Madagascar Pond-Heron *Ardeola idea*

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<sup>17</sup> <http://avibase.bsc-eoc.org/checklist.jsp?region=TZznza>

Amphibians

Zanzibar is not known to having diverse amphibian species. There are studies by Pakenham on Amphibians and Reptiles of the Zanzibar and Pemba<sup>18</sup> which show a total of 19 species or sub-species of amphibians found on Unguja. Lately, Amphibian species<sup>19</sup> that have been trapped and recorded in the project zone during surveys carried out by other ESIA studies include *Arthroleptis stenodactylus* and *Mertensorphrine micranotis*. A new species of frog, Kassina Jozani<sup>20</sup> was discovered in Zanzibar in 2006. This is an ENDANGERED species.

Reptiles

Historically, common reptiles found on Unguja Island include 10 species of lizards and 23 species of snakes (Pakenham:1983). However, since the publication of the study, not many detailed research works have been dedicated on reptiles in Zanzibar although there are some social media pages that attempt to document identified snakes. Sometimes it is hard to say whether the identified snakes are actually native to the geographical range of Zanzibar or they are somehow exotic and invasive. More studies specific to reptiles in Zanzibar are required to determine the current environmental and ecological status of the species. Common snakes found in Zanzibar as of recent records include the Green Tree Snakes, the Eastern Green Mamba, the Brown Snake, etc.

However, with respect to overall reptiles list for Zanzibar, a recent online database of reptiles whose range includes Zanzibar contains the following species:

*Agama mossambica* PETERS, 1854  
*Aldabrachelys gigantea* (SCHWEIGGER, 1812)  
*Amblyodipsas polylepis* (BOCAGE, 1873)  
*Aparallactus guentheri* BOULENGER, 1895  
*Atractaspis bibronii* SMITH, 1849  
*Broadleysaurus major* (DUMÉRIL, 1851)  
*Cycloderma frenatum* PETERS, 1854  
*Elapsoidea nigra* GÜNTHER, 1888  
*Gastropholis vittata* FISCHER, 1886  
*Hemidactylus angulatus* HALLOWELL, 1854  
*Hemidactylus platycephalus* PETERS, 1854  
*Hemidactylus puccionii* CALABRESI, 1927  
*Hemidactylus turcicus* (LINNAEUS, 1758)  
*Indotyphlops braminus* (DAUDIN, 1803)  
*Lepidochelys olivacea* (ESCHSCHOLTZ, 1829)

<sup>18</sup> R.H.W. Pakenham (1983) THE Reptiles and Amphibians of Zanzibar and Pemba Islands (With a Note on Freshwater Fishes). The Journal of East Africa Natural History Society and National Museum. Issue No. 177. Pp 1 - 40.

<sup>19</sup> [http://www.amphibiaweb.org:8000/cgi/amphib\\_query?where-genus=Kassina&where-species=jozani](http://www.amphibiaweb.org:8000/cgi/amphib_query?where-genus=Kassina&where-species=jozani)

<sup>20</sup> <http://www.iucnredlist.org/details/136136/0>

*Letheobia lumbriciformis* (PETERS, 1874)  
*Letheobia pallida* COPE, 1868  
*Letheobia swahilica* (BROADLEY & WALLACH, 2007)  
*Lycophidion acutirostre* GÜNTHER, 1868  
*Lycophidion capense* (SMITH, 1831)  
*Lygodactylus howelli* PASTEUR & BROADLEY, 1988  
*Lygodactylus luteopicturatus* PASTEUR, 1964  
*Lygodactylus picturatus* (PETERS, 1870)  
*Mochlus afer* (PETERS, 1854)  
*Phelsuma dubia* (BOETTGER, 1881)  
*Philothamnus macrops* (BOULENGER, 1895)  
*Philothamnus punctatus* PETERS, 1867  
*Philothamnus semivariatus* (SMITH, 1840)  
*Sepsina tetradactyla* PETERS, 1874  
*Uromastix princeps* O'SHAUGHNESSY, 1880

## **Marine And Coastal Ecology And Biodiversity**

### *Sea Water Quality*

Molly Moynihan (2010) carried out a study on how a rapid increase in Zanzibar's population, as well as a lack of proper sewage treatment, water quality and eutrophication have become serious issues on Unguja<sup>21</sup>. These issues not only threatened public health, but also threatened the health of nearby coral reefs. When data from bacterial enumeration was compared with recommended levels of enterococci for safe recreational waters, values revealed that Stone Town's water is unsafe for public swimming. Moreover, measured concentrations of ammonium from Chapwani Island exceeded those tolerable by healthy coral ecosystems. These results indicate that sewage pollution is causing, and will continue to cause damage to Stone Town's waters unless a new method of sewage treatment is created.

