MINISTRY OF AGRICULTURE, LIVESTOCK FISHERIES AND COOPERATIVES
EMERGENCY LOCUST RESPONSE PROGRAM (P173702)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)
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PREPARED BY:

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ENVIRONMENTAL KNOWLEDGE IN PRACTISE

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ACRONYMS

DOHS	Directorate of Occupational Health and Safety
EA	Environmental Assessment
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ELC	Environmental and Land Court
EMCA	Environment Management and Coordination Act
EPD	Environmental Permitting Decision
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
FAO	Food Agricultural Organization
GOK	Government of Kenya
GRC	Grievance Redress Committee
GRS	Grievance Redress Service
HIV/AIDS	Human Immuno-Deficiency Virus
IFC	International Finance Corporation
IPMP	Integrated Pest Management Plan
KNCHR	Kenya National Commission on Human Rights
M&E	Monitoring and Evaluation
MENR	Ministry of Environment and Natural Resources
MSDS	Materials Safety Data Sheets
NEMA	National Environment Management Authority
NET	National Environmental Tribunal
NGEC	National Gender Equality Commission
NGO's	Non-Governmental Organizations
NT	National Treasury
OSHA	Occupational Safety and Health Act
PAD	Project Appraisal Document
PCC	Public Complaints Committee
PDO	Project Development Objective
PIC	Public Information Center
PPE	Personal Protective Equipment
STDs	Sexually Transmitted Diseases
TAC	Technical Review Committee
WB	World Bank

EXECUTIVE SUMMARY

This Environmental and Social Management Framework (ESMF) has been prepared for Component 1 of the Emergency Locust Response Program (ELRP) which is a World Bank financed project to Government of Kenya's Ministry of Agriculture, Livestock Fisheries and Cooperatives (MoALFC). Project's Component 1 is dedicated to locust monitoring and control. Government of Kenya (GoK) has embarked on locust control activities with technical support from Food Agriculture Organization (FAO) and has requested the World Bank to finance the ELRP.

The Horn of Africa that includes Kenya, has been infested with large swarms of desert locust. The desert locust crossed into Kenya through Ethiopia and Somalia on late December 2019. The swarms have spread rapidly and have so far been confirmed in Counties in North Eastern and Central parts of Kenya that includes: Mandera, Wajir, Marsabit, Garissa, Samburu, Isiolo, Meru, Baringo, Kitui, Tharaka Nithi, Embu, Machakos, Turkana, Elgeyo Marakwet and West Pokot. Thus, majority of these Counties suffering the impacts from the desert locust infestation in Northern parts of Kenya are largely Arid and Semi-Arid Lands (ASALs) and majority of the residents are traditional communities who are considered as marginalised minorities by the constitution and practice nomadic pastoralism as their livelihood; and also home to ecologically sensitive habitats that include national parks, reserves and conservancies. In the central parts of the Country, they are categorized as highlands and significant number of residents practice small scale agriculture. The activities proposed in this operational include ground and aerial spraying with the use of a combination of two pesticides i.e. Fenitrothion (synthetic chemical pesticide) and Metarhizium (biopesticide). This is likely to affect the natural resource-based livelihoods and community health.

Emergency Locust Response Program

Previously, the Bank has provided support through a Contingency Emergency Response Component (CERC) under the Kenya Climate Smart Agriculture Project (KCSAP) which has financed desert locust control activities in the same regions. The KCSAP is also currently implementing livelihood activities similar to those to be financed under Component 2 of the ELRP. Thus, the activities will complement the ongoing GoK and other development partners activities to control the desert locust infestations.

The project is financing activities that will have positive impacts and benefits to the areas currently infested with the desert locust. The proposed locust control activities will eliminate swarms of locust that have destroyed vegetation, crops and restore livelihoods that have been destroyed in these parts of the Country. Through the project livelihood restoration and recovery component, the project could positively and negatively affect pastoralist and farmers communities that have seen their livelihood destroyed by large swarms of desert locust. Particularly disadvantaged and vulnerable groups could include internally displaced people (IDP), refugees, pastoralists, persons with disabilities, and women and girls across these groups.

