

EAST AFRICA PUBLIC HEALTH LABORATORY NETWORKING PROJECT

**Environmental and Social Management Framework for
Kenya, Tanzania, Rwanda and Uganda**

January 2010

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LIST OF ACRONYMS

AIDS	Acquired Immuno Deficiency Syndrome
BSL -3	Bio-safety Level 3
°C	Degrees Celsius
CDC	Centre for Disease Control
CIA	Central Intelligence Agency
CPHLs	Central Public Health Laboratories
DED	Deutscher Entwicklungsdienst
DEMC	District Environmental Management Committee
DEMO	District Environmental Management Officer
DHMT	District Health Management Team
DHO	District Health Officer
DSS	Diagnostic Services Section
DHSWO	District Health and Social Welfare Officer
e.g.	For Example
EAIDSNet	East Africa Integrated Disease Surveillance Network
ECSCA	East, Central and Southern African Health Community
EIA (EA)	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
EMC	Environmental Management Committee
EMO	Environmental Management Officer
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
et al	and others
EQA	External Quality Assessment
GoK	Government of Kenya
HCFS	Health Care Facilities
HCW	Health Care Waste
HCWM	Health Care Waste Management
HCWMO	Health Care Waste Management Officer
HCWMP	Health Care Waste Management Plan
HIV	Human Immuno-deficient Virus
HSSP III	Health Sector Strategic Plan III
IDA	International Development Agency
KFW	Kreditanstalt Fur Wiederaufbau
km ²	Square Kilometre
LGA	Local Government Authority
LTD	Limited
Mamsl	Metres above mean sea level
LWMP	Laboratory Waste Management Plans
MDG	Millennium Development Goals
MOHSW	Ministry of Health and Social Welfare
MDR-TB	Multi Drug Resistant Tuberculosis
MUHAS	Muhimbili University of Health and Allied Sciences
NEMC	National Environmental Management Council
NEP	National Environmental Policy
NGOS	Non Governmental Organization

NHCWMP	National Health Care Waste Management Plan
NHLQATC	National Health Laboratory for Quality Assurance and Training Centre
NIMR	National Institute for Medical Research
NSCHCWM	National Steering Committee For Health Care Waste Management.
NTRL	National TB Reference Laboratories
OP	Operational Policy
PAD	Project Appraisal Document
PC	Project Coordinator.
PEA	Preliminary Environmental Assessment
PHC	Primary Health Care
REME	Regional Environmental Management Expert
SRL	Supranational Reference Laboratory
TB	Tuberculosis
TRC	Technical Review Committee
TZ	Tanzania
UNDP	United Nation Development Programme
UNICEF	United Nation International Children Emergence Funds
UNEP	United Nation Environmental Programme
WHO	World Health Organization
USA	United State of American
WHO-GPA	World Health Organization Global Programme on AIDS

EXECUTIVE SUMMARY

Introduction

The World Bank is supporting the East Africa Public Health Laboratory Networking Project (part of the Africa Regional Communicable Disease Control and Preparedness Program), which aims to strengthen capacities of participating countries for the diagnosis and surveillance of TB and other communicable diseases. The project is expected to contribute to reducing burden of priority communicable diseases in the East Africa Region. *Kenya, Tanzania and Uganda*, which are among the twenty-two high HIV burden countries worldwide, will participate in this project along with Rwanda.

Project Objective

The project aims to strengthen capacities of participating countries for the diagnosis of TB and other communicable diseases in support of better harmonized regional response.

Components

The project has three components as follows:

Component 1 (US\$40.4 million) for Laboratory Networking for specialized diagnostic services and disease surveillance preparedness will focus on improving access to quality diagnostic techniques for TB and other communicable diseases, by strengthening national public health laboratories as well as specialized and integrated satellite laboratories; and putting in place systems for laboratory management and surveillance. This would involve of networking public health laboratories for timely and high quality diagnosis of drug resistant TB and other communicable diseases and strengthening ongoing disease surveillance programs through more efficient laboratory linkages and effective information sharing for coordinated cross border response for communicable diseases of regional importance.

Component 2 (US\$7.1million) is for training and regional capacity building to undertake specialized tests to diagnose TB and communicable diseases. This component will also support capacity building for more effective cross border response for disease surveillance.

Component 3 (US\$ 8.5 million) for joint operational research and knowledge sharing activities with each of the participating country taking lead in establishing specialized centres of excellence for testing innovative approaches and support operations research. The project will also support wide dissemination of new evidence from research and successful innovations with other countries in the region.

Potential Safeguard Issues

The project will involve upgrading, rehabilitation, and/or construction, as well as operation of laboratories. The civil works as well as generation of medical waste from these laboratories will have negative environmental and social consequences. Therefore the project has

triggered OP/BP 4.01(Environmental Assessment) and has been assigned the World Bank's environmental category B.

Potential safeguard issues and areas of influence will be environmental effects on soil, air and water, and vegetation. The social issues relate to safety of staff working in the laboratories, construction workers and risk of spreading TB, and other communicable diseases to people visiting hospitals and residing in the neighbourhood especially due to poorly ventilated public places and laboratories; The high risk zones include locations for collection, transportation, storage and testing of infectious samples; as well as places for disposal of laboratory and hospital waste.

Objectives of the ESMF

This ESMF is prepared to ensure proper assessment and mitigation of potential adverse environmental and social impacts under the project in conformity with the policy requirements of the participating countries as well as the World Bank. It includes issues related to development and operation of the laboratories including laboratory waste management.

Among other things, the ESMF outlines an environmental and social screening process, focusing on the completion of the Environmental and Social Screening Form. It also includes an Environmental and Social Management Plan (EMP), guidelines for monitoring and development of appropriate monitoring indicators, capacity building for environmental management and indicative costs of the environmental safeguards. It also includes (as appendices) Environmental Guidelines for Contractors, a summary of the Bank's Safeguard Policies, an Environmental and Social Checklist and Generic EIA Terms of Reference, to be used in the event that the screening results indicate the need for preparation of an EIA report. The recommendations of the ESMF will be incorporated into the design and cost estimates of the East Africa Public Health Laboratory Networking Project.

Justification for the ESMF

The precise scope of project activities at the selected locations is not fully known at this time. Therefore the potential social and environmental impacts of the project activities cannot be identified and mitigation measures determined for the specific sub-projects (i.e. public health lab support). This ESMF provides generic impacts and mitigation measures associated with the construction, rehabilitation and operation of public health laboratory facilities. Specific sub-project activities, their impacts and mitigation measures will be identified once the project supported activities at the selected sites have been finalized.

Approach and Methodology for Preparation of the ESMF

Information for the preparation of the ESMF has been collected through a number of approaches including review of related literature from published and unpublished documents, field investigations and consultation with key stakeholders. The field investigations and public consultations were conducted in Dar es Salaam from August 4 to 22, 2009 and in Nairobi from August 23 to 25, 2009; and a list of the key stakeholders consulted is presented

in Annex 8. During these consultations, it was confirmed that any laboratory requiring land acquisition and resettlement will not be funded under the project

Summary of Features of the ESMF

The impact of TB and the effects of TB combined with the HIV/AIDS; as well as the high burden of communicable disease outbreaks are the driving forces for this project. Four East African countries (Kenya, Rwanda Tanzania, and Uganda) are participating in the project.

In general, the legal, regulatory and administrative framework to support environmental management of the East Africa Public Health Laboratory Networking Project in the participating countries is established. However, the legal framework for environmental management is not explicit for projects whose activities at the selected locations are not yet fully known. This ESMF provides the framework for such situation taking in to consideration the existing legislations in the participating countries' and the World Bank's Safeguard Policies (focusing the Environmental Assessment Policy (OP 4.01)).

Although the ESMF has been prepared with information obtained primarily from Tanzania and Kenya, the other participating countries could use it to meet their specific needs with appropriate modifications, if any. This is because the project inputs (comprising construction, expansion, and rehabilitation as well as operation of laboratories) are similar in all four countries.

In general, the civil works proposed under the project would not normally require an Environmental Impact Assessment as the nature of project activities would be considered minor.

This ESMF will assist in determining the level of environmental work required for the sub-projects. The rationale and process of carrying out this assessment is described in chapter 6 and would be applicable for all participating countries. However, there could be minor differences as the project sites are not environmentally similar and in such cases, the Screening Form would assist in determining the area or sub-project specific environmental impacts and their mitigation measures. The World Bank environmental policy insists that all projects whose exact activities and locations are not known should be subjected to the screening process.

Generic impact of the proposed project including the methods and techniques used to identify these impacts are elaborated in Chapter 4 of this ESMF. The impacts are organised into the four project phases of *planning and design, construction and rehabilitation, operation and maintenance* and *decommissioning and closure*. The typical environmental and social components to be impacted upon include *soil, vegetation, landscape and landform, surface water, socio-economic, and health and safety* components. The potential impacts include soil erosion, water pollution and siltation, dust and noise nuisances, occupational health and safety of laboratory staff and construction workers, including the risk of TB and HIV and AIDS infections in the general public.

Management of these environmental and social impacts will be through an Environmental and Social Management Plan (EMP), which details mitigation measures and responsible institutions for carrying out these measures. Management of laboratory wastes will be done in accordance with the Laboratory Waste Management Plan (LWMP), a generic sample of

which is attached in Appendix 6. A generic environmental and social management plan is presented in Chapter 4 and a generic environmental monitoring plan is outlined in Chapter 5.

This ESMF proposes capacity building measures, including strengthening the Environmental and Social Units (ESU) of Ministries of Health in participating countries and related training Sensitization activities for top level staff of the ministry responsible for health, project implementers, district staff and local community groups is also recommended.

Key Recommendations of the ESMF

This ESMF recommends that for successful implementation of the project, there is need to ensure that the existing environmental regulations are adhered to in all the participating countries. Specifically, the recommendations made in this ESMF should be implemented and for its successful application, involvement and participation of all stakeholders is very important. The ESMF further recommends that:

- The screening process and the screening forms should be used for all the sub-project activities of the East Africa Public Health Laboratory Networking Project;
- The Environmental and Social Units in the respective Ministries' of health responsible for the project should be strengthened to oversee implementation of this ESMF as well as the Waste Management Plan and the National Healthcare/ Laboratory Waste management Plans as a part of overall strategy to improve health care waste management;
- Environmental and social awareness and training for key players, as presented in the capacity building proposal, should be implemented;
- This ESMF requires to be periodically updated to respond to changing designs and local conditions in the participating countries, and should be done as appropriate;
- Building capacities at the district level where satellite labs are being supported, for appropriate information management systems, to facilitate the environmental and social management process should be supported by the project;
- At the district level, the necessary resources and equipment for producing the required documentation and completing the screening forms as well as preparing reports for the implementation of the ESMF recommendations should be provided; and
- That staff at all levels should be empowered to adequately administer the ESMF throughout the project implementation.

ORGANIZATION OF THE ESMF

This ESMF report is organised as follows:

Chapter 1 provides the introduction to the project; summarising the project background, the impact of TB in Africa and the effects of TB combined with the HIV/AIDS scourge. The project description involving the countries participating in the project (Kenya, Rwanda, Tanzania and Uganda) is given in this chapter where the three project components are summarised. Also presented in this chapter are the project development objectives, which focus on contributing to improving health outcomes in the participating countries. A description of the project activities in the four participating countries and the areas of influence in the environmental and social setting is given in this chapter; linking these activities to the objectives and justification of the ESMF. Finally, the approach and methodology used in preparation of the ESMF as well as the potential users are outlined.

In Chapter 2, the legal, regulatory and administrative framework for environmental management of the project is described. The chapter outlines the relevant policies, laws and administrative instruments, including the national environmental policy, the Environmental Management Acts and the Health Sector Strategic Plans, to mention a few. The World Bank's Safeguard Policies are given in this chapter, 'describing the Environmental Assessment Policy (OP 4.01), which is triggered by the project; and the World Bank's environmental classification system of projects.

Chapter 3 gives short descriptions of the generic impacts of the East Africa Public Health Laboratory Networking Project, highlighting the methods and techniques used to identify these impacts. The impacts are organised into the four project phases of planning and design, construction and rehabilitation, operation and maintenance and decommissioning and closure. The typical environmental components to be impacted include soil, landscape and landform, water, air, vegetation, society and health.

Chapter 4 describes the environmental and social impact management, and presents the Environmental and Social Management Plan (EMP). The EMP details mitigation measures for the impacts, indicating the responsible institutions for carrying out these measures.

Chapter 5 presents the generic Environmental and Social Monitoring Plan including typical monitoring indicators, to be used for monitoring implementation.

Chapter 6 presents the Environmental and Social Screening Process to be used for assessing whether a sub-project is likely to have significant environmental, health and social impacts and to determine the level of environmental work required for the sub-project. The chapter introduces the Screening Form to be used for determining the level of environmental work required for the sub-projects.

Chapter 7 proposes capacity building measures, including the strengthening existing Environmental and Social Units (ESU) in the four participating countries; and specific training activities.

Finally, **Chapter 8** gives the conclusions and recommendations of the ESMF among which are to ensure that the implementation is adequately supported and the capacity building measures are implemented at all recommended levels.

CHAPTER 1 INTRODUCTION

1.1 PROJECT BACKGROUND

In 1993, the World Health Organisation (WHO) declared tuberculosis (TB) a global emergency. TB has been on the rise since the 1980s, with its spread concentrated in South East Asia and Sub-Saharan Africa. The resurgence of TB, especially in Africa where approximately two thirds of those living with HIV also carry it, is connected with the HIV and AIDS pandemic. HIV and TB represent two of the most significant health challenges in human history and the combination of the two infections is particularly devastating because HIV dramatically increases the severity of TB infection.

In general, the numbers of new TB cases (fuelled by the HIV/AIDS epidemic) and mortality rates have been on the rise in Africa since 1990, while other regions have shown a steady decline in the tuberculosis burden. Tuberculosis cases have also increased significantly in recent years, in Sub-Saharan Africa where there is virtually no diagnostic or surveillance capacity at the supranational level. Africa as a region has made progress in laboratory-based surveillance of some diseases (polio, measles, HIV/AIDS, meningitis). However, there has been little progress in early detection of other epidemics such as drug resistant tuberculosis. To contribute to the improvement of this situation, the proposed project will strengthen the operations of regional and national laboratories in the four participating countries of Kenya, Rwanda, Tanzania, and Uganda.

1.2 PROJECT SETUP IN THE FOUR PARTICIPATING COUNTRIES

The institutional and implementation arrangements vary by country but the broad principles are the same, namely to rely on national institutions and strengthen them rather than establishing new structures. The details for each country are summarized in the following sections.

1.2.1 Tanzania

The Ministry of Health and Social Welfare (MoHSW) for mainland Tanzania will have the overall responsibility for project activities. The proposed activities are consistent with the 2009-2015 National Health Laboratory Strategic Plan which aims to establish quality laboratory services at all levels in an effort to ensure equitable, gender sensitive services, with an efficient and effective governance system and establishing partnerships with public and private laboratories. The Laboratory Services group is responsible for managing the National Health Laboratory Quality Assurance and Training Center, a new facility constructed by CDC/PEPFAR, which the government is developing into a regional training institute.

The Central Tuberculosis Reference Laboratory, which will play a key role in the regional project, heads the national TB laboratory network. The reference lab is managed by the Ministry of Health and Social Welfare through the National Tuberculosis and Leprosy Program in the Department of Preventive Services and is physically located in the Central

Pathology Laboratory at Muhimbili Hospital. The National Institute for Medical Research, which will serve as a key center for conducting operational research, collaborates closely with various stakeholders, including the flagship Field Epidemiology Training Program, and the Medical Research Centre within Muhimbili University of Health and Allied Sciences, which will facilitate close links between training and research.

As is the case for other Bank funding outside the pooled funds, the proposed project will be managed by the Director of Policy and Planning (DPP) with day-to-day operations coordinated by the Health Sector Reform Secretariat (HSRS), which has responsibility for the fiduciary aspects of non-pooled Bank funding. The Department of Preventive Services (DPS), and in particular the Diagnostic Services Section (DDS), which is responsible for laboratory services at referral and national levels will provide technical leadership. The Head of the National TB/Leprosy Program, situated within the DPS, has been designated as focal point for the project, assisted by a full time public health specialist/ coordinator, an additional accountant within the Chief Accountant's Office, and short-term procurement assistance.

1.2.2 Uganda:

The proposed project activities are in line with Uganda's laboratory policy framework which calls on all stakeholders (e.g. government, partners) to support integrated laboratory systems. The National TB Reference Laboratory has overall responsibility for ensuring that the TB Control Program can rely on quality-assured reliable diagnostic TB services to support case detection and management and to protect the community against the public health threat of TB. The Central Public Health Laboratory will be expected to play a key role in strengthening etiological confirmation of pathogens. The activities carried out under the regional project would rely primarily on country systems. Additional technical and managerial assistance to the NTRL, CPHL, and other supportive departments within the Ministry of Health will be required to ensure timely and appropriate implementation and monitoring of project activities.

Consistent with the proposed institutional arrangements for the Uganda Health Systems Strengthening Project, the Permanent Secretary of the Ministry of Health will have overall responsibility for project implementation and will appoint a focal point to provide overall coordination of project activities. Due to the additional work load arising from new and existing projects, including UHSS and RHSS-TB, Global Fund, GAVI and other sector based projects, a Technical Support Team for the ministry has been proposed to provide technical assistance in light of the LTIA agenda. Consequently, MoH has agreed to recruit technical assistance comprising Financial Management and Procurement specialists to be employed on a contractual basis under the supervision of and reporting to the Principal Accountant and Head of Procurement and Disposal Unit, respectively.

1.2.3 Kenya:

The project activities are consistent with Kenya's broader policy and strategic documents (e.g. National Health Sector Strategic Plan II, NPHL Plan, DLTLTD Strategic Plan, and draft CTRL Strategic Plan) which identify laboratory services as an essential support service for the efficient delivery of quality health services. The Ministry of Public Health and Sanitation (MoPHS) will have overall responsibility for project implementation. Within the ministry the Department of Disease Prevention and Control has been designated as the unit which will lead Kenya's activities under the regional project. The director of this department will be the

focal point for the project and a small project support team consisting of one national project officer and two consultants (an accountant and an operations officer) will handle day to day operations and reporting requirements. In districts supported by the project, coordination will be the responsibility of the hospital and district health management teams including officer in charge of laboratory services.

The DDPC is well placed to handle this role as it is responsible for managing three key units: (i) Division of TB, Leprosy and other lung disease programs (DLTLD); (ii) Central TB Reference Laboratory (CTRL) which reports administratively to the NPHL; and (iii) Division of Disease Surveillance and Response which handles disease outbreak monitoring and response preparedness. The MoPHS will constitute a “*Laboratory Technical Advisory Group*” to provide technical advice and guidance for improving lab services in the country at facility, district and national levels and improve coordination between the partners. The members of this team will include CDC, JICA, USAID, KEMRI, WB, and Laboratory Heads from program divisions.

The second ministry of health (Ministry of Medical Services) has responsibility for: (i) facilities at levels 2 and 3 (dispensary and health centers); (ii) disease control programs; and (ii) Kenya Medical Research Institute (KEMRI), a parastatal body with substantial capacity. To ensure effective coordination with this ministry a coordination committee will be established which will include an officer in-charge of Disease Surveillance and Response Unit, Chief Medical Lab Technologist from MOMS and Head, Technical Services from the National Public health Labs Division. The proposed organizational arrangements aim to improve the coordination between the two ministries at three levels: (i) broader policy coordination at the directors’ level; (ii) specific project coordination at the project focal point (Director, Disease Prevention and Control Department) and the Hospital Administrator of the MoMS); and (iii) district level (in districts where satellite labs are located) through the district coordination team where both district health officer and superintendent of the hospital will be leading the coordination effort.

1.2.4 Rwanda

The overall implementation responsibility for the project will rest with the Ministry of Health. The Permanent Secretary will have overall oversight. No new structures will be created for the project. The Project Management Unit which successfully managed the Rwanda MAP and numerous Global Fund grants will be responsible for coordinating the activities under the regional project. The ministry will identify a focal point for effective coordination and to ensure timely implementation. The National Reference Laboratory will take the leadership in laboratory networking and systems development while the TRACPlus will take lead in improving laboratory linkages with integrated disease surveillance and TB and Malaria control programs; identifying gaps and building and national capacities for integrated disease surveillance. In line with the decentralization efforts, district health steering committees will have a key role in project implementation at district level and will have oversight responsibilities for the satellite labs.

1.2.5 Regional Coordination

The East, Central and Southern African Health Community (ECSA), based in Arusha, will have responsibility for coordinating activities under the project. For Rwanda, regional coordination will be achieved by collaborating with ECSA and other regional bodies, such as the East Africa Community. While ECSA has been selected to provide overall coordination for the regional project, it will be important for the East Africa Community to be involved and support to take over when the ECA health unit will be operational.

ECSA is a regional inter governmental organization comprising Kenya, Lesotho, Malawi, Mauritius, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. Established in 1974 by the Commonwealth Secretariat in London, its broad objectives are to foster regional cooperation in health and to strengthen capacity to address the health needs of its member states.