As follow up to the above research in 2010, Socorro Lopez (2104) carried an extensive study on the environmental impact of fecal contamination on the Zanzibar Town's marine environment<sup>22</sup>. Zanzibar Town is struggling to deal with the large amount of waste generated by growing populations and increasing tourist industries. In 2010, the waters surrounding Stone Town, a subsection of Zanzibar Town, were found to be highly polluted by fecal waste. Socorro's study attempted to determine whether pollution has lessened or worsened in the past four years. Furthermore, environmental components of the coastal area, particularly tides, were tested in order to determine whether they had an impact on pollution in the waters. Results suggest that the pollution at both sites has worsened and continues to pose a serious risk to public health. Furthermore, spring and neap tides had a significant impact on enterococci concentrations, but how these environmental fluctuations influenced concentrations at the Port was not

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<sup>21</sup> Moynihan, Molly, "Water Quality and Eutrophication: The Effects of Sewage Outfalls on Waters and Reefs Surrounding Stone Town, Zanzibar" (2010). *Independent Study Project (ISP) Collection*. Paper 827. [http://digitalcollections.sit.edu/isp\\_collection/827](http://digitalcollections.sit.edu/isp_collection/827)

<sup>22</sup> Lopez, Socorro, "Pollution in Stone Town's Coastal Waters: An Assessment of Environmental Influences on Fecal Contamination" (2014). *Independent Study Project (ISP) Collection*. Paper 1767. [http://digitalcollections.sit.edu/isp\\_collection/1767](http://digitalcollections.sit.edu/isp_collection/1767)

entirely clear. If measures are not taken in the future to improve the pollution in Stone Town's coastal waters, there could be serious consequences to the local economy and the community's health.

### *Seagrasses*

Studied around Chwaka Bay Area show a rich marine diversity. Seagrasses can function as habitat for a variety of organisms, including epiphytes such as microalgae, macroalgae, bacteria and a number of invertebrates such as echinoderms, crustaceans, molluscs, nematodes and polychaetes. The associated organisms within seagrass beds can affect seagrass ecosystem productivity and structure. Scientists have reported the presence of about 11 species of seagrass communities around the Bay area, of which *Enhalus acoroides*, *Thalassia hemprichii*, *Cymodocea rotundata*, *Cymodocea serrulata*, and *Thalassodendron ciliatum* are dominant species. Others are *Syringodium isoetifolium*, *Halodule uninervis*, *Halodule wrightii*, *Halophila ovalis*, *Halophila stipulacea*, and *Nanozostera capensis*.

### *Fish*

Fish diversity around Zanzibar is high but the inshore banks have been deteriorating due to overfishing and destruction of coral reefs. A high density of small fish species also attracts concentrations of large predators making Zanzibar Channel as among best areas of game fishing. Fish are more abundant where there are healthy coral reefs.

### *Dolphins*

Common Dolphin species observed around Zanzibar include Spinner Dolphin (*Stenella longirostris*), the Indo-Pacific Bottlenose Dolphin (*Tursiops aduncus*), and Indo-Pacific Humpback Dolphins (*Sousa chinensis*) which is categorized under IUCN Red List data Book as a Near-Threatened Species. Sperm and Humpback whales are regularly observed between July and November.

### *Sea Turtles*

The species of sea turtle most commonly found in the waters around Zanzibar are the green turtle (*Chelonia mydas*), the hawksbill turtle (*Eretmochelys imbricata*) and the loggerhead turtle (*Caretta caretta*). Sea turtles are now classified as 'endangered' worldwide and Zanzibar's population of nesting sea turtles appears to be declining. The sea turtle population of Zanzibar appears to contain two components: a small nesting population, and a migratory population that feeds in Zanzibar but nests in other areas. Fishermen's estimates of the numbers of turtles nesting annually suggest that the nesting population (which consists of green and hawksbill turtles) have declined significantly in the last few decades, with signs of nesting activity being seen less than 10 times per year in the majority of areas.

### *Coelacanths*

Other marine species of IUCN importance in the geographical proximity include the Coelacanth (*Latimeria chalumnae*) listed as critically endangered. Coelacanths found around Zanzibar are thought to have originated from the Comoros, extending their range into the archipelago of Zanzibar.