Project Development Objectives

The Project Development Objectives (PDO) is to prevent and respond to the threat to livelihoods posed by the desert locust outbreak and to strengthen Kenya's system for preparedness. Citizen engagement will be monitored by tracking awareness raising communication campaigns conducted and grievances registered and resolved by the program.

Project Components

The agricultural systems of the countries affected by the desert locust outbreak Kenya included, are highly vulnerable to the impacts of climate change and weather variability. Recent climate modelling and climate change and disaster risk screening conducted by a World Bank team suggest that global warming will lead to higher-than-average rainfall in the sub-region, stimulating higher vegetation growth and generating the conducive breeding ground for locusts. The ELRP will address the vulnerability to climate-induced locust upsurge by strengthening capacity for ex ante surveillance and control operations. It will support investments in monitoring and control of locust populations, as well as build resilience by rehabilitating the livelihoods of locust-affected communities. The program objectives in Kenya will be achieved by supporting investments across the following technical components of the ELRP.

Component 1: Surveillance and Control Measures

The objective of activities under this component is to limit the growth of existing climate-change-induced desert locust populations and curb their spread, while mitigating the risks associated with control measures and their impacts on human health and the environment. Activities to be supported would be continuous surveillance and monitoring, spraying of hopper bands and adult swarms, and delivery of training and capacity building to field teams to ensure that operations are carried out in a safe and effective manner. Component 1 has 2 sub-components described below.

Sub-component 1.1: Continuous Surveillance

This sub-component will finance the surveillance activities including both aerial and ground surveillance. The surveillance activities will be anchored at the national level and will be undertaken through already established ground control stations. Continuous surveillance will be designed to enable informed and climate-responsive locust management decision-making. The surveillance activities will cover the following broad areas: (i) monitoring the presence of and movements of adult swarms, breeding and egg-laying areas and the movement of developing nymphs and hopper bands, all to support improved forecasting of breeding and migration and decision making on areas to be treated and appropriate and optimal control methods to break the cycle of the next generation; (ii) evaluating the effectiveness of locust control operations; (iii) aerial and ground assessments of damage caused by the locust upsurge to crop and pasturelands to guide targeting of livelihood protection and restoration activities to be supported under Component 2; and (iv) continuous monitoring and assessment of environmental and human health risks associated with locust control. Innovative approaches to surveillance such as the use of satellite maps, drones, eLocust3, Geographical Positioning Systems (GPS) enabled cameras and meta-data analysis and climate information for locust risk mapping will be

used, building on work already going on related to big data and disruptive agricultural technologies under the KCSAP.

Sub-component 1.2: Control Measures

Control will reduce locust populations and prevent their spread to new areas. This would be achieved via a range of targeted ground and aerial control operations and would emphasize, whenever possible, neutralizing hopper bands before they develop into adult swarms, which leads to another cycle of infestation and expansion and requires more costly and logistically challenging aerial spraying. Depending on the size of hopper bands and of the related infested areas, their control can be handled either by ground control teams or aircraft spraying either with insect growth regulators, bio-pesticides or conventional chemical pesticides. The primary strategy to be employed in the control of the desert locust will be to target the breeding sites and control the hoppers, i.e. while locusts are still at the nymph stage before they can fly. The adult locust swarms shall be controlled mainly through aerial sprays. This sub-component would finance the spraying equipment, protective gear, approved pesticides, and safety and awareness training for spraying teams and other locust control personnel. Public awareness campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations. The project will also implement health, environmental and safety measures to avoid risks where possible or reduce risks to an acceptable minimum.

Component 2: Livelihoods Protection and Rehabilitation

Beyond the immediate control measures deployed to curtail the proliferation and spread of the locusts, the next priority and the objective of Component 2 would be to help protect the poor and vulnerable in locust- affected areas from human capital and asset loss, enhance their access to food, and restore livelihoods that have been damaged or destroyed by swarms. The objective of this component is to support affected farmers and livestock holding households restore their productive assets for enhanced adaptation and resilience. A separate ESMF has been prepared for component 2.