The institution's core mandate is to promote and encourage efficiency and relevance in the provision of health services in the region. To this end, ECSA aims to: (i) offer a regional platform for governments, professional organizations and the scientific community to promote cooperation, networking, collaboration and joint/cross border actions in health; (ii) establish a regional forum for learning and information brokerage by documenting and promoting the exchange of ideas, experiences, best practices, knowledge and information; (iii) promote a regional voice for member states in all matters of health at regional and international decision making forums; and (iv) advocate for greater attention and resources to strengthening laboratory capacity in the region. ECSA will collaborate as necessary with the East African Community (EAC), which has a small health desk located in Arusha.

ECSA is recognized as an important indigenous organization that has earned the support of governments and other regional and international organizations. ECSA enjoys political, technical, and administrative support from and access to key decision makers of the Member States through annual meetings of the Directors' Joint Consultative Committee (DJCC), comprising Permanent Secretaries, Deans of Health Universities and Schools, and Directors of Health Services and Research Institutions; and the Health Ministers Conferences (HMC).

ECSA will work closely with the Regional Advisory Panel and with other technical partners and with the lead countries in each thematic area to support the following activities:

- ***Coordination and Harmonization for Improved Lab Services***
 - Promoting harmonization of roles and responsibilities of PH labs
 - Facilitating the development of regional SOP for PH labs
 - Coordinating development of regional guidelines
 - Helping to establish a regional external quality assurance program and a regional lab accreditation system
- ***Training and Capacity Building***
 - Supporting countries to establish regional staffing norms for PH lab services
 - Conducting an inventory of training institutions that can offer specialized training in lab services
 - Promoting coordination between MOHs and other stakeholders to harmonize training of lab staff
 - Supporting preparation of consolidated and harmonized training plans
- ***Policy and Advocacy for National Plans for PH Labs***

- Leading process of linking results and recommendations from national to regional level, through DJCC and HMC forum
- Organizing regional workshops for information exchange and transfer of capacities to country teams
- ***Operations Research on Communicable Diseases***
 - Organizing stakeholder meetings to agree on priority areas for OR
 - Facilitating peer review and approval of OR studies
 - Organizing annual forums to share best practices and new evidence from OR

Regional Advisory Panel (RAP)

ECSCA will establish a Regional Advisory Panel to serve as a vehicle for multi-country and multi-stakeholder expert engagement and dialogue. The RAP will build on the partnerships developed during project preparation. The Regional Advisory Panel will provide a forum for the participating countries and their implementing partners to report on overall program progress and to share scale-up experiences and lessons. The RAP will review periodic reports from technical partners (including WHO, TB Union, CDC, TB-CAP/USAID) on ongoing technical support, program coordination and regional learning. In anticipation of potential technically challenging diagnostic and surveillance issues, the RAP may also establish appropriate working groups to be organized by the lead countries for each thematic area in order to: (i) address clinical diagnostic and other health related issues affecting the range and quality of diagnostic and surveillance services; and (ii) recommend innovations and adjustments as new regional and global evidence emerges. Based on lessons from participating countries, the RAP and working groups will recommend improvements and replications.

The RAP will provide oversight to inter-country learning and facilitate lesson drawing to enhance the design of the program and draw policy implications. The multi-disciplinary panel will play an advisory and consultative role. It will provide a forum for learning and sharing vital experiences from countries (including those not participating in the regional project) to strengthen and improve the range and quality of laboratory diagnostic and surveillance capabilities in the four participating countries. The RAP will offer participating countries a scientifically sound consultative and advisory mechanism to meet the challenge of responding to rising demands for expanded diagnostic tools and enhanced surveillance capabilities.

RAP participants will include, *inter alia*, officials from each project country (2 to 3 per country depending on the agenda topics); WHO/Geneva and WHO/AFRO, USAID/Regional, CDC, EAC, and all implementing partners. Membership would be multi-disciplinary and include African clinicians and experts currently involved in issues related to: (i) laboratory management; and (ii) diagnostic techniques, quality assurance, disease surveillance, and monitoring and evaluation, including lab information systems development. Others would be invited to attend meetings as observers, including officials representing other African countries, implementing partners, African universities; and international experts.

The RAP will be responsible for reviewing: (i) annual reports from participating countries, summarizing achievements, issues, and lessons; (ii) diagnostic and surveillance experiences from non participating countries; and (iii) quarterly outbreak reports of diseases that have the potential for regional and global spread from the participating countries. The RAP will provide advice on lessons and experiences and make recommendations on relevant action for improvement. The advisory panel will focus on the institutional and policy aspects and working groups will address the technical aspects affecting the quality and effectiveness of laboratory networking. The specific roles and responsibilities of the RAP will include the following:

- Review policy, strategy, and institutional issues, and the organization of public health laboratory and surveillance services in participating countries, as they relate to the project, and, in consultation with the WHO, and recommend necessary modifications.
- Recommend ways of reinforcing partnerships between the respective ministries of health (MOH) and the implementing partners, for further scaling up of comprehensive laboratory networking and integrated disease surveillance.
- Provide advice on supporting country efforts to strengthen the technical skills of laboratory personnel and facilitate networking with regional and international training institutions.
- Review and recommend, as needed, relevant technical specifications for equipment and diagnostics, including other essential commodities at laboratories
- Identify relevant topics for operational research relevant for the East Africa region, review the designs and results of commissioned studies, field surveillance and follow-up activities in participating countries.

Project Components

The project includes two components as follows:

Component 1: Specialized Diagnostic Services for TB and Other Communicable Diseases (US\$40.4 million)

The first component will provide targeted support to create and render functional the sub-regional laboratory network. Uganda, working in close collaboration with ECSA and under the guidance of the proposed Regional Advisory Panel will lead the establishment of the network. Rwanda would take a lead in ICT and PBF innovations as they related to the lab network, introducing new tools and approaches and sharing them with the other participating countries. The network aims to: (a) *enhance access to diagnostic services for vulnerable groups* to contain the spread of diseases in cross border areas; (b) *improve capacity to provide specialized diagnostic services* and conduct drug resistance monitoring at regional level; and (c) *contribute to disease surveillance and emergency preparedness efforts* through the availability of timely lab data to provide early warning of public health events; and (d) *serve as a platform for conducting training and research.*

Priority attention will be given to networking labs in participating countries that serve cross border and migrant populations, and those that provide specialized diagnostic services. The network will thus include: (i) satellite laboratories in cross border areas across the four countries; and (ii) central public health laboratories. The lab network will facilitate the adoption of harmonized policies, strategies, and protocols to ensure prompt and high quality

results. The network will be backed by strong national and regional reference laboratories and institutions to build competencies of laboratory staff and to promote quality assurance. Countries will adopt a “*phased approach*” to lab development. In an initial phase, human resources would be bolstered, training would be conducted, and proficiency testing would be carried out to ensure that basic microscopy and other core lab functions are performed according to set standards. During a second phase, specialized diagnostic services would be introduced once the physical infrastructure has been upgraded.

Diagnostic Services for Vulnerable Populations in Cross Border Areas (US\$20 million) The project will support about five satellite laboratories in each of the participating countries. These labs are typically based at regional hospitals in strategic cross border areas and/or in densely populated peri-urban areas where poverty is rampant and slum conditions serve as a breeding ground for the spread of diseases. Each country has carefully selected these sites based on the following *criteria*: (i) hospitals which are located in high transmission areas with large numbers of migrants or refugees; (ii) good balance between public and NGO-managed facilities; (iii) regional hospitals which can serve as centers of excellence for conducting training and operational research; and (iv) commitment to collaborate and coordinate efforts within and across participating countries.

Bank financing will promote a systems approach to laboratory development based on quality management principles. The sites will benefit from overall strengthening for core functions (e.g. bacteriology, parasitology, chemistry, and hematology) and will be supported to take advantage of the WHO/CDC Stepwise Accreditation process, reaching a two star status by project completion. Satellite labs will serve as sentinel surveillance sites to monitor hot spots for disease transmission. Project financing will facilitate sharing of information by establishing lines of communications (video conferencing, telemedicine) and by putting in place effective lab information systems which will allow personnel across sites to consult each other and to have access to timely information about disease outbreaks.

Reference and Specialized Services and Drug Resistance Monitoring (US\$10 million) The project will bolster the capacities of the Central Public Health Laboratories in the participating countries and network them to share information, conduct joint training and research, and collaborate in harmonizing policies and strategies. This process will focus on the TB laboratory functions (which have been relatively neglected), supporting one of the labs to be upgraded to a Supranational Regional Laboratory (SRL). The project will finance inter-laboratory external quality assessments among the four East African countries, and standardization of procedures and protocols to ensure that diagnostic procedures are performed by appropriately trained technicians against clear regional and international proficiency and quality standards. As national capacities are enhanced and the network becomes fully functional one of the four labs would play the role of a regional laboratory for East Africa, providing services (e.g. quality control; support with drug resistance surveys; higher-level testing, including second line drug susceptibility testing and molecular diagnostics) to other laboratories in neighboring countries, thus reducing the need to ship specimens to labs on other continents. The process of accreditation is being led by the WHO and other technical partners. Once a decision is taken on which laboratory will play the SRL role, the project will be used to develop the financial arrangements and operational modalities for the regional lab to provide services and for other countries to acquire those services.

Disease Surveillance and Preparedness (US\$10.4 million) The project will complement ongoing regional and global initiatives to improve Integrated Disease Surveillance and

Response country systems. It will support the IDSR strategic goals to improve availability of quality information by: (i) strengthening competence of lab and facility personnel to collect, analyze, and use surveillance data; (ii) reinforcing lab networking and district capacity (particularly those in border areas) to report, investigate, and adequately respond to disease outbreaks; and (iii) strengthening communications and data sharing to respond rapidly to outbreaks. Kenya will take a lead in this area and work closely with ECSA and the EAC health desk to harmonize tools, offer training and technical support, and serve as a center of excellence, documenting and sharing good practices in disease surveillance.

Bank funding will assist the countries to comply with their commitments under the International Health Regulations. To this end, the project will support *laboratory-based disease surveillance efforts*, by: (i) strengthening etiological confirmation of pathogens and promoting active participation of lab personnel in disease surveillance; (ii) collaborating in investigations of disease outbreaks, (iii) establishing and maintaining an integrated data management system; and (iv) facilitating sharing of relevant data across the sub-region, including publication of periodic newsletters and quarterly and annual disease surveillance reports. The strategy is to start gradually and prioritize a few key diseases for Bank support: hemorrhagic fever, cholera, MDR and XDR-TB, meningitis, malaria, and influenza. The project will also provide complementary support for the East Africa Integrated Disease Surveillance Network to enhance its effectiveness, and facilitate the production of quarterly regional surveillance bulletins by the East Africa Integrated Disease Surveillance Network. In addition to technical support, provision of equipment for national public health labs and selected laboratories in the border districts, and communication resources for data sharing across countries, the project will focus on targeted training in areas such as field epidemiology, microbiology, virology, and communications.

The first component will finance the following: (i) rehabilitation, expansion, and/or construction lab facilities; (ii) computer equipment, software, and technical support for integrated laboratory information systems and connecting facilities; (iii) lab equipment and supplies; (iv) materials and protective gear (e.g. masks, gloves) and related waste management equipment to ensure the safety of lab personnel; (v) telemedicine capacity to allow laboratory technicians and clinicians across participating sites to share expertise and consult in case of complex cases; and (vi) provision of operating funds to render the laboratories functional, including strengthening human resources which are the backbone of quality diagnostics; each participating laboratory would receive an annual budget and would be held accountable for attaining specific results as agreed upon in annual work plans. Under exceptional circumstances, when other funds are not available, the project would support second line drugs for treatment of MDR-TB.

Component 2: Joint Training and Capacity Building (US\$7.1 million)

The project will support training in a range of institutions in the four participating countries and across the region. Tanzania will provide leadership in this area and establish a regional training hub. To this end, it will provide practical training at its state of the art National Health Laboratory Quality Assurance and Training Centre and in-service training and post-graduate mentorships at the Muhimbili University of Health and Allied Sciences. Other regional training programs (such as the Arusha training on TB control) and other training centers like the African Center for Integrated Laboratory Training in Johannesburg will be supported, particularly for training trainers. Main priority areas identified by countries include: (i) laboratory quality management systems; (ii) internal and external quality assessments; (iii) technical training in new technologies; (iv) lab services for emergency and outbreak preparedness and response; (v) epidemiology and statistics for laboratory management; and (vi) training in preventive maintenance of equipment. Each country has prepared a training plan with priority short-term and long-term training activities. *These training plans were discussed during a regional consultation meeting in Nairobi and will be finalized during appraisal.*

The Bank project will finance: (i) attendance at training courses at national and regional institutes; (ii) laboratory attachments, fellowships, and regional exchanges at recognized centers of laboratory excellence; (iii) selective graduate training, as may be required to support specialized services; (iv) technical assistance to review and develop standards and training curricula and generic specifications for equipment; and (v) regional workshops to facilitate knowledge sharing.

Component 3: Joint Operational Research and Knowledge Sharing (US\$8.5 million) *The project will finance relevant operational research which is related to activities supported under the project.* As agreed during project preparation, ECSA would establish an independent peer review mechanism for selecting proposals, convening stakeholders to firm up the operational research agenda, overseeing the award process, and establishing a forum for sharing results and lessons. The main research priorities identified by countries to date relate to the need to evaluate the effectiveness of the new technologies at the programmatic level, to assess alternative models of care for management of drug resistant patients, to map malaria drug resistance patterns, and to assess the effectiveness of the regional approach to communicable disease prevention and control. The project will fund: (i) technical assistance to support operational research; and (ii) operating costs to organize regional workshops to share results and explore policy implications.

1.3 BIOPHYSICAL ENVIRONMENT FOR THE PARTICIPATING COUNTRIES

1.3.1 The Republic of Tanzania

Location and Size

The United Republic of Tanzania (Fig. 1,1) lies between 29°30'E and 40°30'E, and 1°00'S and 11°48'S. Located on the east coast of Africa, It is bounded by Uganda (north), Rwanda and Burundi (north-west), Malawi and Zambia (south-west), Mozambique (south), and Kenya (northeast).

Tanzania covers an area of approximately 945,000 km², of which the Zanzibar Islands cover 2,400 km². 61,495 km² of the total area is covered by the inland waters of the Great Lakes (Victoria, Malawi and Tanganyika).

Topography

Tanzania is a land of contrasts in topography, with Africa's highest mountain (Kilimanjaro, at 5,950 mamsl); and its lowest point (the floor of Lake Tanganyika, at 1,470 m deep). The



Figure 1.1 The United Republic of Tanzania

Indian Ocean, whose shores are characterised by coral reefs and small islands, lies to the east. The continental shelf within the 200-m depth contour varies from 4–60 km from the shore.

Except for the coastal belt and islands, most of the country is part of the Central African Plateau (1,000–1,500 mamsl) characterised by gently sloping plains and plateaux, broken by scattered hills and low-lying wetlands. The Central African Plateau is deeply incised by two arms of the Rift Valley: the eastern arm, which includes Lakes Natron and Manyara, and the deeper western arm, which contains Lake Tanganyika. Both arms of the Rift converge in the south of the country near the northern end of Lake Malawi.

Climate, Rainfall and Temperatures

Tanzania experiences a variety of climatic conditions, ranging from the alpine deserts on the top slopes of Mount Kilimanjaro that are permanently covered with snow, to the tropical coastal areas that are under the influence of two monsoon winds. The North-East monsoon wind which blows southwards from December to March brings the hottest weather, while the South-East monsoon winds which blow northwards from March to September bring intermittent rains. The dry season has duration of 4 to 6 months. It is shorter and less severe in the north-east than in the south.

The main rainy season on the coast is from March to May (the 'long rains') with a second season between October and December (the 'short rains'). Mean annual rainfall varies from 400 mm in the central regions to over 2,500 mm in the highlands and the western side of Lake Victoria. Mean annual temperatures are influenced by altitude, ranging from 21 °C in high montane areas to 29 °C at sea level.

Water Resources

Tanzania shares three major lakes (Malawi, Tanganyika and Victoria) with other countries in eastern and central Africa. Other lakes in the country include Burigi, Eyasi, Magadi, Masoko, Manyara, Natron and Rukwa. Tanzania also has many perennial and seasonal rivers. Main rivers include the Pangani, Rufiji, Ruvu and Ruvuma. Tanzania's wetlands cover about 10% of the country. They are classified as marine and coastal wetlands, inland wetland systems, rivers and inland flood plains, and artificial wetlands. The marine and coastal wetlands include the mangrove estuary swamps, coral reefs, seaweed and grasses, and intertidal mudflats. The inland wetlands include the Rift Valley lakes (Balangida, Eyasi, Manyara, Natron, Malawi, Rukwa, and Tanganyika), some depression swamps (Bahia and Wambere) and Lake Victoria.

Biodiversity

The shores of the Rift Valley lakes provide a habitat for birds, while Lake Natron serves as the largest flamingo breeding ground in Africa. The soda lakes (Eyasi, Manyara, Natron and Ngorongoro) are their feeding grounds. The waters of these lakes and the adjacent land are often inhabited by wildlife, which is a major tourist attraction in Tanzania.

Some swamps (Lake Tanganyika for instance) are important breeding sites for fish and Lake Tanganyika has about 217 endemic fish species. Both lake Tanganyika and lake Malawi are world-famous for their diversity of aquarium fish. Lake Tanganyika is important nationally for sardine, while Lake Victoria has a naturally rich and diverse indigenous fish fauna (178–208 species). However, the introduction of Nile perch has led to the disappearance of several indigenous species.

The flora of Tanzania is extremely diverse, with over 12,700 plant species – a figure comprising more than one-third of the total plant species in Africa (UNEP 1998). This high diversity of plants is not evenly distributed throughout the country, however. According to Stuart et al. (1990), they are found in six specific ecological zones, namely –

- Moist Forest Mosaic
- Coastal Forests and Thickets
- Afromontane
- *Acacia*–Savannah Grassland
- *Acacia*–*Commiphora* Thornbush, and
- *Brachystegia*–*Julbernardia*–Savannah Woodland.

Proportionately, Tanzania has a much bigger land surface area devoted to resource conservation (29%) than the neighbouring countries. The hierarchical protected-area system consists of national parks (12), game reserves (28), the Ngorongoro Conservation Area (1), and game-controlled areas (38), comprising a total of 240,000 km². In addition to the wildlife-protected areas, there are 540 forest reserves covering 132,000 km², equivalent to 15% of the total woodland and forest area in Tanzania. There is also the Mafia Island Marine Park.

Amphibians show high diversity and wide distribution, with high endemism in coastal forests and in the montane forests of the Eastern Arc Mountains. Tanzania has 293 reptile species, which have a wide distribution range and are not greatly threatened by habitat change. The number of bird species found in Tanzania is 1,065. Of these, 25 are endemic, and all but 3 species are limited to forest habitats.

Some 302 species of terrestrial mammals occur in Tanzania. The keystone species of critical importance include chimpanzee, colobus and mangabey monkeys, elephant, and a dwindling population of black rhinoceros. The larger carnivores include lion, leopard, cheetah and the African wild dog. There are over 30 antelope species, and the giraffe populations are the most numerous in Africa. Tanzania also has a rich menagerie of small mammal species, including bats (97 species), shrews (32 species) and rodents (100 species). Of the 302 species of terrestrial mammals, 13 species (4%) and 5 subspecies are endemic to Tanzania and Kenya, and one subspecies is endemic to Tanzania and Uganda. Tanzania also has high numbers and a great species diversity of millipedes, terrestrial molluscs and butterflies. The marine environment has more than 7,805 invertebrate species, while about 789 species of freshwater invertebrates (mostly aquatic insects) are known in Tanzania.

Land use

Under the Land Act (No. 4 of 1999), all land in Tanzania is public land held by the President as a trustee on behalf of all citizens. However, people are given the right to occupy and use land under what is known as a Right of Occupancy.

Forty-two percent of the land is totally under cultivation while 29% is officially protected (national parks, conservation areas, and game and forest reserves). Other areas are infested by tsetse fly (26% of rangeland), which restricts livestock production and use of animal traction.

Key environmental limitations

Rainfall is erratic, with only 21% of the country receiving an annual rainfall of more than 750 mm with a 90% probability. Droughts of varying magnitudes have occurred in the recent past, requiring the Government to seek food aid from the donor community to ward off starvation that affected up to a million people. Mitigation measures to counteract the droughts included the construction of dams and wells. In contrast, floods commonly occur in various parts of Tanzania, notably in the Rufiji Basin. Zanzibar and parts of the coast are affected by cyclones, which can cause extensive damage and loss of life. In summary, therefore, the key environmental limitations facing Tanzania include –

- rainfall variability and seasonality
- inaccessible water resources
- poor soil fertility and erodible soils

Key environmental impacts caused by development

Development has impacted on the environment in the following ways:

- Deforestation
- Land degradation and soil erosion
- Pollution
- Habitat destruction and loss of biodiversity
- Household and industrial air pollution, and
- Increase in human, domestic and industrial effluent and waste production.

Key Socio-economic Limitations

As with most southern African countries, there is high dependence on natural resources in Tanzania. Socio-economic development is closely linked to the availability of and access to natural capital. Tanzania has an agriculture-based economy, with approximately 69% of the population living in rural areas. Population densities in the rural areas are high in areas of good, arable land. Consequently, the pressure on natural resources such as cultivatable land, grazing land, water, timber and fuel-wood is continually increasing.

Key socio-economic limitations include:

- high population growth and high rural densities
- an increasing number of urban residents
- inadequate health facilities
- an inadequate water supply, and
- inadequate education facilities.