### *Sea Birds*

A wide variety of sea birds are found around the shallow lagoons of the Indian Ocean in Zanzibar. Birds such as Sooty Terns (*Sterna fuscata*), Noddy Terns (*Anous stolidus*), Crested Tern (*Sterna bergii*) and masked booby (*Sula dactylatra*) are found on the sand banks, on the beaches, around inter-tidal flats and

in the mangroves. Around a hundred species of birds have been documented from the Menai Bay Conservation Area. These birds include Little Egrets, Cattle Egrets, Tellow Billed Egrets, Squaco heron, Night Heron, Purple Heron, Black Headed Heron, and Goliath Heron.

## **ANNEX B: SCREENING CHECKLIST**

The following checklist has been designed to assist in the evaluation of infrastructure projects under the ZUSP Additional Financing. The form is intended to assist with Step 2 of the “Procedure for sub-project environmental and social screening, appraisal, review and approval” found in Section 7 of the ESMF. This will inform the safeguards triggered by the subproject, and drafting the application for EIA certificate at ZEMA.

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

Name of sub-project.....

Implementing Institution (Participating Urban LGA) .....

Name of the area in which the sub-project is to be implemented

.....

Name of Executing Agent/Contractor.....

Name of the Supervising Agent .....

Details of person responsible for filling out this ESSF:

Name: .....

Job title:.....

Telephone numbers:.....; .....

E-mail address.....

Signature:.....

Date: .....

**PART A: BRIEF DESCRIPTION OF SUB -PROJECT**

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

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

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

**PART B: BRIEF DESCRIPTION OF THE ENVIRONMENTAL SITUATION AND IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS**

Describe the infrastructure location, siting, surroundings (include a map, even a sketch map)

Describe the land formation, topography, vegetation in/adjacent to the project area

Estimate and indicate where vegetation might need to be cleared.

**Environmentally sensitive areas or threatened species**

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

Intact natural forests: Yes \_\_\_\_\_ No \_\_\_\_\_

Riverine forest: Yes \_\_\_\_\_ No \_\_\_\_\_

Surface water courses, natural springs Yes \_\_\_\_\_ No \_\_\_\_\_

Wetlands (lakes, rivers, swamp, seasonally inundated areas) Yes \_\_\_\_\_ No \_\_\_\_\_

How far is the nearest wetland (lakes, rivers, seasonally inundated areas, sea)?  
\_\_\_\_\_ km.

Area of high biodiversity: Yes \_\_\_\_\_ No \_\_\_\_\_

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

Yes \_\_\_\_\_ No \_\_\_\_\_

Others (describe)..... Yes \_\_\_\_\_ No \_\_\_\_\_

### **Rivers, Lakes and Marine Ecology**

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

Yes \_\_\_\_\_ No \_\_\_\_\_

### **Protected areas**

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

Yes \_\_\_\_\_ No \_\_\_\_\_

If “YES”, Natural Habitats (OP 4.04) is triggered and/or Physical Cultural Resources (OP 4.11). Include appropriate mitigation measure to be taken in ESIA and ESMP.

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

Yes \_\_\_\_\_ No \_\_\_\_\_

### **Geology and Soils**

Based upon visual inspection or available literature, are there areas of possible geologic

or soil instability (prone to: soil erosion, landslide, subsidence, earthquake etc)?

Yes \_\_\_\_\_ No \_\_\_\_\_

Based upon visual inspection or available literature, are there areas that have risks of large scale increase in soil salinity?

Yes \_\_\_\_\_ No \_\_\_\_\_

Based upon visual inspection or available literature, are there areas prone to floods, poorly drained, low-lying, or in a depression or block run-off water

Yes \_\_\_\_\_ No \_\_\_\_\_

### **Contamination and Pollution Hazards**

Is there a possibility that the project will be at risks of contamination and pollution hazards (from latrines, dumpsite, industrial discharges etc)

Yes \_\_\_\_\_ No \_\_\_\_\_

Would the project procure or use pesticides, poisons, or rodenticides to control pests (insects, rodents, invasive birds)?

Yes \_\_\_\_\_ No \_\_\_\_\_

If “YES” then the Pest Management (OP/BP 4.09) safeguard policy is triggered. Carry out EIA for appropriate measures for safe handling, use, and disposal of chemicals.

### **Landscape/aesthetics**

Is there a possibility that the project will adversely affect the aesthetic attractiveness of the local landscape?

Yes \_\_\_\_\_ No \_\_\_\_\_

### **Historical, archaeological or cultural heritage site**

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the project alter any historical, archaeological, cultural heritage traditional (sacred, ritual area) site or require excavation near same?

Yes \_\_\_\_\_ No \_\_\_\_\_

If “YES” , Physical Cultural Resources (OP 4.11) is triggered. Carry out EIA for appropriate mitigation measure to be taken.