Component 3: Coordination and Early Warning Preparedness.

Interventions under this component would include establishing and strengthening a Locust Control Unit (LCU) within the Plant Protection Services Division (PPSD) of MoALFC at the national level to prevent future outbreaks from spiralling out of control. Early warning systems will be developed and implemented to support prevention and rapid response to new and existing climate change-induced locust infestation, thereby limiting in-country and cross-border spread and intensification. Activities under the component will include: (i) bringing in specialized personnel in the areas of entomology, GIS, climate change and climate resilience within the LCU and undertake capacity building related to locust management activities at the national and county levels; (ii) working with the impacted counties and advocating for the establishment of similar locust control units at the county level; (iii) monitoring weather trends and normal desert locust territories to identify the conditions for an outbreak and early population increases; (iv) establishing communication/notification systems and protocols through international, regional, and national bodies so that warnings are not missed and that recipients of warnings understand the importance of the information (e.g., translating dense scientific material into

comprehensible messages); (v) establishing linkages with international and regional bodies and developing standard operating procedures for a desert locust response; and (vi) supporting existing manufacturers to build the capacity to produce sufficient quantities of quality biopesticide for use during future outbreaks. Due to the emergency nature of this project, the environmental and social instruments required may be deferred, the production and implementation of these instruments will be presented as specific commitments for the relevant components in the Environmental and Social Commitment Plan (ESCP) developed.

Component 4: Project Management

This would finance the associated costs such as financial management, procurement, environmental and social management, and communications. The communications component, in particular, apart from external and internal communication activities can promote increased community awareness about locust response and what they need to do when their area has been treated with pesticides (e.g., do not eat the locusts or feed them to livestock, do not dump in water bodies, etc.), as well as coordination among responsible entities (international, regional, national, and subnational) to better respond to outbreaks.

Project Beneficiaries

The Project is expected to benefit all the farmers in the impacted counties in Kenya. The component 1, 3 and 4 will be implemented in all the counties that have experienced locust infestations. However, component 2 will be implemented in specific wards that are most impacted in the 15 of the most severely impacted counties in the country. The primary project beneficiaries will be affected farmers, pastoralists and households that have been affected by the locust upsurge and are food insecure. Vulnerable and marginalized households and female headed households will be prioritized in the targeting process.

Justification and Objective of ESMF

ESMF was selected as the environmental and social instrument for assessing, managing and monitoring environmental and social risks and impacts of the Project and specifically Component 1. Since the actual areas to be sprayed are not known, i.e. the breeding and egg laying areas and will only be known when mapping and surveillance is undertaken, and since the pesticides to be applied in infested areas are only determined after analysing the breeding locations, ESMF is the most appropriate instrument.

This ESMF lays out screening processes and tools directly implemented by the MoALFC/NPCU to assess risks and impacts per activity. This will facilitate the recommendation of appropriate mitigation and monitoring measures for each activity. The main purpose of this ESMF is therefore the establishment of procedures and methodologies for environmental and social assessments, review, approval and implementation of activities to be financed under the project, as the nature, scope and locations of activities become known during the implementation of the project.

The ESMF describes the appropriate roles and responsibilities of MoALFC/NPCU and other stakeholders and outlines the reporting procedures on environmental and social risk issues. It describes the managing and monitoring processes of environmental and social

risks and impacts related to the activities to be implemented under Component 1. It further determines the training, capacity building and technical assistance required for MoALFC/NPCU to successfully implement the provisions of the ESMF; and provides practical information resources for implementing the ESMF. It also lays out the Project's staffing and institutional arrangements clarifying the relations between MoALFC/NPCU and the World Bank, including their roles and responsibilities in view of the implementation of the ESMF.

Policy, Legal and Institutional Issues

The following legal instruments among others were reviewed in view of the fact that they provide guidance and regulations when implementing pesticide use projects. These are principally the GoK legislations that apply to this project and a comparative analysis has been made between some certain relevant regulations of the GoK and the applicable Bank's Environmental and Social Standards (ESS).