There is high dependence on the land, which is increasingly unable to support the growing rural densities. Restructuring of the agricultural sector has led to sharp declines in agricultural production and food shortages prevail. In urban areas, services and facilities are under extreme pressure.

Key Environmental Challenges

Key environmental challenges include:

- Insufficient institutional framework for coordination;
- Limited government involvement with regard to environmental management;
- Insufficient involvement of local authorities and communities in environmental management and conservation; and
- Poverty

Population

The Health Sector Strategic Plan III for July 2009 to June 2015 prepared by the Ministry of Health and Social Welfare gives the estimated population of Tanzania to be 37,990,563 in 2008. 48.9% of this population is male. Population density has increased slightly since 1996 (34.5 people/ km²), having been estimated at 38.1 people/ km² for 2008. The urban population was estimated to have grown by approximately 2% per year since 1996. Life expectancy for males is 53 while that for females is 56 years.

Socio-economic overview

Mineral production (gold, diamonds and gemstones) is one of the main economic activities. The manufacturing (construction materials, food and textiles) and the electricity, construction industry, trade and water sectors have continued to expand. Government has also continued to give priority to both the health and education sectors.

Agriculture and tourism account for the bulk of output, employment and foreign exchange earnings in Tanzania (GURT 2001). Traditional exports include cashew nuts, coffee, cotton, sisal, tea and tobacco. Non-traditional exports include minerals (diamonds and gold), fish and fish products, horticultural products and manufactured goods.

1.3.2 The Republic of Kenya

Location and Size

The Republic of Kenya (Fig 1.2) is in East Africa, lying along the Indian Ocean, at the equator. Kenya is bordered by Ethiopia (north), Somalia (northeast), Tanzania (south), Uganda plus Lake Victoria (west), and Sudan (northwest). Total area is 582,650 sq km of which Land is 569,250 sq km and water is 13,400 sq km.

Topography

South-western Kenya and central Tanzania are on a plateau roughly 1200 metres above sea level, the lowest point being the Indian Ocean at 0 m while the highest is Mount Kenya at 5,199 m. The Kenyan Highlands comprise one of the most successful agricultural production



regions in Africa. Glaciers are found on Mount Kenya, Africa's second highest peak with unique physiography, supporting abundant and varied wildlife of scientific and economic value

Climate, Rainfall and Temperatures

Kenya has a temperate climate and the days can be hot while nights can be chilly, once the sun has set. There are no real seasonal changes because of the proximity of the equator (the top of Mt Kenya is within 20km of the equator). The weather and

Figure 1.2 The Republic of Kenya

climate in Tanzania and Kenya is normally settled with temperatures around 20-25 degrees C in between the 'long rains' from March to May and the 'short rains' from mid-October to early December. Average annual rainfall is 567 mm, which converts to 323 billion m³ per year and is distributed in the basins as follows:

7.30 billion m³ in the Lake Victoria basin;
4.7 billion m³ in the Tana River Basin;
1.39 billion m³ in the Athi–Galana Basin;
0.81 billion m³ in North Rift Valley; and
0.74 billion m³ in Ewaso Nyiro South (GoK/UNEP, 2001).

Natural Resources

Natural resources for Kenya include gold, limestone, soda ash, salt, rubies, fluor spar, garnets, wildlife and hydropower.

There are numerous rivers (Dawa, Ewaso Ng'iro, Gucha, Kerio, Mara, Nairobi, Ruiru and Suam) including the longest the 440-mile Tana River. Water resources are under pressure from agricultural chemicals and urban and industrial wastes, as well as from use for hydroelectric power. Kenya expects a shortage of water to pose a problem in the coming years. Water-quality problems in lakes, including water hyacinth infestation in Lake Victoria, have contributed to a substantial decline in fishing output and endangered fish species.

All Kenya's major river drain from the central highlands, divided by the rift into those flowing westwards into Lake Victoria and those flowing eastwards towards the Indian Ocean. There are five major drainage basins: Lake Victoria, the Rift Valley, the Athi-Galana-Sabaki River (and Coastal areas to its south), the Tana River and the northern Ewaso Ng'iro.

Biodiversity

Kenya has very little rainforest (mostly montane forest) cover, and these scattered patches are being further degraded for fuelwood and building material. Overall forest loss in Kenya has been moderate over the past generation—5 percent of the country's forest cover was lost between 1990 and 2005. Primary forest cover also fell by 5 percent over the same period and now covers around 700,000 hectares. Deforestation rates have decreased slightly since the end of the 1990s.

Kenya is world famous for its safari wildlife, and 12.3 percent of its land area is currently under some form of protection. The country has 1,103 species of birds, 261 mammals, 407 reptiles, 76 amphibians, and 6,500 species of plants.

The most immediate threats to Kenya's forests are subsistence activities and agricultural expansion. In recent years conflicts between forest squatters and police have escalated as the government tries to crack down on deforestation. In 2005, the government evicted 10,000-50,000 families from the edge of the Mau Forest in the Rift Valley as part of its campaign to protect the country's natural resources.

Land use

Land is currently the most important resource from which the country generates goods and services for the people. The national economy is primarily agro-based. Ninety percent of the

population living in rural areas derives its livelihood directly from land. To these people, land resources are the means to a livelihood determining the levels of prosperity or poverty, fulfilling social obligations, and also conferring social status and political power. Sustaining the livelihoods of such a high population with limited land resources places a high demand for access to resources, making use and ownership of land fundamental issues in the socio-political and economic landscape of the country.

The major land-cover types in Kenya are forests, savannahs, grasslands, wetlands, fresh and saline water bodies, and deserts. These are used for agriculture, pastoral activities, water catchments, nature reserves, urban and rural settlements, industry, mining, transport and communications, tourism and recreation. Other uses include cultural sites, fishing, forestry and energy. Of the total land cover, about 2.4% is under indigenous and exotic forests.

Of the total area of 582,646 km², only 17% is suitable for rain-fed agriculture. About 2.2% of the arable land is covered by forest reserves. Arid and semi-arid lands comprising grassland and savannah rangelands cover the remaining 82%. The rangelands are home to 85% of total wildlife population.

Key environmental impacts caused by development

Key environmental impacts include water pollution from urban and industrial wastes; degradation of water quality from increased use of pesticides and fertilizers; water hyacinth infestation in Lake Victoria; deforestation; soil erosion; desertification; poaching.

Environmental agreements

Kenya is party to environmental agreement on: Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Wetlands and Whaling.

1.3.3 The Republic of Uganda

Location and Size

The Republic of Uganda, located in east central Africa, between latitudes 1° 30' S and 4° N and between longitudes 29° 30' and 35° E. It is bounded on the north by Sudan, on the east by Kenya, on the south by Tanzania and Rwanda, and on the west by the Democratic Republic of the Congo. Uganda is a land locked country and covers approximately 241,551 square kilometres, of which 197,323 square kilometres is land area.

Topography

Physically, the country consists of a plateau, generally between 1200 and 1500m, dissected by numerous streams. In the west, this plateau is interrupted by an escarpment forming Lakes Edward and Albert, with the upthrust of the Margherita Peak on Mount Stanley (5 110 m) in the centre, between the lakes. In the extreme north the plateau extends across the Nile into the district of West Nile. The south-west is very hilly and higher than the rest of the country. In the east, along the border with Kenya, three high mountains, Elgon (4 321 m), Kadam (3 068 m) and Moroto (3 083 m), dominate.



Figure 2.3 The Republic of Uganda

Climate, Rainfall and Temperatures

The climate is more of the “equatorial” type but mild because of the generally high altitude. The country is generally rainy with two dry seasons (December to February, June to August) and semiarid in northeast. The temperature ranges from about 16° to 29°C, with 1 000 mm or more rainfall over most of the country. In the extreme north-east, in Karamoja, there is a small zone with less than 500 mm of rainfall.

Water Resources

The Nile divides the country in two parts, flowing from Lake Victoria at Jinja through Lake Kyoga to the northern tip of Lake Albert, and then north to the Sudan. A significant proportion of the southern part of Uganda contains swamps.

Biodiversity

The vegetation is typically savannah, though there are some forests on the mountain ranges, and riparian vegetation in river valleys. There is a wide range of savannah woodland. This savannah is usually interspersed by perennial grasses.

Between 1990 and 2005, Uganda lost 26.3 percent of its remaining forest cover, and deforestation continues today at a rate of 2.2 percent per year, mostly due to subsistence farming, cutting for fuel-wood, and colonization by the burgeoning population. While Uganda is famous for its mountain gorillas, it is home to some of the highest concentrations of biodiversity in Africa. More than 5,000 plant species are found in the country along with 345 mammals, 1,015 birds, 165 reptiles, and 43 amphibians.

Land use

The country is divided into 79 Districts all of which have a decentralized local governance system. The settlement patterns in the rural areas vary, depending on a number of factors: areas with consistently good rains, good soils, and free from disease agents, have high and rising population densities. Areas with less rain, less fertile soils, and which are not free from disease agents, have low population densities. Security is another major factor, which determines settlement pattern in Uganda: for instance, the serious security problems in the northern region since the 1980's are one reason for its low population density.

Besides the other uses like pasture, farmland constitutes the biggest proportion of land use (35%) in Uganda. The average landholding size in Uganda ranges from 0.4 to 3 hectares per typical household of seven persons. This landholding size has been declining over the years due to population pressure (UBOS, 2002). As of 2005, arable land was 21.57%, land with permanent crops: 8.92% and other: 69.51% (CIA World Fact Book, November 2009)

Key environmental impacts

Key environmental concerns include: draining of wetlands for agricultural use; deforestation; overgrazing; soil erosion; water hyacinth infestation in Lake Victoria; poaching is widespread

Environmental agreements

Uganda has signed agreements on: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Life Conservation, Ozone Layer Protection, Wetlands

Natural Resources and Socio-economic Profile

Uganda has substantial natural resources, including fertile soils, regular rainfall, and sizable mineral deposits of copper and cobalt. Agriculture is the most important sector of the economy, employing over 80% of the work force. Coffee accounts for the bulk of export revenues. Since 1986, the government - with the support of foreign countries and international agencies - has acted to rehabilitate and stabilize the economy by undertaking currency reform, raising producer prices on export crops, increasing prices of petroleum products, and improving civil service wages.

The agricultural sector dominates Uganda's economy and the incomes of its people. It accounts for 43% of GDP, 85% of export earnings and 80% of employment, and provides most of the raw materials to the mainly agro-based industrial sector. Food-crop production predominates, accounting for two thirds of agricultural GDP while the livestock subsector provided 16%, export/cash crops 7%, fisheries 9% and forestry 6%. With the exception of small amounts of sugar and tea grown on large estates, nearly all agricultural production comes from the country's estimated 2.5 million smallholder families/households

During 1990-2001, the economy turned in a solid performance based on continued investment in the rehabilitation of infrastructure, improved incentives for production and exports, reduced inflation, gradually improved domestic security, and the return of exiled Indian-Ugandan entrepreneurs.

Key Environmental Challenges

Key environmental challenges include:

- High population growth rate;
- Poor sanitation;
- Poverty; and
- Deforestation

The National Environment Management Authority (NEMA) warned in its State of the Environment for Uganda, published in mid-June 2008 report that:" If deforestation continues at the present rate, Uganda will have lost all its forested land by 2050,"

Poor sanitation coupled with unsafe water sources increases the risk of water-borne diseases and illnesses due to poor hygiene, contributing immensely to the disease burden in Uganda.

Population

Population growth is cited as a major contributing factor to shortages of agricultural land, loss of forests and wetlands, and poverty. High population growth which is currently 3.2 percent per annum, with high fertility rates of seven children per woman has resulted in the expansion of built-up areas, particularly around Kampala.

Socio-economic overview

Uganda's biodiversity has been affected by violence, especially during the periods of extreme civil instability in the 1980s. During these periods, there was a breakdown in government capacity to manage protected areas, and there was massive exploitation of the unique Bwindi

forest, in terms of gold extraction, timber harvesting, and hunting of wildlife. Uganda had more than five million hectares of forest in 1990, but only 3.5 million hectares remained by 2005.

In 2006, as a result of over 20 years of civil war in northern Uganda, up to 70 percent of the population lived in extreme poverty. Northern Uganda, where many people have been displaced on a regular basis, suffers from environmental and socio-economic impacts of war. One major effect of the violence has been damage to the social fabric, including informal networks of trust and support, undermining governance and natural resource management.

Children have been a major target of conflict and violence as well as targets of forced recruitment as child soldiers through, among other things, abductions. Children may be killed or maimed or may end up as orphans or street children

1.3.4 The Republic of Rwanda

Location and Size

Rwanda is a landlocked country situated in the heart of Africa with an estimated population of 9.2 million within an area of 26,338 km² with 350 people per km². Rwanda is the most densely populated country in Africa; it has latitude between 1°04' and 2°51' of latitude south and between 28°53' and 30°53' of longitude east. Altitude ranges between 1000m in the southwest and 4500m in the northwest (Volcanoes range). It is surrounded in the north by Uganda, in the east by Tanzania, in the south by Burundi and in the west by the Democratic Republic of Congo. The population growth rate is currently 2.6%. Rwanda considers its population as its fundamental resource and banks on it for its future development.

Topography



Rwanda is one of Africa's smallest and most densely populated countries. With an area only a third that of Tasmania, it is home to 9.2 million people; giving a density of 305 persons a square kilometer. No country in Africa has a higher density and only a few countries in the world are comparable.

The mountain gorillas of the Virunga Volcanoes National Park made famous by the work of Dian Fossey; is Rwanda's most notable aspect. Most of Rwanda lies 1500 meters above sea level, giving the country a cooler climate than expected, as it is approximately 120 km from the equator, in central Africa. The topography of Rwanda inspired the country's sobriquet, 'Land of a Thousand Hills'. The landscape is a succession of rolling hills, every hill covered by a patchwork of farms. With 60% of the landmass arable, it is the source of livelihood for 90% of the population, mostly subsistence farmers. The GDP per capita of US\$250 (2003) is sustained principally by the cultivation and export of coffee and tea, the mainstay of the economy.

Climate, Rainfall and Temperatures

Rwanda has more or less constant annual temperatures ranging from 16 to 17°C for the high altitude region, 18 to 20°C for the central plateau and 20 to 24°C for the lowlands in the east and west.

The rainfall regime has a strong influence, on the hydrological regime. The country experiences floods during the long rainy season (March to May) and floods subside during the long dry season (June-September). Low water levels are very marked. Currently, there are disturbances both in the distribution and quantities of rainfall and temperatures. Rwanda experiences continued droughts, which tend to be cyclical and persistent. This situation could be related to the climatic changes recorded in the world due particularly to global warming.

Natural Resources

The natural resources of the country comprise mainly of forests, savannas, lakes, rivers, marshes and mines. These resources contain important protected areas, including the Volcanoes, the Akagera National Park, natural forest of Nyungwe which shelter a natural heritage of national and international importance.

State of biodiversity

Despite its territorial small size, Rwanda is covered by diversified ecosystems: natural ecosystems consisting of mountain rainforests; gallery forests, savannas, wetlands and aquatic lands and ecosystems that have been altered by man's activities consisting of a forestation and cultivated areas. All these ecosystems accommodate a flora and fauna wealth. The flora comprises hundreds of higher and lower plant species. Some of them have been domesticated for years and are today the basis of human diet; others are meat for commercial and medical uses.

Land use

The 1994 Genocide devastated the Rwandan economy as well as its population. GDP was halved in a single year, eighty percent of the population was plunged into poverty and vast tracts of land and livestock were destroyed. The genocide also exacerbated a number of development constraints, which existed before 1994. The already poorly developed productive infrastructure was completely destroyed and the nation was robbed of a generation

of trained teachers, doctors, public servants and private entrepreneurs. Thus, the consequences of genocide have devastated Rwanda's social, political and economic fabric.

Agriculture, accounts for more than 90% of the labour force, yet remains unproductive and largely on a subsistence level. Distribution of arable land now stands at one hectare for every 9 Rwandans and is diminishing due to high birth rates. The obvious consequence is that a substantial number of rural families who subsist on agriculture own less than 1 hectare, which is too small to earn a living. Available pastureland is 350,000 hectares most of which is of poor quality. This results in intense exploitation of the land, with no simultaneous application of corrective measures, most notably through fertilizer use. The net result has been a decline in land productivity and massive environmental degradation, contributing to rampant malnutrition amongst the Rwandan population. Rwandans can no longer subsist on land and ways and means need to be devised to move the economy into the secondary and tertiary sectors. There has also been a substantial increase in the share of cultivating households that now purchase insecticide (25%) and seeds (71%).

Key environmental impacts caused by development

Access to drainage and sewage disposal services is 85% of the population, whilst 64% of latrines do not meet the required hygienic standards. Consumption of dirty and unsafe water is at the origin of various water-borne diseases. The unplanned and disorganized construction of towns without a suitable drainage system exacerbates sanitary problems. Sewerage and rainwater can destroy public roads or stagnate, creating ideal breeding grounds for both human and animal diseases. Since most houses are situated on the summit and on the slopes of hills, water sources are in constant danger of pollution by domestic sewerage and other human activities carried by the stream of water. The environmental impact of deficient waste management is barely taken into account by human settlements and industrial installations. Key environmental impacts include water pollution from urban and industrial wastes; degradation of water quality from increased use of pesticides and fertilizers; water hyacinth infestation, deforestation, soil erosion and desertification.

Environmental agreements

Rwanda signed the international Convention on Biological Diversity in Rio on 10 June 1992 and ratified it on 18 March 1995. This act offered a formal framework that enabled the Government of Rwanda to confirm its concerns for the conservation of its biological diversity since the 1920s with the creation of national parks (Akagera National Park 1934, the Volcanoes National Park 1925), and forest reserves (Nyungwe Forest Reserve 1933).

Aware of the dangers caused by POPs to human health and environment and involvement in the international community's efforts to fighting against POPs, Rwanda adhered to the Stockholm Convention signed on May 22, 2002 and ratified as approved by the Presidential Order n°78/01 of 8 July 2002.

1.4 DESCRIPTION OF THE PROJECT'S AREAS OF INFLUENCE

The project has triggered OP/BP 4.01(Environmental Assessment) due to the planned construction/rehabilitation/expansion of laboratories as well as the generation of medical waste at these laboratories. The project has been assigned the World Bank environmental category B. Any activities requiring land acquisition and resettlement for new construction and/or access roads will not be funded under this project

Potential safeguard issues and areas of influence will be environmental effects on soil, air, water, and vegetation. Issues on social components will relate to safety of workers and potential for spread of HIV and AIDS as well as potential TB infection. The areas to be affected include public places where people gather in large numbers; poorly ventilated public places and laboratories; points or places of collection, transportation, storage and analysis of specimens; as well as places of disposal of laboratory and hospital waste.

To ensure that these consequences or impacts are avoided, minimized or mitigated, this Environmental and Social Management Framework, (ESMF) has been prepared in conformity with the requirements of the participating countries and the World Bank.

1.5 PROJECT DEVELOPMENT OBJECTIVES

The development objective of the project is to strengthen capacities for the diagnosis and surveillance of TB and other communicable diseases by establishing a network of efficient, high quality, accessible public health laboratories and by promoting innovation and knowledge sharing. To this end, the project will support four adjoining countries (Kenya, Rwanda, Tanzania, and Uganda) to rapidly diagnose communicable diseases of public health importance, and to share information about those diseases which is crucial to mount an effective regional response.

Representatives from the participating countries have agreed to function as a *community of practitioners* by promoting cross country learning and knowledge sharing. The countries will provide regional leadership in thematic areas where each has a comparative advantage and would serve as a center of excellence, as follows:

Kenya: Integrated Disease Surveillance and Response

Uganda: Lab Networking and Accreditation

Tanzania: Training and Capacity Building

Rwanda: ICT, Performance Based Financing, MDR-TB

1.5 OBJECTIVES OF THE ESMF

This ESMF is prepared to ensure proper assessment and mitigation of potential adverse environmental, health and social impacts, from the construction and rehabilitation of the proposed laboratories. The ESMF includes issues related to operation of the laboratories and those which need to be addressed for health-care waste management. Laboratory Waste Management Plans have also been prepared separately, taking into account the laboratory waste generation, segregation, storage, treatment and disposal.

The ESMF outlines an environmental and social screening process, focusing on the following steps:

- (i.) Completion of the Environmental and Social Screening Form;
- (ii.) Assignment of the appropriate environmental category as per OP 4.01;
- (iii.) Carrying out the appropriate level of environmental work;
- (iv.) Review and clearance of the screening results;
- (v.) Preparation of EIA reports, where this may be necessary and;
- (vi.) Preparation of Environmental Management Plan

The ESMF includes an Environmental and Social Management Plan (EMP), guidelines for monitoring and development of appropriate monitoring indicators, capacity building measures for environmental management and cost estimates for the environmental work. It also includes (as annexes) Environmental Guidelines for Contractors, Environmental Assessment Safeguard Policies, an Environmental and Social Checklist for Environmental screening and Generic EIA Terms of Reference.

The ESMF will facilitate environmentally and socially sustainable construction and rehabilitation of the laboratories in all participating countries.

1.6 JUSTIFICATION FOR THE ESMF

The precise scope of sub-project activities is not fully known at this time. In addition, the national environmental legislation does not require the screening of small-scale investments for potential adverse environmental and social impacts. Therefore the potential social and environmental impacts of the project activities cannot be identified and mitigation measures determined in the context of a traditional EIA, for the specific sub-projects.