**Resettlement and/or land Acquisition**

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

Yes \_\_\_\_\_ No \_\_\_\_\_

If “Yes” Involuntary Resettlement OP 4.12 is triggered. Please refer to the Resettlement Policy Framework (RPF) for appropriate mitigation measures to be taken.

**Loss of Crops, Fruit Trees and Household Infrastructure**

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

Yes \_\_\_\_\_ No \_\_\_\_\_

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

Will the project interfere or block access, routes etc (for people, livestock) or traffic routing and flows?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Noise and Dust Pollution during Construction and Operations**

Will the operating noise level exceed the allowable noise limits?

Yes \_\_\_\_\_ No \_\_\_\_\_

Will the operation result in emission of copious amounts of dust, hazardous fumes?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Degradation and/or depletion of resources during construction and operation**

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

Yes \_\_\_\_\_ No \_\_\_\_\_

**Solid or Liquid Wastes**

Will the project generate solid or liquid wastes? (including human excreta/sewage, asbestos)

Yes \_\_\_\_\_ No \_\_\_\_\_

If “Yes”, does the project include a plan for their adequate collection and disposal?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Occupational health hazards**

Will the project require large number of staff and laborers; large/long-term construction camp?

Yes \_\_\_\_\_ No \_\_\_\_\_

Are the project activities prone to hazards, risks and could result in accidents and injuries to workers during construction or operation?

Yes \_\_\_\_\_ No \_\_\_\_\_

**PART C: MITIGATION MEASURES**

For all “Yes” responses, describe briefly the measures taken to this effect.

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**PART D: ENVIRONMENTAL CATEGORIZATION AND SCOPE OF ESIA**

**Categorization**

Based on the results of the screening, would the project have potential to cause (check one):

Significant, diverse, unprecedented negative environmental and/or social impacts?		If checked, the project is a Category A and should proceed according to the ESIA standards for content, consultation and disclosure included in World Bank OP/BP 4.01, and the format for a full ESIA according to ZEMA guidelines.
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Moderate environmental and social impacts that are largely site-specific.		If checked, project is Category B and should proceed with the appropriate level of environmental assessment and include mitigation measures based on the safeguards triggered. EA should be consistent with ZEMA guidelines for EA.
Minimal or no environmental and social impacts.		If checked project is Category C and can utilize basic environmental guidelines to mitigate any impacts or no further action required if no impacts noted in the checklist.

Please explain rationale for environmental category selected

Please tick all World Bank safeguard policies triggered

<b>Safeguard Policies</b>	<b>Triggered?</b>
Environmental Assessment OP/BP 4.01	
Natural Habitats OP/BP 4.04	
Forests OP/BP 4.36	
Pest Management OP 4.09	
Physical Cultural Resources OP/BP 4.11	
Involuntary Resettlement OP/BP 4.12	

Please outline next steps for compliance with ZEMA requirements and World Bank safeguard policies, including dates as relevant:

## **ANNEX C: ZEMA FORMAT FOR ESIA**

### **Cover Page:**

The cover page must display important information prominently and facilitate referencing. It should therefore contain information such as:-

- Title of the Environmental & Social Impact Statement
- Location (s) of the proposed Project's activities
- Project Proponent
- Lead Consultant(s)
- Contact Addresses – post office box number, fax and phone numbers, and email
- Reviewing Authority
- Approving Authority
- Date of completion of the report

### **Table of Contents:**

The page of contents should contain the following:-

- List of major sections of the report
- List of Tables
- List of figures (including maps, graphs and plates) and illustrations
- List of appendices
- Page numbers of the report

### **List of Acronyms**

### **Definitions of technical terms**

### **Non-Technical Executive summary of the Environmental & Social Impact Statement in both English and Swahili**

#### **Chapter 1: Introduction**

- Brief description of the project – name, nature, size, location of the project, its importance and justification, etc
- Land description - Project location, Shehia, District, etc.
- Profile of the project proponent, organization, project consultants, etc.
- Objectives, Scope, and Study Methodologies
- ToR

#### **Chapter 2: Project Description**

- Project Feasibility Study and references from Detailed Project Document
- Details about description of the project site, geology, soil, topography, hydrological survey, ground water survey, wetlands, biodiversity, socio-cultural environment of the surrounding area,

economic aspect of the project for the local communities and for the country, etc. should be included.

- Quantity of raw materials involved during the construction phase along with their source of origin.
- Use of existing public infrastructure such as other road networks, water supply lines, electricity lines, built-up environment, etc in the construction activities should be elaborated.
- Cost and budget, financial projection, etc of each project component should be highlighted
- Details of land acquisition, compensation, resettlement, incentives.
- Resources, manpower and time frame involved, etc
- Monitoring and Evaluation of the construction phase, etc.