- *Constitution of Kenya (2010)*
- *Environmental Management and Coordination Act (1999) and amendment 2015*
- *Water Act*
- *Occupational Health and Safety Act*
- *Public Health Act*
- *Wildlife Act*
- *Forest Act*
- *Agriculture Act*
- *Employment Act*
- *Crop Protection Act*
- *Public Health Act*
- *The Agricultural Sector Development Strategy (ASDS)*
- *The National Agricultural Sector Extension Policy (NASEP)*
- *The National Productivity Policy (NPP)*
- *Chapter 324 – Plant Protection Act*
- *Chapter 346: Pest Control Products*
- *Chapter 326 – Seeds and Plants Variety Act*
- *The Pest Control Products (Licensing of Premises) Regulations, 1984*
- *The Pest Control Products (Labelling, Advertising and Packaging) Regulations, 1984*
- *The Pest Control Products (Importation and Exportation) Regulations, 1984*
- *The Pharmacy and Poisons Act*
- *Pest Control Products (Licensing of Premises) Regulations, 1984*
- *Pest Control Products (Disposal) Regulations, 2006*
- *Convention on Biological Diversity (1992)*
- *International Plant Protection Convention of FAO (1952)*
- *United Nations Framework Convention on Climate Change (1992)*
- *World Food Security and the Plan of Action of November 1996*
- *FAO Desert Locust Guidelines (2003)*
- *FAO Guidelines on Developing a Reporting System for Health and Environmental Incidents Resulting from Exposure to Pesticides, 2009*
- FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
- *FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)*
- *FAO Guidelines on Good Practice for Ground Application of Pesticides (2001)*
- *FAO Guidelines on Management Options for Empty Pesticide Containers*
- *FAO Guidelines on Desert Campaign organization and execution, FAO Rome 2001*

- *FAO Guidelines on Desert Locust Control (2003)*
- *FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)*
- *WHO Guidelines for personal protection when handling and applying pesticides- International Code of Conduct on Pesticide Management*
- *Guidelines for personal protection when handling and applying pesticides,2020;*
- *Guidelines on Organization and Operation of Training Schemes and Certification Procedures for Operators of Pesticide Application Equipment,2001;*
- *Guidelines on Developing a Reporting System for Health and Environmental Incidents Resulting from Exposure to Pesticides,2009;*
- *Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011 and*
- *The International Code of Conduct on Pesticide Management of the World Health Organization Food and Agriculture Organization of the United Nations Rome, 2014*

Environmental and Social Risk Management Instruments

Prior to appraisal, GoK prepared and disclosed an Environmental and Social Commitment Plan (ESCP), and Stakeholder Engagement Plan (SEP), which includes guidance on outreach activities and the establishment of grievance redress mechanisms (GRM) prior to undertaking desert locust control activities. There are other environmental and social risk instruments that will complement this ESMF and IPMP and include Gender Based Violence (GBV) Action Plan, Security Management Plan (SMP) and Labor Management Procedures (LMP) which have been developed. (See annex D, E and F for LMP, SMP and GBV Action plan).

Environmental and Social Requirements

In order to reduce, minimise and mitigate adverse risks and impacts and undue harm of its development projects to the environment, all Bank-financed projects are guided by applicable environmental and social standards under the Environmental and Social Framework (ESF). A number of Bank's ESSs are applicable as a result of this project E&S screening and they include: -