Once the full scope of the project activities are known and once the screening process (Annex 1) has determined that a separate EIA report is required, the EIA report will be prepared on the basis of the respective national EIA procedures, taking into account the Bank's safeguard policies.

Thus, this ESMF provides mechanisms for ensuring that potential environmental and social impacts of the East Africa Public Health Laboratory Networking Project activities are identified, assessed and mitigated as appropriate, through the environmental and social screening process. This ESMF would therefore, complement the participating countries' EIA procedures for meeting the environmental and social management requirements. The ESMF is in line with the World Bank Operational Policies for environmental management of projects where specific details are not yet known.

1.7 POTENTIAL USERS OF THE ESMF

The ESMF has been prepared as a reference manual for use by key stakeholders to be involved in the planning, implementation, management and operation of the proposed East Africa Public Health Laboratory Networking Project. As a reference material, the ESMF would be useful to the following project key stakeholders, ministries and departments in the participating countries:

- Ministries responsible for Health and Social Welfare
- Participating Countries of the East Africa Public Health Laboratory Networking Project who may update the ESMF as necessary;
- Funding and Donors Agencies;
- Town & Country Planning Committees and District Executive Committees in the selected cities and districts of the participating countries;
- Senior government officials responsible for policy making and development planning; and
- National healthcare waste management programmes of the participating countries

1.8 APPROACH AND METHODOLOGY FOR ESMF PREPARATION

One of the key objectives of the ESMF is to provide a screening process for potential environmental and social impacts of the proposed sub-projects and to recommend generic management and monitoring plans for addressing these potential negative impacts. In the development of this ESMF a high degree of consultation with various key stakeholders was employed. The rationale for these extensive consultations was to solicit views of a cross section of key stakeholders, including key officials of government departments involved in the project and the EIA process.

The strategies for executing this assignment followed the six steps listed below:

- Review of documents for project concept and implementation processes for the proposed project activities;
- Review of other relevant literature and government regulations for environmental management and preparation of EIAs;
- Identification and analysis of potential generic environmental and social impacts the project activities are likely to generate within and around the project sites;
- Identification of appropriate generic mitigation measures for the negative environmental and social impacts
- Development of an appropriate screening process for project sites;
- Compilation of a generic management and monitoring plan for addressing the impacts during implementation of the project.

Field investigations were conducted in Dar es Salaam from August 4 to 22, 2009 and in Nairobi from August 23 to 25, 2009. Some of the key stakeholders consulted are presented in Annex 8

CHAPTER 2 LEGAL, REGULATORY, AND ADMINISTRATIVE FRAMEWORK

2.1 BASIS FOR THE FRAMEWORK

The legal, regulatory and administrative framework is based on information gathered from participating countries as described below. Typical relevant policy and regulatory information includes information provided in this section. Adjustments to the framework must be made to suit the particular situation in each participating country, at the time of project implementation.

2.2 POLICIES

National policies relevant to the East Africa Public Health Laboratory Networking Project would include;

- National Environment Policy;
- National Policy on HIV and AIDS;
- National Land Policy;
- Construction Industry Policy;
- National Water Policy;
- National Gender Policy;
- Health Sector Strategic Plans;
- National Health Laboratory Strategic Plans;
- National Policy Guidelines for Healthcare Waste Management; and
- National Environmental Health, Hygiene and Sanitation Strategy

2.3 THE WORLD BANK'S SAFEGUARD POLICIES

The World Bank Safeguard policies provide guidelines aimed at preventing and mitigating undue harm to people and to the environment, when implementing development projects. These policies provide a platform for the participation of stakeholders in project design and implementation, and include the following :

- a) Environmental Assessment (OP/BP 4.01) (**TRIGGERED**)
- b) Forests (OP/BP 4.36)
- c) Involuntary Resettlement (OP/BP 4.12)
- d) Indigenous Peoples (OP/BP 4.10) (**TRIGGERED FOR KENYA ONLY**)
- e) Safety of Dams (OP/BP 4.37)
- f) Pest Management (OP 4.09)
- g) Physical Cultural Resources (OP/BP 4.11)
- h) Natural Habitats (OP/BP 4.04)
- i) Projects in Disputed Areas (OP/BP 7.60)
- j) Projects on International Waterways (OP 7.50)

Of specific relevance to this project is the Environmental Assessment Safeguard Policy (OP/BP 4.01), which is the only policy triggered by the project. Details of the ten World Bank's safeguard policies are provided in Annex 5, for reference.

The Regional Health and TB Support Project triggers only OP 4.01 on Environmental Assessment, since laboratory rehabilitation and construction will be confined to existing hospital building premises and to unoccupied land owned by the respective governments. Any project activities requiring new land acquisition and resettlement will not be funded under the proposed project.

2.3.1 Environmental Assessment (OP/BP 4.01)

The objective of Environmental Assessment is to ensure that sub-projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and mitigation of their likely environmental impacts. This policy is triggered if a project is likely to have potential adverse environmental risks and impacts in its area of influence. *Construction and rehabilitation of laboratory buildings may have negative environmental impacts, which require mitigation. Therefore, in line with this Operational Policy, this environment and social management framework, for screening of the Regional Health and TB Support Project activities and sites has been prepared.*

2.3.2 The World Bank's Categorization of Projects

Environmental consequences should be recognized early in the project cycle and taken into account in project selection, siting, planning and design. In so doing, adverse environmental and social impacts may be prevented, minimized, mitigated and/or compensated for; and positive impacts may be enhanced. The World Bank's Environmental Assessment includes the process for mitigating and managing environmental and social impacts throughout project implementation and the Environmental Assessment Sourcebook (1993) and its updates (1996, 1997) provide technical guidance. The World Bank's categorization of projects, with respect to significance of environmental impacts is as follows:

- 1) **Category "A":** A proposed project is classified as Category "A" if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subjected to the physical works. Environmental Assessment for a Category "A" project examines the project's potential negative and positive environmental and social impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. For a Category "A" project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive or sectoral EIA) that includes as necessary, elements such as environmental audits or hazard or risk assessments.
- 2) **Category "B":** A proposed project is classified as Category "B" if its potential adverse environmental and social impacts (on human populations or environmentally important areas including wetlands, forests, grasslands, and other natural habitats) are less adverse than those of Category "A" projects. Category "B" projects are further sub-divided into "B1" and "B2".

For category "B1" projects, the impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be readily designed; and an Environmental Management Plan (EMP) or an Environmental Action Plan will suffice.

For “B2” category projects, an EIA would be required. The scope of EIA for a Category “B2” project may vary from project to project, but it is narrower than that of Category “A” EIA. Like Category “A” EIA, it examines the project's potential negative and positive environmental and social impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

- 3) **Category “C”:** A proposed project is classified as Category “C” if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further action is required for a Category “C” project.

- 4) **Category “FI”:** A proposed project is classified as Category “FI” if it involves investment of Bank funds through a financial intermediary, in subprojects that might result in adverse environmental impacts.

Rehabilitation of laboratories is not expected to have significant environmental and social impacts because the project activities will be done within the compounds of existing laboratories. *Therefore, the environmental categories to be used under the project are those as defined in OP 4.01 Environmental Assessment, because national environmental legislation does not have such environmental categories or the equivalent.* The works are likely to be category B1 and therefore will require simple mitigation measures. Circumstances requiring B2 category environmental work are highly unlikely since the construction/rehabilitation activities will take place on land already occupied by buildings or zoned for buildings. B2 category work would apply for cases of new construction in environmentally sensitive areas; or for large and complex buildings requiring special scrutiny and supervision; or where the approving authority, for some reason, requires an impact assessment.

2.4 LEGAL FRAMEWORK

Typical national legal framework relevant to the East Africa Public Health Laboratory Networking Project would include;

- Urban Planning Act;
- Health Laboratory Practitioners Act;
- Water Resources Management Act;
- The National Constitution of the participating country;
- Environmental Management Act;
- Local Government Authorities (City, Municipal, District and Town Councils)
- Environmental Impact Assessment and Audit Regulations;
- Mining (Environmental Management and Protection) Regulation;
- The Land Act (1999) and the Land Regulations;
- The Occupational Health and Safety Act;

CHAPTER 3 IMPACT IDENTIFICATION AND ASSESSMENT

1.1 METHOD AND TECHNIQUES USED IN IDENTIFICATION AND ASSESSMENT

The consultant used a number of methods and techniques to determine the environmental and social impacts of the East Africa Public Health Laboratory Networking Project. These include the following

3.1.1 Public Consultations and Field Investigations

In Dar es Salaam, discussions were held with a number of key stakeholders including staff of the World Bank Country Office who provided details of the project. This included the Project Appraisal Document (PAD), the Project Implementation Plan, and other project related information.

Discussions were also held with a number of officers in the Ministry of Health and Social Welfare, including health-care waste management, health sector reforms and health services infrastructure . Also discussed were the existing set up, processes and regulations for health-care waste management. Discussions were held on environmental laws, regulations, and procedures with the National Environmental Management Council (NEMC).

Field investigations comprised visits to government institutions, departments and laboratories including the National Health Sector Reform Secretariat, the National Tuberculosis and Leprosy Programme (NTLP), the Centre for Disease Control (CDC), the National Institute for Medical Research (NIMR), the Central TB Reference Laboratory (CTRL), the National Health Laboratory for Quality Assurance and Training Centre (NHLQATC) and the Medical Research Centre (at MUHAS). These visits and other guided tours were made to gain familiarization with the project and with the existing establishments, laboratory facilities and their operations.

In Nairobi, discussions were held with a number of officers from the World Bank Country Office and from the Ministry of Public Health and Sanitation.

3.1.2 Literature Gathering and Review

A number of documents relating to the project were gathered during the Public consultation and field Investigations. These include various acts and legislation (given in References section) which were sourced mainly from the institutions visited in Tanzania and Kenya. Some documents related to ESMF preparation and some ESMFs prepared in the past were also used in the preparation of this document. The literature gathered was reviewed to assess issues that needed clarification before use in the preparation of this ESMF.

3.1.3 Categorization of Impacts

To facilitate identification and assessment of impacts, typical project activities, to be implemented under the laboratory rehabilitation and construction of the East Africa Public Health Laboratory Networking Project were broadly categorized into the following project phases:

- Planning and design;
- Construction and rehabilitation;
- Operation and maintenance and.
- Decommissioning and closure.

Activities in each of the project phases listed above will have environmental and social consequences on the different environmental components such as landscape, soils, vegetation, water resources, air quality and the socio-economy.

1.2 ASSESSMENT OF IMPACTS

3.2.1 Generic Positive Impacts

Most of the impacts of the East Africa Public Health Laboratory Networking Project will be positive and include improvements in health and socio-economic conditions. Positive impacts of the project will be major and long term and will include the following:

1. Improvement of Health in Participating Countries

The project will contribute to improvements in health conditions in participating countries through increased provision of and access to health care and laboratory and diagnostic services.

2. Contribution to Global and Regional Health Objectives

The project will also contribute to the achievement of the Millennium Development Goal Number 6 (Combating HIV and AIDS, malaria and other diseases), and more specifically to the global targets to “reduce the prevalence and death rates associated with TB” and to increase the “proportion of TB cases detected and cured”.

3. Increase in TB Case Detection and Treatment Success Rates

Improving the accuracy and turnaround time of TB diagnostic techniques will contribute to increases in case detection and treatment success rates, as TB infectious individuals will be placed on correct treatment in the early stages.

4. Complementing other TB Programmes

By focusing on diagnostic capacities, the project will complement initiatives of other donors financing scale-up of TB treatment, including improved access to MDR-TB treatment. Combination of these efforts will contribute to the overall reduction in TB burden and transmission rates.

5. Support to Cross-border Activities

The project will support activities to combat cross-border diseases, and to standardize and harmonize quality assurance of laboratories.

6. Skills Development and Training

The project will include establishment of a regional training centre, formulation of joint training plans, and conducting joint human resource training assessments for regional training and capacity building. Short and long term training programmes for staff development in laboratory and diagnostic skills will be implemented and staff will have access to higher level professional training.

3.2.2 Generic Negative Impacts

Existing laboratories will be rehabilitated within existing compounds. Therefore, new and temporary access roads are unlikely to be required, and changes in natural ground slopes and landform are unlikely to occur. Nevertheless, the project will generate negative impacts associated with rehabilitation of existing laboratories and laboratory operation activities, including indirect works (sand mining, quarrying operations, etc. for supplying construction materials)

Many of the negative impacts from rehabilitation will be minor, short term and localised; while impacts from laboratory operation activities and medical waste could be adverse and long term, with spatial extent ranging between local, regional and global.

IMPACTS DURING PLANNING AND DESIGN

Most of the impacts during planning and design will relate to the laboratory design layout to ensure spacious, easy and safe working environment for staff. The design should allow for free, easy and safe movement of staff to work with infected material and provide for adequate infection control measures. The layout should consider minimal movement of people (other than the laboratory staff) in the working areas and should include adequate space for storage of disposable and re-usable materials as well as waste. Most important, the laboratory should be well ventilated.

Other impacts during planning and design will relate to activities for field investigations and surveying, during which minor destruction of trees and vegetation, loosening of soil as well as disturbance of micro-organisms might occur.

IMPACTS DURING CONSTRUCTION AND REHABILITATION

The impacts during construction and rehabilitation will be typical of any building construction works and will include the following:

1. Impacts on Soil

During construction, soil erosion will occur on construction sites as well as sites where construction materials will be mined. Soil exposure, breaking up, loosening, erosion and compaction will result from movement of heavy plant, equipment and vehicles on earth roads, around materials mining sites and around the construction sites. Loss of productive top soil will occur in areas where construction materials will be mined and where temporary access (to collect construction materials) may be required. These impacts will be localised, moderate, and short term

Soil contamination from construction wastes (e.g. cement, paints, fuels and lubricants) may occur during construction. Soil contamination may also arise from accidental or deliberate disposal of construction waste and chemicals. Soil contamination from construction wastes will be localised, minor and short term.

2. Vegetation

Trees and vegetation may be removed and destroyed during clearing of construction sites, access routes and during mining for construction materials. Use of burnt bricks for the project is likely to contribute indirectly to deforestation.

3. Landscape

Solid wastes from construction activities and packaging materials may contaminate the soil and deface the landscape. Careless disposal of solid waste may affect the existing scenery, and restrict peoples' movement. However due to the limited nature of the construction and rehabilitation activities, the impacts will be localised, minor, and short term.

4. Impacts on Surface Water

As a result of the loosening of soils due to movement of vehicles and mining of construction materials, sediments will be generated and will subsequently be washed away into drains and nearby streams, causing water pollution and siltation. Water pollution from construction wastes as well as on-site makeshift toilets may also occur. The impacts will be localised, moderate and short term.

The construction activities may lead to changes in natural drainage flow pattern of surface water and runoff, particularly if new laboratory facilities are to be constructed near streams and natural water bodies. Changes in natural drainage flow pattern are likely to occur due to construction of temporary drainage channels for protecting mining areas for materials, construction sites and temporary access roads. Clearing of vegetation in some areas may lead to increased runoff. Construction waste and rubble, if not disposed in designated places, is likely to lead to clogging of drainage systems and, in some places, creating stagnant pools of water where mosquitoes, flies and other insects might breed.

The nature of these impacts will be localised, short term and moderate due to the small nature of the construction and rehabilitation.

5. Air Pollution

Air pollution will arise from vehicle emissions, earthmoving equipment and dust. Air pollution from vehicle emissions will be short term, moderate, and localised

6. Socio-economic

People living in the neighbourhood of the project activities may temporarily lose access to water, electricity or telephone services, should these be accidentally damaged by the contractor during excavation. People may also be subjected to noise and vibration disturbances as well as temporary obstruction on roads and walkways. Slow movement of material haulage trucks as well as pedestrians around the construction sites may also lead to traffic congestion. Demolished waste materials could obstruct movement of people and vehicles as well as affect the general aesthetics of the surroundings. These socio-economic impacts will be temporal in nature, short term, and localised.

7. Health Impacts

During construction and rehabilitation, people will gather together and associate to accomplish the construction and rehabilitation tasks. Some of the people may come from places outside the neighbourhood. These gatherings and associations between migrants and local residents may lead to casual sexual relationships, thereby increasing chance of contracting and spreading STI and HIV and AIDS. Contractors working on or near the existing laboratories may also be exposed to TB or other infection.

IMPACTS DURING OPERATION AND MAINTENANCE

1. Impacts on Soil

Chemicals and detergents used in the laboratories during operation may be disposed on soil, thereby contaminating the soil. This is likely to take place in areas where there are no appropriate waste disposal systems and facilities.

2. Impacts on Surface Water

Water contamination may occur from laboratory waste, detergents and chemicals used in the laboratories during operation. Water contamination from waste, detergents and chemicals may cover large areas and may be long term.

3. Air Contamination

Air contamination may also take place from TB infected material along the patients' or TB specimen areas of movement. Chances of air contamination from TB infectious waste material or persons may be high, long term and may cover large areas where infected people or materials will be found.

4. Health and Safety

TB, infections are likely to occur where people are exposed to infectious material or persons. These infections may occur:

- a. in places where infected persons live together with others in crowded situations;
- b. in hospitals and laboratories where TB patients seek medical attention and give out specimens for examination;
- c. during transportation of specimens from the sample collection to delivery points;
- d. during sample culturing and examination in labs; and
- e. during handling and disposal of laboratory waste.

Impacts on safety of workers may arise from accidents in the laboratory and risks of fire. Health impacts could be major, long term and fatal, and may cover wide areas due to peoples' mobility.

5. General Environmental Impacts

Soil contamination and water and air pollution are likely to occur during waste transportation, treatment and disposal as follows:

- a. soil contamination and water pollution from waste accidental spills and leakages during temporary storage, transportation and disposal;
- b. air pollution from exposure of volatile waste to the atmosphere for long periods; and
- c. water pollution from leachate at disposal sites

Environmental impacts of soil contamination and water and air pollution are likely to arise from waste accidental spills and leakages, careless handling of waste and equipment, inappropriate collection and transportation practices, use of wrong equipment, inappropriate waste disposal practices at the disposal sites as well as lack of security leading to waste scavenging. Impacts of this nature (Annex 7) could be long term, fatal and could affect many people. Waste scavenging is a particularly serious matter in poor communities and especially among children.

IMPACTS DURING DECOMMISSIONING

Decommissioning entails closure of the auxiliary facilities and services such as quarry mines. Consideration of impacts of decommissioning is important so that on closure of these facilities, due regard is given to mitigate impacts of abandoned structures and equipment. Social impacts relate to staff that may be made redundant and equipment as well as infrastructure that may be abandoned.

Decommissioning impacts for a project of this nature are likely to be minor, localised and short term. Closure of laboratories and therefore retrenchment as well as abandonment of equipment and infrastructure is not expected to occur under the project.

IMPACTS FROM LABORATORY OPERATIONS

Negative impacts from operation of laboratories generally relate to exposure to infection at the various points of handling TB patients, laboratory specimens and laboratory waste.

To avoid or mitigate against exposure to infection, it is important to look at points of high risk to exposure, and to develop systems or mechanisms to reduce the risk. These systems or mechanisms would target patient and general public behaviour as well as methods for handling TB specimens and laboratory waste.

Apart from chemotherapy, general improvements in patient behaviour and in socioeconomic conditions of the public greatly contributes to control of spread of TB in the long term. In addition, care in handling of TB specimens and health-care waste, including laboratory waste will reduce chances of exposure to TB infection by laboratory staff, construction workers, and the public. Improvement in patient behaviour and socioeconomic conditions of the public can be achieved through training of laboratory staff and civic education of the general public. On the other hand, proper handling of TB specimens and laboratory wastes requires an understanding and control of the collection, storage, transportation, treatment and disposal methods of these specimens and wastes.

While collection and storage of laboratory specimens can be done and monitored following internationally established laboratory standards and procedures, laboratory wastes are handled differently from place to place depending on the types of waste and the available or affordable technologies. Management and monitoring of impacts from laboratory waste, for the East Africa Public Health Laboratory Networking Project can therefore be greatly improved by knowledge and consideration of the following:

1. Composition of Laboratory Waste

Laboratory waste generally comprises *non-risk health-care Waste, infectious waste and highly infectious waste*. Non-risk Health-Care Waste includes paper, cardboard, non-contaminated plastic or metal, cans or glass, leftover food etc. Also included in this category are items such as gloves, gauze, dressings and swabs, which have been used for medical care but are visually not contaminated with blood or body fluids of the patient. Sanitary napkins from maternity wards, even if contaminated with blood are also normally included in this category of waste. In general, Non-risk Health-Care Waste constitutes between 75% and 90% of the HCW generated by a medical institution.

Infectious waste consists of all viable biological and pathological agents, artificially cultivated in the laboratory. Cultures and stocks, dishes and devices used to transfer, inoculate and mix cultures of infectious agents belong to this category of waste. Laboratory

waste may also consist of anatomical and pathological waste, depending on the functions of the laboratory.

2 Quantities of Laboratory Waste

Determination of the amount of waste generated by a laboratory is very important as it helps to organise the flow of waste at each stage of handling the waste all the way to the treatment or disposal place. As it may be appreciated, the amount of waste generated by a laboratory can only be established through an assessment process conducted specifically for that particular laboratory. This is because the amount of waste generated during any particular period or at any particular time depends on several factors including but not limited to type and size of laboratory.