It is extremely important that the following maps and drawings be presented:

- Maps specifying project locations
- Land Use Map showing activities of the surrounding areas
- Site layout plan showing all details of design, construction and operations.

### **Chapter 3. Description of the Environment:**

This section should include a detailed biophysical profiles of the project location.

- Topography of the proposed site should be clearly stated.
- Geology of the proposed site including soil profile and quality;
- Meteorological Data of the study area;
- Hydrological and Ground water survey of the project sites.
- Water quality assessment of surface and ground water in the project zone.
- Soil quality and atmospheric pollution assessment in the zone.
- Drainage and watershed survey.
- Biological Environment (Baseline data of flora and fauna, whether there are endangered species in the surrounding areas)
- Socio-economic and occupational health hazards (socio-economic survey, demography of the surrounding human settlements, health status of the communities, existing infrastructural activities, employment status, etc.)

### **Chapter 2: Policy, Legislative and Regulatory Framework**

This Chapter will cover all the relevant and existing policy, legislative, and the regulatory frameworks associated with the proposed project. The project proponent also will be required to show relevant legislative and administrative linkages with other sectorial plans and programs. And other relevant policies, acts, guidelines as may be required in the process. Moreover, the consultant shall cite national policy provisions and institutional set-up on relevant issues and matters concerning the proposed project activities.

### **Chapter 3.0 Public Consultations and Stakeholder Analysis**

The project proponent shall present the findings of all the stakeholders consulted in the stakeholder analysis process. These stakeholders shall include the following:

- Zanzibar Environmental Management Authority (ZEMA)
- Department of Environment, Zanzibar.
- Department of Forestry and Non-Renewable Natural Resources, Zanzibar.
- Department of Lands and Registration
- Department of Rural and Urban Planning
- Department for Roads Construction, Zanzibar
- Department of Health and Health Education
- Zanzibar Water Authority (ZAWA)
- Zanzibar Electricity Corporation (ZECO)
- Zanzibar Municipal Council
- Central District Administrative Office
- Communities from Shehias forming boundaries with the proposed site.
- People whose lands, plots, crops, trees, etc directly affected by the project

#### **Chapter 4.0. Evaluation of Predicted Impacts**

The following considerations should be included for each identified impact:-

- Statement of impact or effect;
- Brief description of the impact or effect;
- Group(s) affected,
- including land owner(s);
- Statement of criteria for determining significance (could include magnitude, geographic extent, duration, frequency, risk or uncertainty, size of group affected)
- Significance of or effect without mitigation
- Suggested measures for mitigation or optimization
- Significance of impact with mitigation or optimization measures.

The predicted impacts should reflect key issues highlighted during the findings of the ZEMA scoping study.

#### **Chapter 5.0 Analysis of the Project Alternatives**

This chapter should include analysis of issues such as the design, location, cost-benefit analysis, or any other feasible alternative to the current arrangement.

#### **Chapter 6.0. Mitigation Measures**

This section will show how the mitigation measures proposed against the identified impacts. For each of the environmental effect identified in the evaluation of impacts, the mitigation measure should be elaborated.

#### **Chapter 7.0. Environmental and Social Management Plan**

This section will show how the proponent is committed to implementing the mitigation

measures proposed against the identified impacts. Responsibility for carrying out monitoring by other institutions has to be shown under this section as well

### **Chapter 8.0. Environmental and Social Monitoring Plan**

This section will show how the proponent will finance the implementation of the Environmental and Social Management Plan. For each of the identified environmental effect, the project proponent should show how the mitigation measure should be implemented under specified cost and budget.

### **Chapter 11.0 Conclusion and Recommendations**

#### **Technical Appendices**

- Input into the logical framework planning matrix of the project design – intervention logic, indicators, assumptions and preconditions.
- Maps of the project area and other illustrative information not incorporated into the main report.
- Other technical information and data, as required.
- Records of stakeholder engagement.

#### **Other appendices**

- Study methodology/work plan (2–4 pages).
- Consultants' Itinerary (1–2 pages).
- List of stakeholders consulted or engaged (1–2 pages).
- List of documentation consulted (1–2 pages).
- Curricula vitae of the lead consultants (1 page per person).
- ToR

## ANNEX D: MITIGATION MEASURES FOR SMALL CIVIL WORKS

The following annex presents mitigation measures that can be applied by contractors and the PMT broadly to mitigate environment, health and safety impacts of the types of urban upgrading activities (e.g. road rehabilitation, roadside drainage, street lighting) that would be undertaken by the ZMC and PTCs. ESMPs will be tailored to each subproject, which can draw from the following mitigation measures. It should be noted that the sanitation investments under the AF will require more specific mitigation measures for landfill and sludge management facilities, in addition to considering the following.