Table 0-1. Relevant Environmental and Social Standards

ESS	Rationale
Assessment and Management of Environmental and Social Risks and Impacts. (**ESS1**)	The pesticide applications will cover large swathes of the country, approximately 15 counties impacted by the desert locust infestations. The use of the pesticides will potentially impact local populations dependent on natural resources for their livelihoods such as pasture, vegetation and crop fields. The project will identify and map out ecologically sensitive and agronomically sensitive areas such as water bodies, national parks, reserves and crop fields. The use of biopesticides (Metarhizium) in the project will significantly minimise the adverse impacts on the environment. Biopesticides are usually less toxic than conventional pesticides, only affect the target pests and closely related organisms, in contrast to broad spectrum (conventional pesticides may affect

	organisms as different as birds, insects and mammals) and are often effective in very small quantities and often decompose quickly resulting in lower exposure and largely avoiding the pollution problems caused by conventional pesticides. However, the use of Fenitrothion (an organochlorine) and a conventional pesticide in the project is likely to lead to significant risk to human health and a high potential for adverse ecological effects. The potential negative environmental risks and impacts associated with these desert locust control activities include: (i) Potential spillage or leakage of pesticides (considered hazardous materials) during transportation, handling, storage of the pesticides, dosage during treatment and disposal of used pesticide containers/drums, this will likely lead to the contamination of the environment and potential health hazards to the pesticide applicators and communities. (ii) risk of diversion of pesticides for other uses; (iii) inappropriate use of pesticides; (iv) potential high risk of accumulation of obsolete stocks. In terms of social risks, with the locust invasion in affected counties, compounded by the current COVID-19 crisis, effective communication with affected people, culturally appropriate communication for pastoralists and other traditional local communities, stakeholder consultation and engagement activities will be especially challenging to ensure timely and meaningful consultations to meet project and stakeholder needs. Additionally, if the aerial spray is applied improperly it can destroy crops, livestock, human health and surface water. Surveillance and control measures can exacerbate exposure of women/girls to insecurity as they may be forced to walk long distances to access food and search for pasture. This including the low status of women, pre-existing high prevalence of GBV, acceptability of GBV (e.g. early/forced marriage, intimate partner violence) and high levels of poverty, are likely to heighten the community's vulnerability to sexual exploitation and abuse (SEA)/GBV. With the possible deployment of external personnel -including agricultural extension workers, contracted workers and specialists, paramilitary cadets- to conduct ground spraying in these areas, women and girls may face growing levels of SEA, also as a negative coping

	strategy. Therefore, an GBV action plan (with costs integrated into the project budget) will be prioritized as a first step after project approval and implemented before new interventions begin. This needs to be expedited immediately, so as not to delay the implementation of component 1.
Labor and Working Conditions **(ESS2)**	Use and application of the pesticides could result in potential adverse effects on the health of the control teams where both ground and aerial spraying may take place. Spray workers who are directly involved in spraying operations will be exposed to the pesticides, and thus also run the highest risk of being impacted. Other risks by workers may include Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA/H)/Harassment which may be further exacerbated by possible use of National Youth Service officers. (see ESS 4). A GBV/SEA Action Plan has been developed to mitigate against GBV/SEA impacts. The COVID-19 pandemic also presents a risk to workers who in the application or pesticides and interacting with local communities may get exposed to the COVID-19. World Bank Technical Guidelines on interactions during COVID-19 as well as GoK guidelines on the same will be observed during project implementation. Equally, security concerns for workers is likely and of concern as a result of interactions between the spray teams (workers) and local communities which could lead to tensions and present security threats to the workers and further exacerbated by possible use of National Youth Service officers. The project areas are also prone to terrorist attacks and cattle rustling which may expose workers to such security related risks. A Security Management Plan has been developed to manage security related concerns. The project will develop and implement a Labor Management Procedures to address labor and working conditions.
Resource Efficiency and Pollution Prevention and Management **(ESS3)**	The use of pesticides is likely to lead to contamination and pollution of water bodies including wetlands, rivers, lakes etc. The project will finance procurement of large quantities synthetic chemical pesticides and biopesticides and equipment to support the application of the pesticides which will generate wastes (containers) etc. that could pollute land and water resources.