3 Handling, Storage and Collection

Packaging and storage of special health-care waste consists of primary packaging at the source and secondary packaging for transportation. For primary packaging, all special healthcare waste should be placed in leak-proof and disposable bags or containers. In addition, containers for sharps must be puncture proof and glass containers are unsuitable. PVC containers are not preferred for environmental protection reasons.

A colour code of either yellow or red should be chosen for all special HCW. For pathological waste, a contrasting and non-transparent colour should be used. For secondary transport packaging, leak-proof solid containers mounted on wheels should be used for easy transport. Colour-coding should follow the primary packaging code. The World Health Organization recommended colour-coding, to indicate the level of risk is as follows;

- General Health Care waste should be put in black bags;
- Potentially infectious or hazardous HCW should be put in yellow bags; and
- Sharps should be placed in rigid containers which are yellow or with yellow stickers.

To be consistent, all bag holders (preferably to be the same as 'pedal bins') and transporting trolleys should be black for general waste and yellow for hazardous waste. Separate trolleys should be used for general waste and potentially infectious waste.

In-house storage may consist of two levels:

- A well ventilated room at or near the ward, where collectors will take the waste, and
- A centrally located air-conditioned storage room, where temperatures can be kept low, until the waste is picked up for treatment.

Personnel handling HCW must be protected with appropriate personal protective clothing (mop caps, heavy duty gloves, acid resistant coverall and plastic aprons, safety goggles and safety shoes).

4 Treatment

It may be safer for some wastes to be treated or pre-treated on site. Laboratories are uniquely capable of treating some wastes to eliminate hazards or reduce the amount of waste for disposal, thereby cutting costs. However, the technologies are rather sophisticated and capital intensive; requiring elaborate maintenance capacity.

Treatment technologies for laboratory waste are similar to those for health-care waste and these include:

- Carbon Adsorption

- Evaporation
- Elementary Neutralization
- Autoclaving
- Microwave and Radio wave Irradiation
- Chemical disinfection and
- Incineration

Land deposition or Land filling is considered as a “bottom of the list” option for disposal of untreated HCW, and is only recommended when the economic situation of the country does not permit access to environmentally safer technologies, such as an incinerator or the other previously described options. However caution is to be taken because in most cases what people call landfills are not real landfills but dump pits where waste is just dumped without covering the waste with soil. In all cases, waste dumping without land fill is not recommended regardless of category/ classification of the waste.

Details of these treatment methods are described in the Health-Care Waste Management Plans/Laboratory Waste Management Plans prepared separately for each of the participating countries.

LABORATORY WASTE MANAGEMENT AND MONITORING

Preparation of the Laboratory Waste Management Plan considers exposure of people to infection in public places and in the laboratories; as well as the types of wastes and the handling, treatment and disposal processes. A typical laboratory management and monitoring plan, listing key issues to be managed and monitored is included in Appendix 7. The appendix (table) includes issues to be managed and monitored (listed in the first column); and the responsible authority for implementing and monitoring, the responsible authority for monitoring and the frequency of monitoring.

Implementation and monitoring of the Laboratory Waste Management Plan should fall within the overall administration of the HCWMP. In this regard, each laboratory would form a sub-committee of the Hospital Committees to be in charge of direct implementation of the plan. The sub-committee would report to and be monitored by the District Committee of the HCWMP.

CHAPTER 4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

4.1 ENVIRONMENTAL AND SOCIAL IMPACT MITIGATION

Environmental and social impact mitigation for the East Africa Public Health Laboratory Networking Project considers generic measures to reduce the negative environmental effects associated with implementation (construction, expansion, rehabilitation, operation and decommissioning) of the project activities. These generic measures are provided in the Environmental Management Plan (EMP), Table 4.1, which includes broad measures for laboratory wastes management. A more detailed EMPP for laboratory wastes is given in Annex 7.

The purpose of the (EMP) is to ensure that the identified environmental and social impacts are mitigated, controlled or eliminated through planned activities to be implemented throughout the life of the East Africa Public Health Laboratory Networking Project.

Basically the EMP:

- 1) Lists the potential environmental impacts;
- 2) Provides the mitigation/enhancement measures against each impact;
- 3) Assigns the responsible institutions to carry out the mitigation measures;
- 4) Proposes dates by or during which the mitigation measures must be carried out and;
- 5) Gives an estimate of the cost for implementing the mitigation measures

For the Regional Health Systems Strengthening and TB Support sub-projects, the specific EMPs and their implementation will be based on modifications to Table 4.1 to suit the specific sub-project activities on the specific sites.

Activities and impacts relating to Laboratory Waste Management would be based on the Laboratory and Health-Care Waste Management Plans from which key elements to be managed and monitored would be drawn up. A typical plan, included in Appendix 6 has, in the first column, the issues to be considered for management and the other columns indicate the responsible authority for implementing the issues, the responsible authority for monitoring and the frequency of monitoring.

4.2 GENERIC ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Table 4.1 should be considered as the main frame to guide the management of specific potential impacts of the Regional Health Systems Strengthening and TB Support Sub-project activities. The generic or typical environmental impacts in Table 4.1 were developed based on the general project description, public consultations and professional judgment, with respect to the likely project activities. The list of impacts is by no means exhaustive.

Table 4.1: Generic Environmental and Social Management Plan

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
During Planning Surveying and Design				
Soil	Exposing and loosening of soil	Limit extent of site and vegetation clearing for the preliminary activities	Consultant	N/A
Vegetation	Destruction of trees and vegetation	Limit extent of site and vegetation clearing for the preliminary activities	Consultant	N/A
Health (ergonomics)	Infection of staff due to inappropriate working conditions	Design laboratory to include adequate space and ventilation	Consultant and Client	N/A
	Accidents	Design laboratory to include adequate space for free and safe movement	Consultant and Client	N/A
Overall environmental and social impact management	All impacts	Preparation and implementation of simple environmental and social mitigation measures	MoH	20,000
	All impacts	Preparation of Environmental Impact Assessment Report, if any	MoH	30,000
During Construction				
Throughout the entire construction period	All impacts due to environmentally and socially unsustainable construction practices	Use of Environmental Guidelines for Contractors to ensure environmentally and socially sustainable construction practices	Contractor	
Soil	Soil exposure,	Limit extent of vegetation clearing on	Contractor	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	loosening, breaking up and erosion	<p>construction sites, materials mining sites, working areas and service roads</p> <p>Control movement of vehicles, heavy plant and equipment on earth roads and working sites</p> <p>Regular use of water sprays and compacting soil on earth roads and around working areas</p>		<p>N/A</p> <p>15,000.00</p>
	Soil contamination from cement, paints, lubricants, and fuels.	Store and contain rehabilitation and construction materials on lined surfaces, in covered areas.	Contractor	N/A
Vegetation	Removal and destruction of trees and vegetation	<p>Limit extent of trees and vegetation removal</p> <p>Re-plant trees and vegetation after construction</p>	Contractor	<p>N/A</p> <p>2,000.00</p>
Landscape	Solid waste from construction and packaging materials such as rubble, cement bags, paint tins and other materials will pollute and deface land.	Collect and dispose wastes in designated disposal sites as required by the Local Authority	Contractor	N/A
Surface water	Change in natural drainage flow pattern	Provide adequate and effective drains leading to natural drainage systems	Contractor	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	and surface water runoff			
	Changes in flow of surface water runoff due to clearing of vegetation	Provide effective drains to direct surface water to natural drainage systems	Contractor	N/A
	Drainage clogging resulting in impeded water flow and creation of stagnant water pools	Keep all drains clear of silt and debris and backfill voids regularly and after construction	Contractor	N/A
	Water contamination from rubble, cement, paints, lubricants and fuels as well as makeshift toilets	Collect and dispose of wastes in designated disposal sites as required by the Local Authority	Contractor	N/A
	Surface water siltation due to loosening of soils by movement of vehicles and due to mining of materials	Use water sprays on roads and construction sites and compact loose soils.	Contractor	Provided for under "soil" above
	Water pollution from construction wastes as well as on-site makeshift toilets	Collect and dispose of wastes in designated disposal sites as required by the Local Authority Provide appropriate and approved temporary toilets	Contractor	N/A N/A
Air	Air pollution from emissions from construction machinery	Maintain construction machinery regularly as recommended by dealers	Contractor	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	and from dust	Use water sprays on roads and construction sites and compact loose soils.		Provided for under "soil" above
Social / economic	Temporary loss of access to services such as water telephones and electricity due to possible damage by contractor	Identify location of water pipes, telephone and electric cables before construction	Contractor	N/A
	Noise & vibration disturbances due to movement of heavy plant and equipment	Construction and rehabilitation works to be during official government working hours. Vehicles, plant and machinery to be regularly maintained as recommended by dealers	Contractor	N/A
	Disturbance of traffic and movement of people	Divert traffic with appropriate directional signs, where appropriate	Contractor in consultation with Traffic Directorate	N/A
	Temporary obstruction of walkways due to road and sidewalk barriers.	Ensure free and safe passage of pedestrians with adequate and appropriate directional signs	Contractor	N/A
	Potential for accidents due to slow movement of heavy vehicles, general traffic and pedestrians near the construction sites	Provide alternative routes and passages with adequate and appropriate directional signs	Contractor	N/A
	Aesthetics	Remove and dispose wastes regularly in	Contractor	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
		appropriately designated disposal site. Use shields to isolate and enclose construction sites.		
Health and Safety	Accidents to staff and public on construction sites and project activity areas	Provide appropriate protective clothing for staff and ensure they use them Provide appropriate signs for staff and public. Provide first aid boxes. Acquire appropriate workman's compensation and insurance for staff	Contractor	N/A
	Spread of TB, STIs, HIV and Aids	Conduct awareness meetings and provide condoms to staff	MOH in collaboration with National Aids Commission	2,000.00
During Operation and Maintenance				
Soil	Soil contamination from detergents and chemicals	Use appropriate waste drainage system leading to septic tank or public sewerage facilities; as provided by contractor	Client	N/A
	Soil contamination from accidental waste spills and leakages during temporary storage, transportation and disposal	Use recommended storage and transportation equipment and methods		
Water	Water pollution from detergents and	Use appropriate waste drainage system leading to septic tank or public sewerage facilities; as	Client	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	chemicals	provided by contractor		
	Water pollution from accidental waste spills and leakages during temporary storage, transportation and disposal	Use recommended storage and transportation equipment and methods		
	Ground water pollution due to leachate (contaminated liquid waste) at disposal site	Proper selection of disposal sites Adhering to recommended waste disposal practices.	MOH Local Authority	N/A
Air	Air contamination from TB infectious persons and waste	Ensure adequate ventilation in laboratories and treatment areas Ensure proper handling of specimen and laboratory waste by staff and contracted personnel Ensure that staff know and use the recommendations in the HCWMP Conduct staff and public awareness campaigns quarterly	MOH	15,000.00
	Air pollution from smoke and volatile organic compounds	Use recommended laboratory practice to avoid release of gasses and organic solvents to atmosphere	MOH	Include in Laboratory waste

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	from waste, incinerators and refuse tip fires	<p>Use recommended waste storage and transportation practices to avoid release of volatile compounds into air</p> <p>Cover waste regularly with soil at the refuse tip as per recommended disposal practices</p> <p>Use recommended type of incinerator and operate incinerator as recommended by manufacturer</p> <p>Capture and treat incinerator flue gasses as recommended by manufacturer</p>		management plans
		Provide adequate security and confinement of refuse disposal sites	MOH	Include in Laboratory waste management plans
Health and Safety	Transmission of diseases and spread of STIs and HIV and Aids	<p>Conduct civic health education to patients and the general public and implement the Health Care Waste Management Plan</p> <p>Establish recommended laboratory specimen collection and transportation systems as recommended in the HCWMP/LWMP</p> <p>Dispose off HCW and LW in designated places, following approved disposal methods,</p>	MOH	Provided for in "Air" above
	Spread of TB in communities, hospitals and laboratories; during specimen handling and transportation; in		MOH	As provided for in HCWMP and LWMP

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
	laboratories and on disposal sites	as recommended in the HCWMP/LWMP Secure all waste throughout the waste management chain and provide adequate security to prevent scavenging Provide appropriate protective clothing to all staff throughout the waste management chain to prevent infection		
	Accidents and risks of fire	Provide protective clothing and fire fighting equipment Raise awareness on staff about accidents and fire risks bi-annually Conduct regular fire drills as recommended	MOH	50,000.00 6,000.00
During Decommissioning (backfilling and restoring mining sites for construction materials)				
Water	Creation of stagnant water pools on mining sites for materials	Backfill all voids and mined areas	Contractor	N/A
	Surface water siltation from backfilling and restoration activities	Use water sprays on roads and working sites and compact loose soils.	Contractor	N/A
Health and safety	Accidents	Provide appropriate protective clothing for staff and ensure they use them Provide appropriate signs for staff and public. Provide first aid boxes.	Contractor	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Responsible persons/Institution	Estimated Cost per Site
		Acquire appropriate workman's compensation and insurance for staff		

CHAPTER 5 ENVIRONMENTAL AND SOCIAL MONITORING

5.1 OBJECTIVES OF ENVIRONMENTAL AND SOCIAL MONITORING

The objectives for environmental and social monitoring are to:

- I. Provide information on the "implementation" of the environmental and social screening process and determine whether the recommendations of the environmental and social screening form as well as the EA reports, if any, have been successfully implemented;

Alert the ministry of health staff to provide timely information about the environmental and social screening process as outlined in the ESMF. This will facilitate changes to be made in the implementation of the sub-projects where appropriate;

- II. Make a final evaluation, to determine whether the mitigation measures designed for the sub-projects have been successful. This evaluation compares the pre-sub-project environmental and social conditions with that after completion of the sub-project, to determine whether the original environmental and social conditions have been restored, improved or made worse;
- III. Ensure that the operation and maintenance activities are being carried out in a manner that protects the environmental and social conditions as well as the health and social wellbeing of the workers including the general public (Annex 7);
- IV. Ensure that all activities for laboratory health-care waste are implemented in accordance with the Health-care Waste Management Plans/Laboratory Waste Management Plans and
- V. Ensure that changes if any, to the ESMF and additional training and capacity building required to improve the performance of the framework are implemented.

The environmental and social monitoring plan (example given in Table 5.1) provides a link to the mitigation measures in the EMP and specifies the activities to be undertaken to ensure that the mitigation measures are efficiently, effectively and timely implemented.

To assess whether the goals of the environmental and social management plan are being met, the environmental monitoring plan will indicate parameters to be monitored, institute monitoring milestones, and ensure resources necessary to carry out the monitoring activities are provided.

Specifically, the environmental and social monitoring plan provides:

- 1) actions or mitigation measures to be undertaken;
- 2) a description or list of parameters to be measured and monitoring locations where appropriate;
- 3) indicators to measure and verify level or extent of implementation of the mitigation measures;
- 4) frequency of measuring and verifying the indicators; and
- 5) institutions of persons responsible for carrying out the monitoring

Table 5.1: Example of an Environmental and Social Monitoring Plan

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
During Planning Surveying and Design						
Soil and Vegetation	Exposing and loosening of soil	Limit extent of site and vegetation clearing for the preliminary activities	Area cleared of vegetation as a percentage of total working area	Once during surveying	District Environmental Management Officer	300
	Destruction of trees and vegetation					
Ergonomics (Health and Accidents)	Infection of staff due to inappropriate working conditions	Design laboratory to include adequate ventilation and space for free movement	Statutory approval of plans and designs Approval of plans and designs by users and key stakeholders	Twice during meeting for plan scrutiny and approval	District and Local Assemblies Ministries responsible for Health, Environment and labour District / City or Town Planning Committees	2000
Overall impact management	All impacts	Preparation of simple	Approved environmental	Once to approve environmental	Ministry responsible for	5000

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
		environmental and social mitigation measures	management plan	management plan	Environment	
		Preparation of Environmental Impact Assessment Report, if any	Approved environmental assessment reports	Once to approve environmental assessment reports	Ministry responsible for Environment	5000
During Construction						
Water Pollution	Water pollution from construction wastes as well as on-site makeshift toilets	Collect and dispose wastes in designated disposal sites as required by the Local Authority Provide appropriate and approved temporary toilets	Number of times waste is collected and disposed of on designated sites Number of approved temporary toilets	Monthly	District Environmental Management Officer District Health Officer	300
Trees and vegetation	Destruction of trees and	Limit extent of site and vegetation	Total area cleared of vegetation as a	Twice during site clearing and	District Environmental	300

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
	vegetation	clearing	percentage of actual built up area		Management Officer	
Health and social	Spread of TB, STIs, HIV and Aids	Conduct awareness meetings and provide condoms to workers	Number of awareness meetings conducted Number of condoms distributed	Monthly for six months (approximate construction period)	District Health Officer	300
During Operation						
Health and Social	Infection of staff due to inappropriate working conditions	Conduct awareness meetings and provide condoms to staff	Number of awareness meetings conducted Number of workers complaining from coughs and chest pains	Monthly	District Health Officer	300
Health and Social	Accidents and risks of fire	Provide protective clothing and fire fighting equipment	Number of workers provided with and using protective	Quarterly	District Labour Office	1000

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
		<p>Raise awareness on staff about accidents and fire risks bi-annually</p> <p>Provide appropriate signs for staff and public.</p> <p>Provide first aid boxes.</p> <p>Acquire appropriate workman's compensation and insurance for staff</p>	<p>clothing</p> <p>Number of awareness meetings.</p> <p>Number of posters and notices displayed in appropriate places</p> <p>Number of fire drills conducted</p> <p>Number of staff appropriately compensated for accidents</p>			
Air	Air contamination from TB infectious persons and waste	<p>Ensure adequate ventilation in laboratories and treatment areas</p> <p>Ensure proper handling of specimen and laboratory waste by</p>	<p>Number of complaints form staff about smell and poor ventilation</p> <p>Number of cases of breach of procedures for</p>	Quarterly	<p>District Health Officer</p> <p>District Health Officer</p>	1000

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
		<p>staff and contracted personnel</p> <p>Ensure that staff know and use the recommendations in the HCWMP</p> <p>Conduct staff and public awareness campaigns quarterly</p>	<p>handling specimen and laboratory waste</p> <p>Percentage of workers knowledgeable of HCWMPs</p> <p>Number of awareness campaigns conducted</p>		<p>District Health Officer</p> <p>District Health Officer</p>	
During Decommissioning (backfilling and restoring mining sites for construction materials)						
Water	Creation of stagnant water pools	Backfill all voids and mined areas		Twice during restoration of sites	District Health Officer	500
	Surface water siltation	Use water sprays on roads and working sites and compact loose soils.		Twice during restoration of sites	District Health Officer	N/A
Health and safety	Accidents	Provide appropriate protective clothing for staff and ensure they use them		Twice during restoration of sites	District Health Officer	N/A

Project Stage / Environmental Components	Impacts	Mitigation Measures	Monitoring Indicator	Frequency of monitoring per site	Institution to Monitor	Cost per Activity (US D)
		<p>Provide appropriate signs for staff and public.</p> <p>Provide first aid boxes.</p> <p>Acquire appropriate workman's compensation and insurance for staff</p>				

5.2 MONITORING INDICATORS

Monitoring indicators are a very important part of the monitoring plan. The indicators have to be:

- 1) Specific to avoid ambiguity of items being measured;
- 2) Quantifiable to be easily translated into units of measurement and to facilitate verification

Indicators can be measures in units of, for example, time (duration), frequency (how often), area or volume (size of land cleared) and quantity (how many) quality (magnitude, how much, analytical strength).

Two main socioeconomic indicators, by which to evaluate the successful implementation of the environmental management plans are:

- the pre-subproject environmental state has been maintained or improved; and
- the beneficiary communities remain supportive of the project.

The following are some of the general parameters and verifiable indicators that could be used to measure the project's overall success in terms of implementing the intended mitigation plans and achieving the desired environmental and social performance.