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
<i>Increased air pollution due to transportation of construction materials and stockpiling</i>	<ul style="list-style-type: none"> <li>• Avoid excavation, handling and transport of erodible materials under windy conditions.</li> <li>• Institute traffic management and safety programme including proper signage and training of heavy machine/vehicle operators and drivers, enforcement of speed limits, maximum loading restrictions and compliance with Zanzibari transportation laws and standards especially when crossing inhabited or sensitive areas.</li> <li>• Vehicles carrying fine construction materials must be covered during transportation.</li> <li>• Wet working areas without causing erosion or runoff.</li> <li>• Ensure regular cleaning of access roads and unpaved areas to avoid dust pollution due to wind or movement of vehicles and equipment.</li> </ul>	During Mobilization and Construction	Contractor	Under the Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Increased noise pollution and vibrations</i>	<ul style="list-style-type: none"> <li>• Adopt and maintain moderate vehicle speed and traffic when crossing inhabited or sensitive areas.</li> <li>• Noise emissions shall comply with applicable national laws, standards and regulations.</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
	<ul style="list-style-type: none"> <li>• Maintain construction equipment in good running condition, enforce vehicle/road restrictions and carry out routine inspection of construction equipment</li> <li>• Operate noise generating equipment for short periods or during the times they will cause less community disturbance i.e. daylight.</li> <li>• Stationary noise generating equipment shall be placed as far away as possible from sensitive receptors and/or shall be housed inside a shed or covered to reduce the propagation of noise</li> </ul>				Supervision Consultant
<i>Surface and groundwater pollution</i>	<ul style="list-style-type: none"> <li>• Ensure appropriate handling of fuels, oils, cement and other materials to avoid spills including storing them in impermeable, bunded containers and undertaking fuelling of machinery and vehicles in concrete floors previously identified within the site.</li> <li>• Ensure that all construction activities that could endanger water quality is avoided or controlled, through site planning and design of construction activities and preparation of site procedural protocols.</li> <li>• No discharge of muddy water should be permitted from the work areas into the adjacent water courses and/or bodies.</li> <li>• Ensure that waste water containing pollutants like cement, concrete, lime, chemicals and fuels are discharged into temporal tank for subsequent removal from site.</li> <li>• Contaminated water should in no way be discharged into municipal sewer systems.</li> <li>• Avoid deliberate disposal of wastes (even temporarily),</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
	<p>on the banks and beds of water drainage lines.</p> <ul style="list-style-type: none"> <li>• Maintenance of equipment and vehicles should be done on concrete ground/floor to avoid soil and surface and underground water pollution.</li> <li>• Establish awareness raising programme for city dwellers to avoid disposing waste and contaminated effluents into the storm water drainage systems.</li> <li>• Undertake appropriate and regular cleaning and maintenance of ditches and channels to avoid water stagnation.</li> </ul>				
Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>• Stockpiling of soil overburden should be confined to areas previously disturbed or ploughed and clearly marked and accessible by vehicles.</li> <li>• Plant vegetation with properties to prevent soil erosion, like indigenous creepers and herbs where necessary.</li> <li>• Material stockpiles must be appropriately protected against wind and water erosion</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
Traffic disruption and congestion	<ul style="list-style-type: none"> <li>• Institute traffic management and safety programme including proper signage and training of heavy machine/vehicle operators and drivers, enforcement of speed limits, maximum loading restrictions and compliance with Tanzanian transportation laws and standards especially when crossing inhabited or sensitive areas.</li> <li>• Prohibit construction of new roads unless it is absolutely necessary.</li> <li>• Access to the construction site and work areas should be confined to existing roads.</li> <li>• Construction of physical barrier such as road humps</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant

Impact	Mitigation Measure	Time Frame	Responsible Institution	Relative Cost/ Source of Funds	Monitoring
	<p>should be undertaken where necessary to control speed</p> <ul style="list-style-type: none"> <li>• Make arrangements for traffic diversions via establishment of Traffic Management Plan.</li> </ul>				
Waste generation and stockpiling	<ul style="list-style-type: none"> <li>• Small volumes of organic waste that can easily decompose must be disposed-off in environmental friendly manner such as the use of pits.</li> <li>• Large volumes of wastes produced, including construction and demolition debris, must be collected by licensed private/municipal service providers for appropriate disposal e.g. in land-fills.</li> <li>• Office wasteshould be sorted and storage in four different types of waste bins i.e. for paper materials; organic materials; glass wastes; and plastics; and separately disposed.</li> <li>• Construction sites, temporary warehouses and yards should be cleaned to prevent indiscriminate fires, burial or abandonment of waste.</li> <li>• Burning, burying and/or dumping of wastes by the contractor is prohibited</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Lack of/slow restoration of areas damaged by construction</i>	<ul style="list-style-type: none"> <li>• Restore cleared areas such as exhausted borrow pits, disposal areas, workers' camps immediately after completion of construction works followed by appropriate landscaping, adequate drainage and re-vegetation of open areas using indigenous species.</li> <li>• Spoil heaps and excavated slopes shall be re-profiled to stable batters, and grassed to prevent erosion.</li> <li>• Plant trees on exposed land and on slopes to prevent or reduce land slippage or collapse and keep slopes stable.</li> <li>• Remove any soil contaminated with chemicals or</li> </ul>	During construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant

Impact	Mitigation Measure	Time Frame	Responsible Institution	Relative Cost/ Source of Funds	Monitoring
	hazardous substances and dispose them appropriately.				
<i>Occupational and community health and safety risks</i>	<ul style="list-style-type: none"> <li>• Comply with Tanzanian and World Bank and other international standards and regulations on health and safety requirements</li> <li>• Develop and implement in-house manual/guidelines on health and safety</li> <li>• Keep detailed incident reports in the case of accidents</li> <li>• Implement community sensitization programs on the risk for public health and safety caused by project implementation.</li> <li>• Attach warning signs, barriers, and other precautionary signs on all areas of potential risk.</li> <li>• Prepare and implement action plan to cope with risks and emergencies including having emergency first aid equipment available at construction sites.</li> <li>• Train workers in occupational health and safety regulations.</li> <li>• Provide separate passageways for pedestrians and vehicles within and outside construction areas.</li> <li>• Ensure that workers wear/use appropriate personal protective equipment (PPE), such as safety glasses, face shields, hard hats, safety shoes, noise protection ear muffs etc.</li> <li>• When working in confined spaces, such as deep excavation (trenches) use dewatering, adequate side-wall supports (shoring) and slope gradients that minimize the risks of collapse, entrapment or drowning.</li> </ul>	During Mobilization and Construction	Contrator	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Risks to historical,</i>	<ul style="list-style-type: none"> <li>• Adhere to the UNESCO 2003 Convention for Safeguarding Living Heritage; International Council of</li> </ul>	During Construction	Contractor	Under Contract	Construction Supervision

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
<i>archaeological or cultural resources</i>	<p>Museum (ICOM); the International Centre for the Preservation and Restoration of Cultural Property (ICCROM) and the International Network on Cultural Policy (INCP).</p> <ul style="list-style-type: none"> <li>• Adhere to the Stone Town Conservation Master Plan and relevant guidelines</li> <li>• In case any historical/cultural remains or artifacts are incidentally found, the workers shall be educated to stop works and notify Antiquities Department or Archaeologist and work will only resume when the conservation specialist (Archaeologist) has completed the work.</li> <li>• Should graveyards and any sacred places be found in the project area, the contractor shall take precaution to avoid disturbing or destroying them and the process for their relocation shall be in accordance with Graveyard Removal Act (No. 9 of 1969) and local customs.</li> </ul>			TOR	Consultant and Independent Supervision Consultant
<i>Vegetation clearance</i>	<ul style="list-style-type: none"> <li>• Prepare a clearance, re-vegetation and restoration management plan for prior approval by the Construction Supervision Engineer and ensure strict compliance.</li> <li>• Prohibit cutting of any tree unless explicitly authorized in above-referred plan.</li> <li>• When needed, erect temporary protective fencing to effectively protect all trees before commencement of any works within the site..</li> <li>• Confine overburden material to specificall designated sites away from sensitive locations.</li> </ul>	During Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Soil</i>	<ul style="list-style-type: none"> <li>• Ensure that soil overburden removed before</li> </ul>	During	Contractor	Under	Construction