Community Health and Safety **(ESS4)**	Use and application of the pesticides could result in potential adverse effects on the health of local communities where both ground and aerial spraying may take place. Community health and safety risks including, inter alia, risks to livestock, crop, fodder, and humans associated with inappropriate use of pesticides during spraying; risks of labor misconduct; related sexual exploitation and abuse; risks of security personnel are likely to be experienced. Most of the project activities will be implemented in rural and remote areas, of which many have been prone to social tensions and communal and political conflict, inhabited by different social groups, as well as IDPs and refugees. The locust upsurge in affected counties, compounded by the current COVID-19 crisis, may further expose women/girls to insecurity as they may be forced to walk long distances to access food and search for pasture. This including the low status of women, pre-existing high prevalence of Gender Based Violence, acceptability of Gender Based Violence (e.g. early/forced marriage, intimate partner violence) and high levels of poverty, are likely to heighten the community's vulnerability to sexual exploitation and abuse (SEA)/Gender Based Violence. With the possible deployment of external personnel-including agricultural extension workers, contracted workers and specialists, National Youth Service (NYS) paramilitary cadets to conduct ground spraying in these areas, women and girls may face growing levels of SEA, also as a negative coping strategy. While the NYS has a modus operandi, the project would review this and strengthen where necessary, to ensure that their participation in project activities will not result in adverse consequences to community health and safety, including in matters relating to GBV and SEA/SH. A GBV Action Plan will be prepared and implemented if found pertinent. The project will promote the avoidance of SEA by relying on the WHO Code of Ethics and Professional Conduct for all workers as well as the provision of gender-sensitive infrastructure such as segregated toilets in ground stations.

	The interaction between local communities and workers may also lead to increase of communicable diseases.
Biodiversity Conservation and Sustainable Management of Living Natural Resources **(ESS 6)**	The use of the pesticides (especially conventional pesticides) will potentially adversely impact natural resources including ecologically sensitive and agro-ecological zone, sensitive areas/habitats such as water bodies, national parks, reserves, wetlands etc. which are present in the targeted 15 Counties. The MoALFC will identify and map out the sensitive ecological areas that include national parks, reserves, wetlands and agronomically sensitive areas, important fruit-growing areas; beekeeping areas; areas with export crop or livestock production and areas with organic farming). The sensitive ecological and agronomically will not be sprayed with chemical pesticides but will be evaluated and given treatment of the biopesticides that are less harmful.
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (**ESS7**)	Especially pastoralists, will be especially hard hit as their livelihoods are inextricably linked to land and pasture, which is being damaged by locust swarms. Pastoralists' options would be limited to: (a) migrating to find pasture, which could lead to conflict with other pastoralist groups; or (b) searching for alternative livelihood if they are permanently decapitalized due to the loss of fodder for their animal.
Stakeholder Engagement and Information Disclosure **(ESS 10)**	A key risk under this standard, relates to potential inadequate, ineffective, insufficiently inclusive, and inappropriate stakeholder and community engagements and disclosure of information leading to exclusion of truly vulnerable, marginalized and minority members of the community from expressing their views and concerns relating to the project and to their exclusion from sharing in project benefits, amplified by the context of limited resources against widespread need. Others include elite capture where project benefits are diverted to less-needy individuals and locations and poor access to beneficiaries for meaningful community engagements and difficulty in monitoring for social harm.

Sub projects[1] (spray operations in a selected areas) will be subjected to ESSs screening to ensure the ESSs currently identified as irrelevant will (ESS5 and ESS 8) be excluded from financing or otherwise managed.

[1] In the 15 Counties infested by the desert locust, a sub project implies an area infested by the locust within the County and determined through surveillance. This implies that desert locust spray activities may only happen in a given area of a County referred as "sub project" area.

Environmental and Social Risks Classification

Environmental Risk Classification

The application of the pesticides will cover large swathes of the Country, approximately 15 Counties impacted by the desert locust infestations and the use of the pesticides will potentially impact local populations dependent on natural resources for their livelihoods such as pasture, vegetation and crop fields and as such the project environmental risk is considered **Substantial.**