- Number of sub-projects adopted after screening as required by the ESMF;
- Percent improvement or degradation in the environmental health of the communities using or affected by the sub-projects;
- Percent improvement or degradation of bio-physical state of the environment;
- Number and types of the key benefits to the community, from the project as a result of using the ESMF and the screening process;
- Percent decrease in patients' fatal cases, as a result of adoption of safeguard guidelines. Efficiency of sub-projects' maintenance and operation performance;
- Number of environmental resource persons on Technical Planning Teams and District Management Teams who have successfully received EIA training in screening methods etc.; and

Specific environmental and social indicators target the mitigation measures in the Environmental Management Plan. Examples of specific indicators that could be used for the East Africa Public Health Laboratory Networking Project are provided in Table 5.2

Table 5.2: Sample of Indicators to be used for the East Africa Public Health Laboratory Networking Project

Mitigation Measures*	Monitoring Indicator
Limit extent of site and vegetation clearing	Total area cleared as a percentage of actual built up area
Limit extent of topsoil removal.	Total surface area scraped of top soil as a percentage of actual built up surface area
Replace topsoil after construction	Volume of surface area replaced as a percent of volume removed during site clearing
Provide drains to bypass construction sites	Number or length of effective drains constructed
Use water sprays and compact loose soils on construction area and roads	Total area sprayed with water and compacted
Store and contain construction materials on lined surfaces.	Surfaced materials storage area as a percent of storage area not surfaced
Collect and discharge wastes in designated disposal sites	Number of trips or frequency of carting wastes to the designated disposal sites
Terrace and level grounds and backfill all voids after construction	Terraced steep slope area as a percentage of total steep slope area
Keep all drains clear of silt and debris and backfill voids regularly and after construction	Number of blocked drains and open pits
Provide effective drains; remove and dispose of contaminated water in designate places	Quality of water with respect to contamination from the project activities
Construct standard pit latrines with well designed soak away pits	Number of functional pit latrine in relation to number of workers
Maintain construction machinery regularly as recommended by dealers	Records of vehicle maintenance or number of complaints against noise or pollution
Identify location of water pipes, telephone and electric cables before construction	Number of service facilities identified and verified by the utility providers in the project area
Construction to be during official government working hours.	Number of complaints against noise from the construction activities
Provide alternative routes and passages with appropriate directional signs	Number of complaints on slow traffic caused by the project activities. Number of signs in appropriate locations as recommended by the traffic or city authorities
Use shields to isolate and shield construction sites.	Length of sides exposed to public as a percentage of shielded sides of the construction area
Provide protective clothing and safety and fire safety equipment and ensure they are properly used	Number of workers provided with and using protective clothing and safety equipment Number of fire drills and safety awareness meetings conducted
Conduct awareness meetings on TB and HIV and Aids infections; and provide condoms	Number of awareness meetings conducted.
Ensure that staff know and use the	Percentage of staff having attended awareness meetings to the total staff employed

* Mitigation measures taken from the EMP

Mitigation Measures*	Monitoring Indicator
recommendations in the HCWMP	Number of cases of breach of procedures for handling specimen and laboratory waste Percentage of workers knowledgeable of HCWMPs
Ensure proper handling of specimen and laboratory waste by staff and contracted personnel	Number of cases of breach of procedures for handling specimen and laboratory waste
Provide adequate ventilation in laboratories and treatment areas	Number of complaints on poor ventilation by staff and people using the laboratories and treatment areas Number of complaints against smell and coughs

5.3 MONITORING FOR IMPLEMENTATION

Environmental and social monitoring and reporting procedures will ensure early detection of conditions that necessitate particular attention or modification, to achieve the desired levels of impact mitigation at any particular time during project implementation. Monitoring and reporting will provide information on the progress and results of mitigation.

Monitoring for implementation of the sub-project activities will facilitate a systematic measurement of how the sub-projects are being implemented. This will form part of the overall supervision of sub project implementation. It will also ensure that contractual agreements are being adhered to, in accordance with the approved designs; and that no unforeseen negative impacts are occurring as the result of sub project implementation. Environmental monitoring needs to be carried out during the construction as well as operation and maintenance of the sub-projects.

The LGA's Environmental Officer, with the support of the project staff will be responsible for the day to day monitoring and reporting of feedback to the LGA's committee responsible for environment, throughout the life of the sub-project. Specific attention is to be placed on monitoring of environmental management and the civil works contractor during construction as well as monitoring of the implementation of environmental and waste management plans during operation and maintenance. Monitoring reports will be submitted to the District Council and the ministry or institution responsible for environmental matters.

The environmental officer at the district will undertake compliance monitoring to check whether prescribed actions have been carried out. In close collaboration with the sub-project implementers, he/she will ensure that the monitoring plan for the individual sub-project is implemented as planned. The environmental officer at the district, in collaboration with the District Management Team, will consolidate the sub-project monitoring reports and submit them to the District Council and the institution responsible for environmental matters.

CHAPTER 6 ENVIRONMENTAL AND SOCIAL SCREENING

6.1 ENVIRONMENTAL AND SOCIAL SCREENING PROCESS

The environmental and social screening process helps to:

- assess whether sub-projects are likely to have potential negative environmental and social impacts;
- determine appropriate mitigation measures for activities with significant adverse impacts, for incorporating them into the sub project design;
- review and approve sub-project proposals; and
- monitor environmental parameters during project implementation.

The extent of environmental and social work required to mitigate adverse impacts for the sub-projects, will depend on the outcome of the screening process. For the East Africa Public Health Laboratory Networking Project, environmental screening will be done by completing the Environmental and Social Screening Form attached as Annex 1. Steps for the environmental and social screening process are:

- (i) completion of the screening form (Annex 1);
- (ii) assignment of environmental category as per OP 4.01;
- (iii) carrying out of appropriate level of environmental work as per recommended environmental category;
- (iv) review and approval of screening results;
- (v) review and approval of EIA reports, if any;
- (vi) public consultations during the environmental and social screening process; and
- (vii) environmental monitoring

6.2 COMPLETING THE ENVIRONMENTAL AND SOCIAL SCREENING

FORM

The officer responsible for health at the district will be responsible for completion of the Environmental and Social Screening Form. He/she will be assisted by the officer responsible for environmental matters at the district (representing LGA's environmental review committee at the district level).

The sub-project Environmental and Social Checklist in Annex 2 will guide the officer responsible for health at the district, to identify appropriate mitigation measures for project activities.

Construction and rehabilitation of laboratories would take place at existing facilities or on land owned by government, therefore, no land will be acquired and involuntary resettlement will not take place.

6.3 ASSIGNING APPROPRIATE ENVIRONMENTAL CATEGORY

The screening process will lead to categorization of sub-projects (i.e. safeguard category of either C, B1, or B2). Hence the action to be taken for all the sub-projects of the East Africa Public Health Laboratory Networking Project will be assigned to either of the following:

- no further action, if the sub-project has no significant impacts on the environment (category “C”); or
- simple mitigation to be carried out for sub-projects likely to result in a few minor environmental problems that can easily be mitigated (category “B1”); or
- Environmental Impact Assessment for sub-projects that may create environmental problems requiring frequent site visits or construction modification to minimize or eliminate impact (category “B2”)

6.4 CARRYING OUT OF APPROPRIATE LEVEL OF ENVIRONMENTAL WORK

For “B1” category projects with minor environmental impacts, the officer responsible for health at the district will determine simple mitigation measures, using Annex 2, (Environmental and Social Checklist); and prepare an Environmental Management Plan.

Where results of the environmental and social screening process indicate the need to carry out an EIA (category B2); the procedure for preparation of the EIA, up to issuing of an EIA clearance (as provided for in the EIA procedures and guidelines and the environment management regulations of the participating country) shall be followed. MoH will engage an EIA qualified consultant, in line with the applicable procurement procedures for consultants.

The East Africa Public Health Laboratory Networking Project will pay for the EIA study, to be done by the approved consultant and will also pay for the review and approval costs charged by the institution responsible for environmental matters, to issue the environmental clearance.

6.5 REVIEW AND APPROVAL OF CATEGORY “B1” SUB-PROJECTS

For “C” and “B1” category sub-projects, the Environmental Review Committee at the district will review the screening results as well as the Environmental Checklists, to ensure that an appropriate category has been assigned and that all environmental and social impacts have been identified and a mitigation management plan proposed.

6.5.1 Approval

The committee will then make recommendations to the Directorate of the City, Town or District Assembly to approve the screening results for environmental clearance and for project implementation. The decision and basis for approval of the screening results and project implementation will be communicated to the ministry or department responsible for environmental affairs, for information. Once the sub-project has been cleared by the City, Town or District Assembly, MoH will be informed for funding the sub-project activities to proceed.

6.5.1 Disapproval

Where the Environmental Review Committee finds that the submitted sub-project is not consistent with the requirements of the environmental screening form and the environmental checklist, the Region Health Systems and TB Support Project would be requested to make appropriate modifications. Thereafter, the sub-project team will, once again, be subjected to another screening process until it conforms to the environmental requirements. The sub-project will then be submitted for environmental clearance. Any proposed sub-projects that

do not comply with the requirements of this ESMF, the screening form and the World Bank safeguards policies will not be cleared for approval.

6.6 REVIEW AND APPROVAL OF EIA REPORTS

The East Africa Public Health Laboratory Networking Project cannot finance any sub-projects that have been categorized as "A" because the project has been categorized as "B". However where an EIA has to be carried for B2 sub-projects, the ministry or department responsible for environmental affairs will review the EIA reports, to ensure that all environmental and social impacts have been identified and that effective mitigation measures have been proposed, before issuing the environmental clearance certificate. Under the East Africa Public Health Laboratory Networking Project, any category "A" sub-projects cannot be funded because the parent project has been assigned the environmental category B.

6.7 PUBLIC CONSULTATION DURING SCREENING PROCESS

Public consultations are critical in preparing an effective and acceptable sub-project. All sub-project applications, planning reports and appraisal reports have to be available for public examination at suitable and accessible locations, including the district council offices and the offices of the MoH.

Consultation with interested parties, relevant standing committees of the Local Government Authorities and Townships, and as may be provided for in the environmental management regulation or Act, shall be appropriately involved or consulted.

The consultations should assist to identify key issues and determine how the concerns of all parties will be addressed. To facilitate meaningful consultations, the East Africa Public Health Laboratory Networking Project team and the consultant will provide all relevant material and information concerning the sub-projects in a timely manner, prior to the consultation. Depending on the extent of public interest in the potential impacts of the sub-projects, a public hearing may be requested, to better convey public concerns and to facilitate elaboration of the sub-project activities and their impacts. The MoH will produce and distribute copies of the minutes to offices at the district/municipal councils and other civil societies in the community, as appropriate. A summary of the outcome of this public consultation or disclosure meeting will be posted at appropriate public places.

Any interested individual or group has the right of appeal, if dissatisfied with the decision reached at any stage in the screening or EIA process. The appeal process will be according to the environmental management regulation or Act.

Once the sub-project has been reviewed and cleared, key stakeholders and the general public will be informed about the results of the review. The Environmental Screening or results, together with any impact mitigation plans will therefore be disclosed in appropriate public places, including at the offices of Regional and District Commissioners as well as the Info-shop of the World Bank, as may be necessary.

CHAPTER 7: CAPACITY BUILDING MEASURES FOR THE EAST AFRICA PUBLIC HEALTH LABORATORY NETWORKING PROJECT

7.1 STRENGTHENING OF SECTOR ENVIRONMENTAL AND SOCIAL UNITS

The ministry responsible for health should (in line with requirements of the environmental management regulation or Act) strengthen its Environmental and Social Unit (ESU) within the ministry of health. This unit will among other things, be responsible for:

- (a) ensuring environmental compliance of the ministry, as required by the Act;
- (b) ensuring smooth implementation of the HCWMP/Laboratory Waste Management Plan;
- (c) ensuring all environmental matters falling under the Ministry (including those of the East Africa Public Health Laboratory Networking Project as reflected in the ESMF) are implemented and submitted to the Directorate responsible for Environment; and
- (d) coordinating with the institution responsible for national environmental management, on environmental matters, with respect to shared responsibility

7.2 CORE FUNCTIONS OF THE ESU

Among other issues, the Environmental and Social Unit shall develop and promote a clear understanding of environmental management requirements, for the construction, operation and maintenance activities of the East Africa Public Health Laboratory Networking Project. The Unit will assist the Project Management Unit to ensure that appropriate actions concerning all aspects of environmental management (especially screening, and mitigation management) are included in future contracts for the sub-projects. The unit will also monitor implementation of the NHCWMP/Laboratory Waste Management Plan. In this respect, the Project Management Team will be able to design and implement monitoring programs to ensure compliance with environmental obligations.

The Environmental and Social Unit will be closely guided by the recommendations of this ESMF, provisions of the national environmental regulation or Act and the guidelines for EIA, to develop their operating guidelines or policy. These operating guidelines will include:

- Measures for sensitization of top level management on the importance of environmental management, as required by the ESMF and the national environmental regulation; to foster management's technical, human resource and financial support;
- Identification of appropriate representation to be responsible for environmental matters at the regional, city, district and town levels. As far as feasible, the existing staff at these administrative levels (e.g. the District Environmental Management Officer and/or the District Health Officer) should be used; and
- Development of environmental and social capacity within the ministry through capacity building and training of the staff.

The proposed guidelines will detail the regulations and procedures for:

- Screening of environmental sub-projects;
- Determination of the level of environmental and social work for sub-projects;
- Development of Terms of Reference for EIA including identification and recruitment of suitably qualified consultants for the studies

- Appraisal and approval of Screening Forms and EIAs and ensuring that the EMPs are included in the tender and contract documents for sub-projects;
- Monitoring implementation of the HCWMP/Laboratory Waste Management Plans;
- Monitoring contractors' compliance with the requirements of the ESMF, the Screening Form, Environmental Guidelines for Contractors and the EMP during construction, operation and maintenance;
- Designing and implementing training programmes for environmental and social management.

The regulations and procedures developed as outlined above would comprise initial stages for establishment of corporate environmental management systems, which should lead to sustained compliance with the national environmental requirements. Therefore it is very important for top level management to fully support these initiatives financially, materially and in terms of human resource requirements.

7.3 TRAINING

Personnel responsible for implementing the environmental activities should be trained and enabled to manage Environmental Screening and Environmental Impact Assessment by either internal staff or consultants. They should also be trained in the implementation and monitoring of the HCWMP/Laboratory Waste Management Plans.

Regular in-service training on environmental management and HCWM has to be provided at various levels in the Ministry. These trainings can start with training of trainers within the Ministry. The trainers would then deliver trainings on a regular basis to existing and new staff of the ministry responsible for health. The national environmental management authority may be used to provide or assist in providing the initial training of trainers; and staff of the ministry responsible for health or a consultant may facilitate training in Health Care Waste Management.

The general objective of the training and awareness programmes for implementation of the ESMF and the HCWMP would be to:

- Training district level and project staff to be able to:
 - Complete the screening form (Annex 1);
 - Complete the environmental and social checklist;
 - Assign environmental categories as per OP 4.01;
 - Conduct public consultations during the environmental and social screening process;
 - Review and approval of screening results;
 - Carry out appropriate level of environmental work as per recommended environmental category;
 - Develop specific EMPs, Laboratory Waste Management Plans/ HCWMP;
 - Appreciate Environmental Impact Assessments;
 - Select, recommend and supervise appropriate contractors to conduct EIAs;
 - Review and approve EIA reports, if any;
 - Conduct environmental monitoring
 - Monitor implementation of the EMP and Environmental Guidelines for Contractors by the civil works contractor;

- Monitor implementation of laboratory environmental work and Health Care Waste Management activities; and
- Prepare sub-project interim and final environmental and HCWM evaluation reports.
- Sensitize representatives and leaders of community groups (who will in turn relay messages to their communities) on the implementation and management of the mitigation measures; and on their roles in achieving environmental sustainability; and to sensitize the committees on linkages between environmental and social impacts and health; as well as on the HCWMP.

In addition to the above training, it is recommended that exchange visits to other participating countries be undertaken by staff representatives of the ministry responsible for health, local government and the national environmental authority to learn and share how environmental and health care waste management of their project is handled and to draw lessons that can be applied in their own situation.

7.4 PROPOSED AREAS OF TRAINING AND COSTS

The proposed areas of training would be based on the topics outlined in Table 7.1 and training modules would be prepared and delivered to focus on the topics at the estimated costs indicated in Table 7.1.

Table 7.1: ESIA and HCWM Training Areas for Stakeholders of the Project

Type of training, target group and training duration	Training Elements	Cost per session (\$)
Training ESU staff and project staff of the ministry responsible for health 2 days	<ul style="list-style-type: none"> ▪ Introduction to the East Africa Public Health Laboratory Networking Project ▪ Relevant environmental legislation and World Bank Safeguards and compliance requirements ▪ Importance of environmental management and health care waste management ▪ Environmental, social and economic impacts of the East Africa Public Health Laboratory Networking Project and on health ▪ Introduction to ESMF, EMP and Screening Form for the East Africa Public Health Laboratory Networking Project and the HCWMP <ul style="list-style-type: none"> ○ role of various players in implementation and monitoring of the EMP, Laboratory Waste Management Plans/ HCWMP; ○ conducting or supervising the screening process; ○ Key elements of Environmental impact assessments ○ EIA Review and Approval Process; ○ selecting and supervising an appropriate 	15,000

	<ul style="list-style-type: none"> contractor for EIA ○ monitoring implementation of the EMP and Environmental Guidelines for Contractors by the civil works contractor ○ monitoring implementation of the Laboratory Waste Management Plans/HCWMP ○ preparing sub-project interim and final evaluation reports; and ▪ General coordination of laboratory environmental work and Health Care Waste Management activities 	
<p>Training district level staff</p> <p>2 Days session</p>	<ul style="list-style-type: none"> ▪ Introduction to the East Africa Public Health Laboratory Networking Project ▪ Relevant environmental legislation and World Bank Safeguards and compliance requirements ▪ Importance of environmental management and Health Care Waste Management, ▪ Environmental, social and economic impacts of the East Africa Public Health Laboratory Networking Project and on health ▪ Introduction to ESIA and EMP for the East Africa Public Health Laboratory Networking Project <ul style="list-style-type: none"> ○ role of various players in implementation and monitoring of the EMP; ○ conducting or supervising the screening process; ○ Completing the Screening Form and Environmental Checklist ○ assign environmental categories as per OP 4.01; ○ conducting public consultations during the environmental and social screening process; ○ review and approval of screening results; ○ carrying out appropriate level of environmental work as per recommended environmental category; ○ developing specific EMPs, Laboratory Waste Management Plans and HCWMP; ○ supervising civil works contractors ○ in implementation of the EMP and following Environmental Guidelines ○ preparing sub-project interim reports; ○ monitoring laboratory environmental work and Health Care Waste Management activities 	15,000

<p>Sensitize representatives and leaders of community groups (who will in turn relay the message to their communities)</p> <p>2 Day session</p>	<ul style="list-style-type: none"> ▪ Introduction to the East Africa Public Health Laboratory Networking Project, Laboratory Waste Management Plans and the HCWMP; ▪ community group roles in achieving environmental sustainability; ▪ linkages between environmental and social impacts and health; ▪ Mitigation measures for the negative impacts of the East Africa Public Health Laboratory Networking Project ▪ Implementation and monitoring of the EMP and the Health Care Waste Management Plan 	<p>10,000</p>
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CHAPTER 8 CONCLUSION AND RECOMMENDATIONS

This Environmental and Social Management Framework has been prepared to guide project implementers and other stakeholders to identify and mitigate environmental, health and social impacts of the East Africa Public Health Laboratory Networking Project. It is recommended therefore that this framework should be used by all the participating countries (with any minor modifications to suit their particular situation) prior to implementing a specific sub-project.

In implementing this ESMF it should be noted that the project sites, proposed for the East Africa Public Health Laboratory Networking Project, may be prone to other environmental and social impacts from activities of other development projects. These impacts may affect the overall results in implementing this ESMF.

It is expected therefore that other project activities will have their own environmental and social management plans. In this regard, it is expected that the departments responsible for environmental affairs and other stakeholder line ministries will ensure that human activities that lead to HCW and other environmental problems are properly managed and monitored. Hence the Ministry of Health, which is the key and direct custodian of health for everyone should play a proactive role in coordinating and cooperating with departments responsible for environmental matters to ensure better health for all.

Implementers of this ESMF, in consultation with all the stakeholders, should adopt and adapt (where appropriate) the screening process, the environmental checklist and the EMP to suit local conditions.

Specifically it is recommended that:

- The screening process and the screening forms should be used for all the sub-project activities of the East Africa Public Health Laboratory Networking Project;
- The ministry responsible for health should be adequately supported to strengthen its Environmental and Social Unit, to oversee the implementation of this ESMF as well as the HCWMP/ Laboratory Waste Management Plans;
- Environmental and social awareness and training as presented in the capacity building proposal, for the key players should be implemented;
- Regularly updating of this ESMF, to respond to changing laboratory designs, laboratory operations and local conditions in all the participating countries is very important and should be done as appropriate;
- Building capacities at the district level, for appropriate information management, to facilitate the environmental and social management process should be supported by the project;
- At the district level, the necessary resources and equipment for producing the required documentation and completing the screening forms as well as preparing reports for the implementation of the ESMF should be provided; and
- staff at all levels should be empowered to adequately administer the ESMF throughout the project implementation.