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
<i>pollution/contamination</i>	<p>construction is stored and immediately re-used for replacement at the closure of opened trenches.</p> <ul style="list-style-type: none"> <li>• Undertake appropriate cleaning maintenance of ditches and channels.</li> <li>• Ensure immediate replacement of the soils removed during the opening of trenches</li> <li>• Provide training of personnel in proper storage, handling and clean-up of contaminating materials into the environment.</li> </ul>	Mobilization and Construction		Contract TOR	Supervision Consultant and Independent Supervision Consultant
<i>Change in scenic and aesthetic quality</i>	<ul style="list-style-type: none"> <li>• Minimize soil and landscape disturbance/change by re-planting vegetation with indigenous species</li> <li>• Confine overburden material to specifically designated sites away from sensitive locations.</li> <li>• Ensure that soil overburden removed before construction is stored and immediately re-used for replacement at the end of construction.</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Increased risk of HIV/AIDS and STDs</i>	<ul style="list-style-type: none"> <li>• Workers must be educated about STDs, HIV and AIDS.</li> <li>• Disseminate information on HIV/AIDS and STDs through education promotion materials such as leaflets, placards, shirts, arts, etc.</li> <li>• Provide Voluntary Counselling and Testing (VCT) centres for HIV/AIDs at work place,</li> <li>• Enforce HIV/AIDS law and regulations</li> </ul>	During Mobilization and Construction	District Health Authorities; PMO-RALG/Contractor/DLAs; NGOs	PMO-RALG/District Authorities	Construction Supervision Consultant and Independent Supervision Consultant in collaboration with Resident Engineer
<i>Destruction/desruption of utility services</i>	<ul style="list-style-type: none"> <li>• Undertake prior consultation and contingency planning with utility providers (TANESCO, DAWASCO and TTCL) and local authorities about the consequences of particular service failures and establish appropriate construction schedules and alternative service</li> </ul>	During Mobilization and Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
	<ul style="list-style-type: none"> <li>provision.</li> <li>• Install lighting at night (where necessary), to ensure safe traffic movement.</li> </ul>				Consultant
<i>Increased burden on local authorities</i>	<ul style="list-style-type: none"> <li>• Maintain open communication with the local government and concerned communities on agreed schedules of construction activities nearby sensitive places or at sensitive times.</li> <li>• Copies of the ESMPs and of other relevant environmental safeguard documents in Kiswahili be available to local communities and workers at the site.</li> <li>• Maintain early consultations on any loss of amenities such as playground space, car parking with those affected, providing opportunities for investigation and implementation of alternatives.</li> <li>• Disseminate project information to affected parties through community meetings before construction starts;</li> <li>• Monitor community concerns and information requirements as the project progresses;</li> <li>• Respond to telephone inquiries and written correspondence in a timely and accurate manner.</li> </ul>	During Construction	Contractor	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Increased risks of accidents</i>	<ul style="list-style-type: none"> <li>• Impose speed limits at work sites and place appropriate traffic signs along access roads.</li> <li>• Comply with all applicable laws and regulations regarding road transport and safety.</li> <li>• Prohibit construction of new roads unless it is absolutely necessary.</li> <li>• Access to the construction site and work areas should as much as possible be confined to existing roads.</li> </ul>	Contractor	During Mobilization and Construction	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant

Impact	Mitigation Measure	Time Frame	Responsible Institution	Relative Cost/ Source of Funds	Monitoring
	<ul style="list-style-type: none"> <li>• Construction of physical barrier such as road humps should be undertaken where necessary to control speed</li> <li>• Make arrangements for traffic diversions via establishment of Traffic Management Plan.</li> <li>• Provide hard hats and industrial boots and enforce their proper use.</li> <li>• Develop, operationalise (including carrying out regular rehearsals) of contingency plans for dealing with incidents and hazards.</li> <li>• Train and enforce occupational health and safety practices (including PPE) to workers</li> <li>• Provide First Aid and evacuation facilities</li> <li>• Abide to national and international quality standards</li> </ul>				
<i>Disruption of local hydrology</i>	<ul style="list-style-type: none"> <li>• Ensure the drainage designs utilize as much as possible the existing channels and drains</li> <li>• Where possible, the designs shall leave some unpaved space alongside the road for water to seep into the ground</li> <li>• The design shall provide controlled and effective storm water dispersion by installation of appropriate drainage structures.</li> </ul>	Contractor	During Design and Construction	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant
<i>Excavation and depletion of construction materials</i>	<ul style="list-style-type: none"> <li>• Consult Local Government Authorities on authorised borrow pits or quarry sites for exploitation of construction materials.</li> <li>• Under no circumstances would materials like sand be excavated and exploited within the boundaries of the City of Dar es Salaam</li> <li>• All mined construction minerals (gravel, stone, sand</li> </ul>	Contractor	During mobilization and construction	Under Contract TOR	Construction Supervision Consultant and Independent Supervision Consultant

<b>Impact</b>	<b>Mitigation Measure</b>	<b>Time Frame</b>	<b>Responsible Institution</b>	<b>Relative Cost/ Source of Funds</b>	<b>Monitoring</b>
	etc.) must be procured from authorized sites with licenses per the Mining Act (2010)				