The Project will finance the use of two pesticides (already approved by the Bank) for the desert locust control activities, a **chemical pesticide** Fenitrothion 96% which is a WHO **class II**, formulated as ULV and a **biopesticide** Metarhizium. The biopesticide risks to the environment and applicators are minimal as it contains a fungus that is highly specific to this species of locust and safe to other species of insects, animals and humans. The use of Fenitrothion 96%, an organophosphate for locust control will present environmental and social risks including (i) Potential spillage or leakage of pesticides (considered hazardous materials) during transportation, handling, storage of the pesticides, dosage during treatment and disposal of used pesticide containers/drums, this will likely lead to the contamination of the environment and potential health hazards to the pesticide applicators and communities. (ii) Potential risks of polluting ecologically sensitive habitats such as wetlands, national parks, reserves and water bodies. (iii) The application of the pesticides if not properly managed could contaminate community water sources such as shallow boreholes, pasture and browse for livestock and wildlife and affect agronomically sensitive areas where crops may be grown for export. (iv) The use and application of pesticides if not properly managed could contaminate and lead to poisoning of the pesticides application teams and on local communities where both ground and aerial spraying may take place. To manage this risk the project will provide appropriate and adequate Personal Protective Equipment (PPEs). SOPs for spraying activities and will use biopesticides in the area identified as sensitive ecological agronomical to minimize and mitigate any potential negative impacts. Mitigation measures will be put in place through provision of adequate and appropriate PPE, induction and training of the field control teams, conducting regular tests of cholinesterase for the operators and field locust control teams and undertake rotation of operators involved in organophosphate pesticide applications to avoid overexposure to pesticides. Mitigation measures will be put in place through provision of adequate and appropriate PPE, induction and training of the field control teams, conducting regular tests of cholinesterase for the operators and field locust control teams and undertake rotation of operators involved in organophosphate pesticide applications to avoid overexposure to pesticides.

Social Risk Classification

The principle social risks associated with the project fall broadly into one main category: - (i) risks to the community and workers from the locust control measures under Component 1, sub-component 1.2 (control measures). Under Component 1, labour influx associated with these control measures is a primary risk, as it may impact upon the community through sexual exploitation and abuse of vulnerable women and girls or spreading of communicable diseases (including HIV/STDs and COVID-19) to otherwise isolated rural communities with limited access to health services. Labor field officers who are directly involved in

spraying operations tend to be the most exposed to insecticides, and thus also run the highest risk of being poisoned. Other field staff can also be exposed. Necessary PPE will be provided to all field officers directly involved in spraying. In addition to OHS aspects, staff will also sign a code of conduct in relevant languages and receive training on the same. Each project will prepare a LMP before the commencement of project activities. It will apply to all Project workers whether full-time, part-time, temporary or seasonal.

Out of these risks, the most concerning is the risk of sexual exploitation and abuse, and other forms of violence, perpetrated by project workers[2] in ground operations. Members of the National Youth Service (NYS), commonly referred to as a paramilitary organization, will be used to provide support in undertaking the locust control activities that may include management of the field operation offices and ground spraying. This will be categorized as part of GOK workers whose terms and benefits are aligned with GOK procedures. NYS is a fully fledged semi-autonomous state corporation established by the NYS Act 2018 with clear deployment, reporting and management structure. Even though section 38 of the NYS Act 2018 clearly prohibition its officers against torture or other cruel, inhuman or degrading treatment, NYS has, on several occasions, been cited in the press as perpetrating human rights violations whilst on official deployments. The NYS have been undertaking locust related activities with ministry and FAO staff across the project area, including under the recent Contingency Emergency Response Component (CERC). The living arrangements for deployed NYS are understood to be essentially unregulated, spending several days in the field and often camping in school grounds. It is for this reason that the social risk classification for the project is **high.**

Environmental and social risks associated with Component 2 are not covered in this ESMF.

The overall Environmental and Social Risk Classification is rated as **High**. The overall risk is high because the risk rating for Social is HIGH. The reasons for the high-risk rating are described in the above section. The project will mitigate the risks by: (i) ensuring constant technical support to the implementation teams at the National and county levels from the World Bank task team, and the strong involvement and ownership of the county leadership, namely the Governors and the County Executive Committee members for Agriculture; (ii) strengthening the capacity of the National PCU through the placement of additional dedicated Social Safeguard Specialists, Environment Safeguard Specialists, GBV Specialist, GRM Specialist, Procurement Specialist and other technical specialists for this project apart from the specialists that are already in place under KCSAP; and (iii) ensuring that the implementation of the risk mitigation measures proposed under the environment and social safeguard sections are monitored regularly and regular feedback on the quality of implementation of these measures are provided to the client.