This ESMF provides the East Africa Public Health Laboratory Networking Project implementers with the screening process that will enable them to identify, assess, and mitigate potential negative environmental and social impacts and to ensure proper mitigation

and possibly the preparation of a comprehensive EIA where appropriate. Hence the following sections of the ESMF should be included in relevant Operational Manuals:

- Sections 4.1 and 4.2 of Chapter 4, Environmental and Social Management Plan
- Sections 5.1 to 5.4 of Chapter 5, Environmental Monitoring;
- Sections 6.1 to 6.6 of Chapter 6, Environmental and Social Screening; and
- Sections 7.1 to 7.4 of Chapter 7, Capacity Building and Training Requirements and
- Annexes 1 and 2 (the Environmental and Social Screening Form and the Environmental and Social Checklist)

REFERENCES

1. African Statistical Journal, Welfare and Environment in Rural Uganda: Results from a Small-Area Estimation Approach, November 2006
2. Environmental Resources Management MoEST - Draft final S-ESIA 6 May 2005
3. Government of the United Republic of Tanzania, National Environment Policy (1997)
4. Government of the United Republic of Tanzania, National Policy on HIV and AIDS (2001)
5. Government of the United Republic of Tanzania, National Land Policy (1995)
6. Government of the United Republic of Tanzania, Construction Industry Policy (2002)
7. Government of the United Republic of Tanzania, National Water Policy (2002)
8. Government of the United Republic of Tanzania, National Gender Policy (1999)
9. Government of the United Republic of Tanzania, Health Sector Strategic Plan III, 2008
10. Government of the United Republic of Tanzania, National Health Laboratory Strategic Plan (2009-2015)
11. Government of the United Republic of Tanzania, Urban Planning Act, 2007
12. Government of the United Republic of Tanzania, Health Laboratory Practitioners Act, 2007
13. Government of the United Republic of Tanzania, Water Resources Management Act, 2009
14. Government of the United Republic of Tanzania, Constitution of the United Republic of Tanzania (1977-1995)
15. Government of the United Republic of Tanzania, Environmental Management Act (2004)
16. Government of the United Republic of Tanzania, Environmental Impact Assessment and Audit Regulations (2005)
17. Government of the United Republic of Tanzania, Mining (Environmental Management and Protection) Regulation (1999)
18. Government of the United Republic of Tanzania, Land Act (1999) and the Land Regulations (2001)
19. Government of the United Republic of Tanzania, Occupational Health and Safety Act (2003)

20. Government of the United Republic of Tanzania, Health Laboratory Safety and Waste Management Manual, November, 2006
21. Government of the United Republic of Tanzania, National Standards and Procedures for Health Care Waste Management in Tanzania September, 2006
22. Government of the United Republic of Tanzania, Health Care Waste Management National Policy Guidelines, September, 2006
23. Government of the United Republic of Tanzania, Health Care Waste Management and Monitoring Plan
24. Government of the United Republic of Tanzania, Health Sector Strategic Plan July 2009 – June 2015
25. Hunink J.E. et al Green Water Credits for the Upper Tana Basin, Kenya. Phase II – Pilot Operations Biophysical assessment using SWAT, 2009
26. Kenya Land Alliance, Land Use in Kenya, the Case for National Land Use Policy, 2000
27. National Institute for Medical Research, Annual Report for the Period from 1st July – 30th June 2008
28. Makerere University Institute of Environment and Natural Resources, Linkages Between Land Cover/Use Changes Biodiversity Loss, And Land Degradation In Uganda, 2000
29. mongabay.com, Tropical Rainforests, updated December 2009
30. Ministry of Public Health and Sanitation Division of Leprosy, Tuberculosis and Lung Disease DLTD Guidelines on Management of Leprosy and Tuberculosis March 2009 Version – Kenya.
31. National Health and Medical Research Council, National Guidelines for Waste Management in the Health Industry, March 1999
32. National Institute for Medical Research, Annual Report for the Period from 1st July – 30th June 2008
33. Ojiem, John O, Exploring socio- ecological niches for Legumes in Western Kenya Smallholder Farming Systems, November 2006
34. Uganda Aids Commission, Uganda Country Progress Report Uganda, 2008
35. Vernon Booth, Karen Chapman & Bryony Walmsley, Tanzania Country Report, 2009
36. World Bank, Strategic Environmental Assessment of the Kenya Forests Act 2005

37. National strategy and Action Plan for the conservation of biodiversity in Rwanda, 2003
38. Rwanda Vision 2020,
39. National implementation Plan of the Stockholm convention on Persistent Organic Pollutants in Rwanda, 2006
40. Government of the United Republic of Rwanda, Health Sector Strategic Plan II, 2008
41. Government of Rwanda, National Health Care Waste Management Plan Report, 2007
42. National Standards and guidelines for injection safety, prevention of transmission of hospital infections and medical waste management. Epidemiology and Public Hygiene Unit, *With Technical support of MMIS/JSI Project*. February 2008
43. National Policy on Injection Safety, Prevention of Transmission of nosocomial infections and Healthcare Waste Management. Planning, Policy and Capacity Building Unit, Environmental Health Desk. May 2009

ANNEXES

ANNEX 1: ENVIRONMENTAL AND SOCIAL SCREENING FORM

The Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of sub-projects for the East Africa Public Health Laboratory Networking Project. The form is designed for assessment of environmental and social impacts and their mitigation measures, if any, so that requirements for further environmental analysis can be determined.

This form must be completed by the District Environmental Management Officer or district staff appropriately trained to do so and in consultation with the key stakeholders of the sub-project. The form will form part of the approval requirements for implementation of the sub-project activities.

PART A: GENERAL INFORMATION

1. Name of sub-project:
2. Sector:
3. Name of the project location:
4. Name of Ward
5. Name of District
6. Name of Executing Agent
7. Name of the Approving Authority

Details of the Person Responsible for Completing this ESSF:

8. Name:
9. Job title:
10. Telephone Number:
11. Fax Number:
12. E-mail Address:
13. Date:
14. Signature:

PART B: BRIEF DESCRIPTION OF THE SUB-PROJECT

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

Provide information about the nature of activities during the construction of the facilities 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.

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

Describe the sub-project location, sitting, surroundings (include a map or even a sketch map)

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

Estimate and indicate where vegetation may have to be cleared.

No	Description	Yes	No	Not known
PART C. ENVIRONMENTALLY SENSITIVE AREAS OR THREATENED SPECIES THAT COULD BE ADVERSELY AFFECTED BY THE PROJECT				
1	Intact natural forests			
2	Riverine forest and river banks			
3	Surface water courses, natural springs			
4	Wetlands (lakes, rivers, swamp, seasonally inundated areas)			
5	Distance to the nearest wetland (lakes, river, seasonally inundated areas) less than 30 km:			
6	Area is of high biodiversity			
7	Habitats of endangered/threatened species for which protection is required under participating countries' Laws.			
PART D. GEOLOGY, TOPOGRAPHY AND SOIL				
1	Direct cause or worsening of soil loss or erosion by the project			
2	Project will lead directly or indirectly to practices that could cause soil loss or erosion (e.g. soil erosion and pit formation from sand mining and brick moulding)			

No	Description	Yes	No	Not known
3	Need to consult a soil scientist on the project			
4	Modification of slopes is required by the project			
5	Project will affect stability of slopes directly or indirectly			
6	Project is located where existing unstable slopes could be a hazard			
7	Soil instability in the project area black cotton soil, earthquake, landslide, subsidence			
8	Project will cause substantial increase in soil salinity			
9	Increase in chances of floods, poorly drained, low-lying, depression or block run-off – water			
10	Soil contamination and pollution hazards will result from the project			
11	Risks of contamination and pollution from latrines, dump sites, industrial discharge etc.			
12	Need to consult a geo-technical engineer			
PART E. LAND, TREES, VEGETATION AND PROPERTY (IN CASE OF AUXILIARY e.g. QUARRIES)				
1	There are farm lands in the project area			
2	Project will reduce or damage farm land			
3	Project will cause loss of vegetation, crops and fruit trees animals and livestock			
4	Loss of trees for fire wood for brick curing, adding to deforestation			
5	Use of construction timber for supports, door/windows and furniture contributing to deforestation.			
6	Project will cause loss of houses, infrastructures (shed, toilets, granaries)			
7	Project will cause loss or interference with access, routes for people, livestock etc			
8	Land in the project area is intensively developed			
9	The project will increase pressure on land resources			
10	The project will result in decreased holdings by small land owners			
11	A land use planner should be consulted			
PART F. SURFACE WATER QUANTITY AND QUALITY				
1	Project will increase demand or cause loss of available surface water			
2	Project will lead to additional discharges into surface water			
3	Project could cause deterioration of surface water quality			
4	Need to consult a hydrologist and/or water quality expert			
PART G. GROUNDWATER QUALITY AND QUANTITY				
1	Project will increase demand or cause loss of available ground water resources			
2	Project will cause natural or man-made discharge into ground aquifer			
3	Project could cause deterioration of ground water quality (e.g. from human waste from toilets)			
4	Need to consult a hydrologist and/or water quality expert			
PART H. AIR QUALITY				

No	Description	Yes	No	Not known
1	Project will pollute air directly (construction cement /dust)			
2	Project will lead to practices that worsen air quality			
3	Project will lead to a change in engine or fuel use that could cause serious air problems			
4	Project will result in polluted and hazardous working environments for staff			
PART I. NOISE				
1	Noise is a problem in the project area			
	The project will generate noise from construction activities			
2	Project operation will result in increase in noise generation			
3	Project could make people to move to high noise level area			
4	Project could result in noisy working environments for staff			
PART J. AQUATIC ECOSYSTEMS				
1	Significant aquatic ecosystems (wetlands, rivers, streams, lakes or ponds) are in the project area			
2	Project will affect the condition and use of ecosystems for human consumptions			
3	Significant wetland ecosystems (marsh, swamp, flood plains, or estuary) are in the project area			
4	Project will affect the use or condition of such wetlands			
PART K. TERRESTRIAL ECOSYSTEMS				
1	There are significant terrestrial ecosystem (forest, savannah, grassland or desert) in the project area			
2	Project will affect the use or condition of such ecosystems			
PART L. ENDANGERED/ THREATENED/RARE/ENDEMIC/SPECIES				
1	Endangered species exist in the project area			
2	Project will affect the habitant and number of such species			
PART M. MIGRATORY SPICES				
1	Migratory fish, birds, or manuals use the project area			
2	Project will affect the habitat and numbers of such species			
PART N. BENEFICIAL PLANTS, ANIMALS, INSECTS, PESTS AND VECTORS				
1	There are non-domesticated plants and/or animals, used or sold by local people in the project area			
2	Project will affect these species by reducing their numbers or habitant			
3	There are currently problems with pest (plants or animals) in the project area			
4	Plants or animals might become pests due to ecological changes brought by the project in the area			
5	There are known disease problems in the project area transmitted through vectors			
6	Project will increase vector habitat or population			
7	Need to consult a public health officer			
PART O. ENERGY SOURCE				
1	The project will increase demand for conventional energy sources			
2	The project will create demand for demand for other energy sources (wood and charcoal)			

No	Description	Yes	No	Not known
3	The project will promote supply of conventional energy sources			
PART P. RESOURCE DISTRIBUTION AND DEGRADATION				
1	The project will increase demand for certain commodities within or outside the project area			
2	The project will result in decrease of production for certain vital commodities			
3	Project will use large amounts of natural resources (construction materials, water, land and energy)			
4	Adverse impacts of the project will be unequally distributed in the target population			
PART Q. EMPLOYMENT AND INCOME				
1	The project will remove job opportunities from the area			
2	The project will decrease income sources or means of livelihood			
PART R. LIVELIHOODS				
1	People's assets or livelihoods will be affected			
2	People will lose access to natural resources			
PART S. EXISTING AND MIGRANT POPULATION (IN CASE OF AUXILIARY WORKS)				
1	There are people currently living in or near the project area			
2	The project will affect people in or near the project area			
3	There are currently mobile groups in the target population			
4	The project will result in the movement of people in or out of the area			
5	It is necessary to consult a sociologist			
PART T CULTURAL AND RELIGIOUS VALUES AND HISTORICAL SITES (IN CASE OF AUXILIARY WORKS)				
1	Cultural characteristics unique to the project area are understood			
2	The project will adversely affect religious and/or cultural attitudes of area residents			
3	The project will affect religious and or cultural sites or monuments			
4	There special superstitions or taboos that will affect acceptance of the project			
5	There are graveyards in the project area			
6	There are historical buildings in the area			
PART U TOURISM AND RECREATION				
1	There is a significant degree of tourism in the area			
2	There is unexploited tourism or recreation potential in the area			
3	The project will adversely affect existing or potential tourist or recreation attractions			
PART V GENERAL AND HAZARDOUS WASTES				
1	The project will generate significant amounts of waste (rubble: concrete, bricks, blocks etc) during construction			
2	The project will generate significant amounts of waste (e.g. plastics and packaging material) during operation			
3	The project will produce hazardous wastes requiring special handling, storage, treatment and disposal methods			

No	Description	Yes	No	Not known
4.	The project will cause spread of infection within and outside the facility requiring adherence to standards and precautions			

NOTES

Any activities assigned the environmental category A cannot be funded because the parent project has been assigned the environmental category B; and

The screener should determine whether any of the safeguard policies in Annex 5 are triggered by the proposed activity, and if so, appropriate mitigation measures as per the triggered OP should be presented in this section.

GUIDE ON POSSIBLE ACTION TO BE TAKEN

If all the above answers are “No”, there is no need for further action and the environmental category will be “C”.

If there is at least one “Yes”, simple mitigation measures, an environmental management or action plan (EMP or EAP) may be required (category “B1”).

If there are environmental problems requiring frequent site visits, an environmental impact assessment is required (category “B2”);

RECOMMENDED ACTION TO BE TAKEN

(Insert “YES” or “NO” as appropriate)

- (i) Environmental category “B1” (mitigation measures)
- (ii) “B2” (EIA required);
- (iii) “C” (no Environmental work required);

THIS FORM HAS BEEN COMPLETED BY:

Name:Title:

Date:Signature:

Approved by District Executive Director

Name:Title:

Date:Signature:

ANNEX 2: SUBPROJECTS ENVIRONMENTAL AND SOCIAL CHECKLIST

This Environmental and Social Checklist can be used or adapted to the particular sub-project type for the East Africa Public Health Laboratory Networking Project. The checklist will be completed by a member of the project facilitation team at the district level. The member would have received training in environmental assessment.

Table 2.1 Environmental Checklist for Laboratory Construction and Rehabilitation Sub - projects

Stage of construction and potential negative environmental and social impact	Mitigation Measure	Tick as Relevant	
Planning and Design			
Exposing and loosening of soil	Limit extent of site and vegetation clearing for the preliminary activities		Consultant
Infection of staff due to inappropriate working conditions	Design laboratory to include adequate space and ventilation		MoH/ Consultant
Accidents	Design laboratory to include adequate space for free and safe movement		MoH/ Consultant
Use of wooden doors, windows and furniture contributing to deforestation.	Use steel and iron windows, doors and furniture etc in the design, where possible		MoH/ Consultant
Loss of vegetation and trees for brick curing, contributing to deforestation	Use concrete blocks in the design		MoH/ Consultant
During Construction			
Soil erosion	Avoid sloping or hilly land		MoH
	Limit extent of vegetation clearing on construction sites, materials mining sites, working areas and service roads		Contractor
	Control movement of vehicles, heavy plant and equipment on earth roads and working sites		Contractor
	Use water sprays compact soil on roads and around working areas		Contractor
	Terracing		Contractor
	Excavation to level		Contractor
	Provide effective drainage and control water flows		Contractor

Soil erosion and pit formation from sand mining	Use sand from approved areas and suppliers		Contractor
	Backfill pits		Contractor
Soil contamination from cement, paints, lubricants, and fuels.	Store and contain materials on lined surfaces and in covered areas.		Contractor
	Dispose of waste and contaminated water as recommended by local authority		Contractor
Loss of vegetation and trees for site clearing, contributing to deforestation	Limit extent of trees and vegetation clearing		Contractor
	Use concrete blocks		Consultant
	Replant trees or support tree planting programmes		MoH
Construction and cement dust pollution	Use breathing masks		Contractor
	Limit/ control plant and vehicle movement		Contractor
	Use water sprays		Contractor
Solid waste from rubble, cement bags, paint tins and other materials will pollute and deface land.	Collect and dispose wastes in designated disposal sites as required by the Local Authority		Contractor
Change in natural drainage flow pattern and surface water runoff	Provide adequate and effective drains leading to natural drainage systems		Contractor
Drainage clogging resulting in impeded water flow and creation of stagnant water pools	Keep all drains clear of silt and debris and backfill voids regularly and after construction		Contractor
Surface water siltation due to loosening of soils by movement of vehicles and due to mining of materials	Use water sprays on roads and construction sites and compact loose soils.		Contractor
Construction noise	Use of ear plugs		Contractor
	Limit/ control plant and vehicle movement		Contractor
	Service vehicles regularly		Contractor
Use of poles and timber for construction supports	Use steel and iron for construction where possible		Contractor
	Buy poles and timber from approved suppliers.		Contractor
	Plant replacement trees or support tree planting initiatives.		MoH
Increase in human waste from construction workers	Construct temporary latrines for construction workers.		Contractor

Air pollution from emissions from construction machinery and from dust	Maintain construction machinery regularly as recommended by dealers		Contractor
	Use water sprays on roads and construction sites and compact loose soils.		Contractor
Noise & vibration disturbances due to movement of heavy plant and equipment	Construction and rehabilitation works to be during official government working hours.		Contractor
	Vehicles, plant and machinery to be regularly maintained as recommended by dealers		Contractor
Disturbance of traffic and movement of people	Divert traffic with appropriate directional signs, where appropriate		Contractor
Temporary obstruction of walkways due to road and sidewalk barriers.	Ensure free and safe passage of pedestrians with adequate and appropriate directional signs		Contractor
Potential for accidents due to slow movement of heavy vehicles, general traffic and pedestrians near the construction sites	Provide alternative routes and passages with adequate and appropriate directional signs		Contractor
Temporary loss of access to services such as water telephones and electricity due to possible damage by contractor	Identify location of water pipes, telephone and electric cables before construction		Contractor
Aesthetics	Remove and dispose construction wastes regularly in appropriately designated disposal site.		Contractor
	Use shields to isolate and enclose construction sites.		Contractor
Accidents to workers and public on construction sites and project activity areas	Provide appropriate protective clothing for staff and ensure they use them		Contractor
	Provide appropriate signs for workers and public.		Contractor
	Provide first aid boxes.		Contractor
	Acquire appropriate workman's compensation and insurance for workers		Contractor
Spread of TB, STIs, HIV and Aids	Conduct awareness meetings and provide		MoH/ District Health Officer

	condoms to staff		
During operation			
Soil contamination from detergents and chemicals	Use appropriate waste drainage system leading to septic tank or public sewerage facilities; as provided by contractor		Laboratory Manager
Soil contamination from accidental laboratory waste spills and leakages during temporary storage, transportation and disposal	Use recommended storage and transportation equipment and methods		MoH/ Laboratory Manager
Water pollution from detergents and chemicals	Use appropriate waste drainage system leading to septic tank or public sewerage facilities; as provided by contractor		Laboratory Manager
Water pollution from accidental waste spills and leakages during temporary storage, transportation and disposal	Use recommended storage and transportation equipment and methods		MoH/ Laboratory Manager
Ground water pollution due to leachate at disposal site	Proper selection of disposal sites		LGA
	Adhering to recommended waste disposal practices.		Laboratory Manager
Air contamination from TB infectious persons and waste	Ensure adequate ventilation in laboratories and specimen collection areas		MoH/ Laboratory Manager
	Ensure proper handling of specimen and laboratory waste by staff and contracted personnel		MoH /Laboratory Manager
	Ensure that staff know and use the recommendations in the LWMP		Laboratory Manager
	Conduct staff and patients awareness meetings quarterly		District Health Officer
	Provide adequate security and confinement of refuse disposal sites		LGA
Transmission of diseases and spread of STIs and HIV and Aids	Conduct civic health education to patients and implement the LWMP		District Health Officer/ Laboratory Manager
Spread of TB in communities, hospitals and	Establish recommended laboratory specimen		MoH/ Laboratory

laboratories; during specimen handling and transportation; in laboratories and on disposal sites	collection and transportation systems as recommended in the HCWMP and LWMP		Manager
	Dispose off LW in designated places, following approved disposal methods, as recommended in the LWMP		Laboratory Manager
	Secure all waste throughout the waste management chain and provide adequate security to prevent scavenging		MoH/ Laboratory Manager
	Provide appropriate protective clothing to all staff throughout the waste management chain to prevent infection		MoH/ Laboratory Manager
Accidents and risks of fire	Provide protective clothing and fire fighting equipment		MoH/ Laboratory Manager
	Raise awareness on staff about accidents and fire risks bi-annually		Laboratory Manager
	Conduct regular fire drills as recommended		Laboratory Manager
	Provide protective wear and equipment		Laboratory Manager
Infection from used tools and equipment	Disinfect and dispose of tools and equipment as recommended in the LWMP.		Laboratory Manager
Medical waste from laboratory	Dispose of waste as recommended in the LWMP		Laboratory Manager
During decommissioning (backfilling and restoration of quarry and mining sites)			
Creation of stagnant water pools on mining sites for materials	Backfill all voids and mined areas		Contractor
Surface water siltation from backfilling and restoration activities	Use water sprays and compact loose soils on roads and working sites.		Contractor
Accidents	Provide appropriate protective clothing for staff and ensure they use them		Contractor

	Provide appropriate signs for staff and public.		
	Provide first aid boxes.		
	Acquire appropriate workman's compensation and insurance for staff		

This form has been signed by:

District health officer (Full Name)Signature.....Date.....

District Environmental Health Officer (Full Name).....Signature.....Date.....

District Executive Officer (Full Name).....SignatureDate.....

ANNEX 3: ENVIRONMENTAL GUIDELINES FOR CONTRACTORS

1. General Provisions and Precautions

The contractor shall take all necessary measure and precautions to ensure that all the works and associated operations on or off the work sites are carried out in accordance with statutory and regulatory environmental requirement of the participating countries.

The contractor shall avoid and prevent any nuisance or disturbance associated with execution of work under this project. In the event of any soil, debris or silt from the work sites being deposited on any adjacent land, the contractor shall immediately remove all such spoil debris or silt and restore the affected area to its original state, to the satisfaction of the responsible authorities.

2. Protection of Water and other Public Services

The Contractor shall ensure that no public services are disrupted as a result of execution of the construction works. In particular, the Contractor shall:

- not interfere with supply or abstraction of water for public or private use; and shall not pollution any water resources (including groundwater) as a result of execution of the works;
- not disrupt power supply or telephone connections or any other public or private services including footpaths and walkways;
- not discharge or deposit any waste or any material into any waters or any grounds except with the permission of the appropriate regulatory authorities.
- at all times ensure that all streams and drains within and adjacent to the work sites are kept safe and free from any debris and any material arising from the works;
- protect all water courses (including ditches, canals, drains and lakes) from pollution, siltation, flooding or erosion as a result of the execution of the works.

- assume all responsibility to locate or to confirm the details and location of all utility services on or in the vicinity of the site
- assume responsibility for any damage and \or interference caused by him or his agents, directly or indirectly, arising from actions taken or a failure to take action to protect public or private utilities. The Contractor shall be responsible for full restoration of any damage caused and for restoration of services.
- Water and waste products shall be collected, removed and disposed of at an approved location and in a manner that will not cause pollution or nuisance.
- The contractor shall not dispose of any surplus material on private land unless authorized in writing by the owner(s), authenticated before a notary public, and with previous authorization of the CSC.

3. Control of Air Pollution

- Open fires and burning of construction waste shall not be permitted;
- Blasting and quarrying shall be carried out using material and methods approved by the appropriate controlling authority and in a manner to avoid dust emission.
- Dust- generating operations shall not be permitted to affect any residential areas, pedestrians or any public or private property. Where dust generation is inevitable, appropriate measures such as use of water sprays and fencing shields or appropriate covering material shall be employed. All workers shall be protected from dust emissions by providing them with appropriate protective wear.
- All construction machinery, plant and equipment including all vehicles shall be regularly maintained to ensure that no smoke or obnoxious gas is discharged to pollute the air and affect the public or property.

4. Mining and Acquisition of Construction Material

- All mining and quarrying activities shall be carried out outside in approved places, using approved mining and quarrying practices. Topsoil from borrow pit and mining areas will be saved and reused in re-vegetating the pits to the satisfaction of the consultant and client
- All mined areas shall be restored to original or better state in full compliance of environmental regulations, standards and according to contract specifications. Restoration of the borrow areas and their surroundings, shall be done according to environmental regulations and to the satisfaction of the consultant and client before approval of payment under the terms of contracts.
- Borrow pits shall be levelled and covered to facilitate natural drainage and scenic beauty, or to create functional water storage structures as appropriate.
- Only licensed quarrying operations and sites shall be used as sources of construction materials.

5. Prevention of Soil Erosion.

- The Contractor shall fence off construction sites, provide appropriate drainage and ram or compact soils where necessary to stabilize the soils and reduce erosion.
- All construction sites and sites used for mining materials shall be backfilled, levelled and re-planted with trees, vegetation and grass to restore them to the original state and to prevent soil erosion.
- As far as possible the contractor shall avoid or reduce construction activities and mining of construction material during the peak of rainy seasons.

6. Control of Social Impacts

- The Contractor shall coordinate with all the neighbouring land users and respect their rights to a clean and safe environment. Written agreements with local landowners for temporary use of their sites or property shall be made and sites must be restored to original condition or conditions acceptable to the owner within an agreed time. Camp sites shall be maintained and cleaned up at all times and on completion of the works.
- Health and safety of workers shall be protected by providing basic emergency health and first aid facilities and awareness meetings aimed at the prevention of sexually transmitted diseases. Awareness meetings shall be conducted as a part of all construction employee orientation programs. Employees shall be provided with condoms for protection from STIs.
- The Contractor shall obtain all necessary written traffic control permissions including for use of flagmen, traffic cones or other devices such as barricades and/or lights which he must use to control traffic for safety of pedestrians, cyclists and all road users, particularly school children.
- The Contractor shall not stockpile or store any construction materials; nor park construction plant or vehicles in walk ways, pedestal routes or driveways. Stockpiles of material shall be covered with tarpaulins or sprayed with water where these materials pose risks of dust to the public or people's property.

7. Noise Control and Regulation

- The Contractor shall take all necessary measures to ensure that the operation of all mechanical equipment and construction processes on and off the site shall not cause any unnecessary or excessive noise to the public. In addition, the Contractor shall operate noisy equipment within government working times unless with prior arrangement and permission from the employer
- Vehicle, plant and equipment exhaust systems shall be maintained in good working order, as recommended by the manufacturers, to ensure that no noise is unnecessarily generated to inconvenience the public.
- Construction works and operations shall be scheduled to coincide with periods when people would least be affected by noise, having due regard for avoiding any noise disturbances to local residents, hospitals, schools or any other public and private places in the work site neighbourhood.
- The contractor shall notify public (likely to be affected by the works) of impending construction operations and specify methods to receive and handle all public complaints.

8. Environmental Monitoring

- The Contractor shall be responsible for monitoring all his activities and ensuring that all environmental requirements and the above conditions are met at all times

ANNEX 4: GENERIC EIA TERMS OF REFERENCE

1. Provide a full description of the nature of the project with respect to the name of the proponent, the postal and physical address, the spatial location of the potential site for the project, the estimated cost of the project, and size of land for the project site, including water reticulation, waste disposal and access roads.
2. Provide a site-specific map of the area (Scale 1:50,000) showing the proposed project site and existing establishments in the area and surrounding areas. A site plan for the project should also be provided.
3. Examine the existing conditions of the proposed site identifying and analysing:
 - Geological and soil conditions of the area;
 - The scope of vegetative resources of the area;
 - Existing land uses within the area and within adjacent villages;
 - Ecologically important or sensitive habitats and resources e.g. water resources, biodiversity elements; and
 - Suitability of the site for the proposed development.
4. Describe the major activities to be undertaken for the construction and operation of infrastructure services. This should include the size and type of infrastructure, the type of equipment to be used, the method and duration of construction, nature and quantity of wastes to be generated, the facilities for appropriate disposal and management of waste, number of people to be employed and.
5. State the reasons for selecting the proposed site, the consequences of not undertaking the project at the proposed site and any alternative sites considered.
6. Predict the major short and long-term environmental impacts of the project. Examine both the positive and negative impacts as well as impacts on the biophysical, social, economic and cultural components of the environment. The potential impacts must include those related to:
 - project location (e.g. resettlement of people, loss of forest land, loss of agricultural land, impact on flora and fauna);
 - construction works (e.g. soil erosion, disposal of construction spoils, drainage and access roads)
 - project operation (e.g. solid waste disposal, sewage disposal)
7. Prescribe measures to eliminate, reduce or mitigate the negative effects identified and the measures to enhance the positive effects in 6.
8. Propose an Environmental Management Plan (EMP) in tabular form by which all of the mitigation/enhancement measures prescribed will be carried out, specifying who will be responsible for implementing these measures and the schedule for implementation, cost of implementing the measures and the source of funding. An environmental monitoring plan should also be prepared including the indicators to be used for monitoring the impacts and responsible persons and institutions that will conduct the monitoring.

9. Undertake public consultations to ensure that all interested and affected parties are involved in the EIA process and incorporate their views into the EIA. Evidence of consultation should be provided in the report.

10. Provide an account of all statutory and regulatory licenses and approvals obtained for the project to ensure that they are in line with sound environmental management practices and are in compliance with all relevant existing legislation. Reference should be made, but not limited to the Environment Management Act and other relevant and other relevant legislation.

ANNEX 5: SUMMARY OF THE BANK’S ENVIRONMENTAL SAFEGUARD POLICIES

<p>OP/BP 4.01 Environmental Assessment</p>	<p>The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans-boundary and global environment concerns.</p>	<p>Depending on the project and nature of impacts an EIA and environmental management plan (EMP) can be used. The Borrower is responsible for implementing recommendations of the ESMF.</p> <p><i>Under the Project, the participating countries have prepared a Regional Environmental and Social Management Framework, including a Screening Form and an Environmental and Social Screening form, to determine the level of environmental activity to be undertaken and to design appropriate mitigation plans.</i></p>
<p>OP/BP 4.04 Natural Habitats</p>	<p>This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species.</p>	<p>This policy is triggered by any project (including any sub-project under a sector investment or financial intermediary) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project).</p> <p><i>The policy is not triggered because the laboratories are located in urban areas.</i></p> <p><i>Project activities that could negatively impact on protected areas will not be funded</i></p>
<p>OP/BP 4.36 Forests</p>	<p>The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and</p>	<p>This policy is triggered whenever any Bank-financed investment project (i) has the potential to have impacts on the health and quality of forests or the rights and welfare of people and</p>

	values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to help meet growing demands for forest goods and services.	their level of dependence upon or interaction with forests; or (ii) aims to bring about changes in the management, protection or utilization of natural forests or plantations. <i>The policy is not triggered as it is not expected that there will be project activities impacting on forests.</i>
OP 4.09 Pest Management	The objective of this policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country's regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.	The policy is triggered if : (i) procurement of pesticides or pesticide application equipment is envisaged (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart funding); (ii) the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may (i) lead to substantially increased pesticide use and subsequent increase in health and environmental risk; (ii) maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks. <i>Under the Project, the policy will not be triggered as the Project deals with rehabilitation of laboratories.</i>
OP/BP 4.11 Physical Cultural Resources	The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, "physical cultural resources" are defined as movable or immovable objects, sites, structures, groups	This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01, project located in, or in the vicinity of, recognized cultural heritage sites,

	<p>of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.</p>	<p>and projects designed to support the management or conservation of physical cultural resources.</p> <p><i>The policy is not triggered as it is not expected that physical cultural resources will be affected.</i></p>
<p>OP/BP 4.10 Indigenous Peoples</p>	<p>The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits.</p>	<p>The policy is triggered when the project affects the indigenous peoples (with characteristics described in OP 4.10 para 4) in the project area.</p> <p><i>The policy is triggered for Kenya only.</i></p> <p>An Indigenous Peoples Plan has been prepared for Kenya and will be discussed, validated, and published shortly.</p>
<p>OP/BP 4.12 Involuntary Resettlement</p>	<p>The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.</p>	<p>This policy covers not only physical relocation, but any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.</p> <p>This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.</p>

		<p><i>The policy is not triggered as no involuntary resettlement will take place under Project.</i></p> <p><i>Any investments involving involuntary resettlement will not be funded.</i></p>
OP/BP 4.37 Safety of Dams	<p>The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented.</p>	<p>This policy is triggered when the Bank finances: (i) a project involving construction of a large dam (15 m or higher) or a high hazard dam; and (ii) a project which is dependent on an existing dam. For small dams, generic dam safety measures designed by qualified engineers are usually adequate.</p> <p><i>The policy is not triggered as no dams are involved under Project.</i></p>
OP 7.50 Projects in International Waters	<p>The objective of this policy is to ensure that Bank-financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilization and protection of international waterways.</p> <p>The policy applies to the following types of projects: (a) Hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways; and (b) Detailed design and engineering studies of projects under (a) above, include those carried out by the Bank as executing agency or in any other capacity.</p>	<p>This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is a component of any waterway described under (a); and (c) any bay, gulf strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters.</p> <p><i>The policy is not triggered as the Project will not have activities in international waters.</i></p>
OP 7.60 Projects in	<p>The objective of this policy is to ensure that projects in disputed areas</p>	<p>This policy is triggered if the proposed project</p>

<p>Disputed Areas</p>	<p>are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighbouring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned.</p>	<p>will be in a “disputed area”. Questions to be answered include: Is the borrower involved in any disputes over an area with any of its neighbours. Is the project situated in a disputed area? Could any component financed or likely to be financed as part of the project be situated in a disputed area?</p> <p><i>The policy is not triggered as the project activities will take place in land occupied by health institutions owned by the governments.</i></p>
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ANNEX 6: LIST OF INDIVIDUALS/INSTITUTIONS CONTACTED

Name / Position	Institution	Contact	Areas of Discussion	Date
Anicetus Honest / National Coordinator for HCWMP	Ministry of Health and Social Welfare	+255(0)754311115 ahonest2000@yahoo.com	Health Care Waste Management Project	05.08.09
Daniel Mwakasungula / Engineer	Ministry of Health and Social Welfare	0784269480	General project design process and specifications	05.08.09
Dr. S. M. Egwaga Programme Manager	National Tuberculosis & Leprosy Programme (NTLP). MOHSW	+255 (22) 2120261-7 +255 (22) 2118619 tantic@inafrica.com	Existing laboratory infrastructure services and shortfalls. Possible locations of proposed sites	10.08,09
Dr. Faustin N. Njau Public Health Specialist (Head of Health Sector Reform Programme)	MOHSW, Department of Health, Policy & Planning	+255 (22) 2120261-7 0784787118 faustinnjau@africaonline.co.tz faustinnjau@hotmail.com	Health Sector Reforms	07.08.09
Dr Sayoki Mfinanga	NIMR, Muhimbili Medical Research Centre	+255 (0) 22 2152232 +255 (0)784 755632	Environmental component of the current and planned research programmes and challenges faced.	12.08.09
T. M. Chonde	Central TB Reference Laboratory	tmchondes@yahoo.com	Laboratory chemicals/drugs and wastes including supply chain, storage, administration and distribution. Laboratory waste management plans.	12.08.09
Prof. Eligius Luyamuya	Medical Research Centre, Muhimbili University of Health and Allied Sciences (MUHAS)		Current and planned research programmes and how these will relate to the proposed project activities. Current waste management programmes and the impact of the new activities	13.08.09
M. Mwasekaga, Senior Laboratory	CDC	mwasekagam@tz.cdc.gov	Laboratory activities, equipment and current challenges.	11.08.09

Programme Officer				
F. Rugiga	NEMC	0713 622 421 frugiga@yahoo.com	Environmental Law and ESMF/ESIA requirements and procedures. Relevant legislation for smooth implementation of the project in an environmentally friendly and socially acceptable manner	17.08.09
Dr. Francis Mhimira	Kibong'oto Hospital, designated as the national hospital for MDR-TB	Dr. Francis A. Mhimira MD Kibong'oto Hospital P. O. Box 12 Sanya Juu, Siha Kilimanjaro, Tanzania Mobile No: - +255 754 291657 or +255 713 728285	Current hospital waste management practices and how these will be affected by the project. Additional remedial or mitigation factors to be considered	11.08.09 (talked on the phone)
Helen Lugina	East, Central and Southern Africa Health Community (ECSA)		Regional context of the project and how Tanzania fits in. Plans for coordinated approach to management of environmental and social concerns and harmonization of waste management plans	

ANNEX 7: TYPICAL LABORATORY WASTE MANAGEMENT AND MONITORING PLAN

Issue	Responsible Authority for Implementation	Cost (\$) ¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
WASTE PRODUCTION AND GENERAL ISSUES						
Develop specifications and standards for waste management equipment and supplies.	Respective Laboratory Managers		MoPH & S WSP	Continuously during specifications and standards development	Draft and final Standards and Specification	
Develop facility based plans with selected five hospitals(regional labs)	Respective Laboratory Managers		MoPH & S	Continuously during development of plans	Draft and final Plans	
Construct two chambers. BCM WARRIOR type incinerators for the five (5) Regional Labs (hospitals)	Contractor		MoPH & S	During design and during construction	Approved designs and contract schedules	
Purchase initial supplies for waste management for use in five (5) health facilities(regional labs)	Respective Laboratory Managers		MoPH & S.	-Once on making estimates and requisitions. -Once after purchase	Purchase requisitions, delivery notes and receipts	
Purchase Occupational Health and Safety /Personal Protective Equipment. (PPEs)	Respective Laboratory Managers		MoPH & S DDEH ² ministry or department responsible for environment	-Once on making estimates and requisitions. -Once after purchase	Laboratory safety manual Number of signs displayed in appropriate places	
Procure and install water	Contractor		MoPHS/WSP	-Once on making estimates and	-Purchase requisitions, delivery	

¹ Estimates to be provided by the Ministry responsible for Health in the participating countries

² District Directorate for Environmental Health

Issue	Responsible Authority for Implementation	Cost (\$)¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
storage tanks				requisitions. -Once after purchase -During construction	notes and receipts Contract and specifications	
Develop and implement public (including indigenous people) social mobilization/ awareness	DEH/NLTB		MoPHS	Continuously during preparation of plans and during implementation	Number of people accepting and participating in the project	
Ensure set-up of laboratory is conducive for easy and safe working	Laboratory Supervisor		Laboratory Manager	Monthly	Number of accidents related to laboratory set- up	
Availability of appropriate laboratory chemicals / materials to avoid or minimize waste	Laboratory Supervisor		Laboratory Manager	Monthly	Number of items purchased according to recommended list	
	Laboratory Manager		DDEH	Quarterly	ditto	
Minimize movement of people in the work area	Laboratory Supervisor		Laboratory Manager	All the time	Number of times unauthorised persons found in laboratory	
Use colour coded waste bins in appropriate positions	Laboratory Manager		MoPH&S	Quarterly	Number of bins in recommended places	
Segregation and storage of waste into marked bins	Laboratory Supervisor		Laboratory Manager	Monthly	Number of waste streams used	
Place disposable and re-usable materials separately	Laboratory Supervisor		Laboratory Manager	Monthly	Number of cases of misplacement of re-usable	
Disinfect re-usable materials such as slide holders, forceps etc.	Laboratory Supervisor		Laboratory Manager	Monthly	Number of disinfections done per month	

Issue	Responsible Authority for Implementation	Cost (\$)¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
Follow steps and times for waste movement, storage and internal transportation	Laboratory Supervisor		Laboratory Manager	Monthly	Frequency of waste movement	
Keep infectious (e.g. TB lab specimens and wastes) away from human contact	Laboratory Supervisor		Laboratory Manager	Weekly	Number of reported infection cases Inspection report	
Sterilize or disinfect waste before it leaves the laboratory	Laboratory Supervisor		Laboratory Manager	Weekly	Disinfections statistics Inspection report	
Discard contaminated materials and sputum containers in 5% phenol disinfectant or as recommended.	Laboratory Supervisor		Laboratory Manager	Weekly	Number of disinfections done per day Inspection report	
Disinfect TB work surface areas with appropriate chemicals or methods.	Laboratory Supervisor		Laboratory Manager	Daily	Number of disinfections done per day	
WASTE MOVEMENT						
Ensure internal safe movement of covered carts/bins for waste	Laboratory Manager		MoPH&S	Quarterly	Number of carts as recommended	
Ensure availability of staff specifically designated for waste movement	Laboratory Supervisor		Laboratory Manager	Monthly	Number of positions filled on the establishment	
Ensure availability and use of appropriate tools, protective wear and safety equipment	Laboratory Manager		DDEH ministry or department responsible for environment	Quarterly	Number of people having and using PPE	
Tightly close and secure waste	Laboratory		Laboratory Manager	Daily	Number of spills per	

Issue	Responsible Authority for Implementation	Cost (\$)¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
bins to avoid waste spills during transportation	Supervisor				day	
Provide covered trucks for movement of waste to distant disposal site where necessary	MoPH&S		Ministry or department responsible for environment	Every six months	Number of working trucks available as recommended	
Follow defined routes of waste (loaded carts) movement	Laboratory Supervisor		Laboratory Manager	Daily	Number of carts using the designated route	
Ensure availability of washing and disinfecting material for staff	Laboratory Supervisor		Laboratory Manager	Daily	Quantity of disinfectant available in recommended places	
TREATMENT AND DISPOSAL						
Ensure availability and use of appropriate tools and PPE for personnel at disposal sites	Laboratory Manager		MoPH&S	Quarterly	Number of people having and using PPE	
Ensure appropriate method of treatment is used for each type of waste	Laboratory Manager		DDEH Ministry or department responsible for environment	Monthly Monthly	Number of complaints against poor waste treatment and disposal	
Cover disposal pits when half full to prevent access by people, animals and birds.	Laboratory Supervisor		Laboratory Manager	As appropriate, just before pits are covered	Number of pits covered as recommended	
	Laboratory Manager		DDEH Ministry or department	Monthly	Number of pits covered as recommended	

Issue	Responsible Authority for Implementation	Cost (\$)¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
			responsible for environment			
Line disposal pits and provide under drains to prevent water pollution from leachate	LGA		Ministry or department responsible for environment	Monthly	Water quality	
Install incinerators with air pollution treatment facilities	MoPH&S		Ministry or department responsible for environment	Monthly	Air quality	
DISPOSAL SITE LOCATION						
All year round accessibility to disposal site.	LGA DDEH		Ministry or department responsible for environment	Biannually	Number of cases of failure to access site	
Location of disposal site to be: <ul style="list-style-type: none"> • Far from habited areas • On a leeward side • Far from reach of animals • Low water table sites 	LGA DDEH		Ministry or department responsible for environment	As necessary during disposal facility sighting	Number of complaints from neighbouring residents Ground water quality	
GENERAL COMPLIANCE						
Use of appropriate technology	MoPH&S		Ministry or department responsible for environment	Quarterly	Number of complaints on poor waste management	
General health and safety of	MoPH&S		Ministry or	Quarterly	Number of	

Issue	Responsible Authority for Implementation	Cost (\$)¹	Responsible Authority for Monitoring	Recommended Frequency/times of Monitoring	Monitoring Indicators	Monitoring Cost (\$)
workers, employees and public			department responsible for environment		complaints against health and safety	
Nuisance (air pollution, dust, smell and aesthetics)	MoPH&S LGA		Ministry or department responsible for environment	Quarterly	Number of complaints against nuisance	
Water pollution	MoPH&S LGA		Ministry responsible for Water Resources Ministry or department responsible for environment	Quarterly	Water quality	