[2] ELRP is planning to recruit spray operators from the local areas. Workers also include MoALFC and those form other agencies including from respective County Governments

Adverse Risks, Impacts and Mitigation Measures

Below is a summary of the potential negative environmental and social risks and impacts that the Component 1 may have and proposed mitigation measures.

Table 0-2. Summary of Mitigation Measures

RISKS RELATING TO PESTICIDE LIFE CYCLE	RISK LEVEL	MITIGATION MEASURES	RESPONSIBLE
Procurement			
Procurement from uncertified sources	L	Good registration process requiring submission of specification, source of supply etc.	MoALFC
		Designation and licensing local importer, linked to a known international supplier	MoALFC/NPCU
		Establishment of a transparent tendering process	MoALFC
Importing wrong pesticide specification	L	Above listed mitigations plus Robust inspection at port of entry and manufacture specification	MoALFC
Pilferage at port-of-entry and enroute to central storage	M	Linking transportation from port-of-entry to central warehouse as part of importer responsibility	MoALFC/NPCU National Police Service National Youth Service
		Use of certified/licensed drivers and dedicated transportation.	
		Use security guard during transportation	
Pilferage at central stores	L	Pesticide stock protected by same high-level security for drugs and other essentials	
Inland Transportation			
Inadequate transportation	M	Use of certified/licensed drivers and dedicated vehicles.	MoALFC/NPCU CPCU National Police Service National Youth Service
Pilferage	L	Use security guard during transportation	
Transport relation incidents	L	Transporters trained on first response to incidents (e.g. secure site, call emergency response)	
Storage and Pesticide Management in Spray Areas			
Pilferage	H	Secure, dedicated storage facilities and, as necessary, use of security guard	MoALFC/NPCU CPCU National Police Service National Youth Service
		Strict auditing scheme (e.g. daily spray cards, team leader daily summary cards, supervisor daily summary cards)	

RISKS RELATING TO PESTICIDE LIFE CYCLE	RISK LEVEL	MITIGATION MEASURES	RESPONSIBLE
		Regular inventories	MoALFC/NPCU CPCU
Inappropriate storage practices	M	Trained storekeepers in pesticide management	MoALFC/NPCU CPCU
		Regular inspections	
		Good storage maintenance	
		Effective inspection regimes	MoALFC/NPCU CPCU
End-use of Pesticide: Human Safety			
Exposure of spray operators and other handlers	H	▪ Training on best practices for all categories of workers	MoALFC/NPCU CPCU
		▪ Use of full PPEs by all spray operators	MoALFC/NPCU CPCU
		▪ Availability and effective use of ablution facilities	MoALFC/NPCU CPCU
		▪ Clear criteria for reprimand for non-compliance	MoALFC/NPCU CPCU
		▪ Provision of first aid facilities and training of administration of first aid during exposure to pesticides.	MoALFC/NPCU CPCU
Exposure of communities	H	▪ Safe disposal of used PPE and other waste associated with spraying activities	MoALFC/NPCU CPCU
		▪ Field supervision to assure best operator practices	MoALFC/NPCU CPCU
		▪ Avenue for receipt of complaints	MoALFC/NPCU CPCU
		▪ Enforce any exclusion period after application-time during which humans, livestock, etc., must be kept away from the treated area.	MoALFC/NPC CPCU
		▪ Develop awareness protocol for handling dead locusts (do not eat or feed livestock) including requirement to sweep and bury the locusts in pits to avoid possible poisoning of poultry/birdlife by feeding on them.	MoALFC/NPCU CPCU
		▪ Training and awareness creation targeting local communities on the effects of exposure to the pesticides and related safety precautions including accidental exposure etc	MoALFC/NPCU CPCU

RISKS RELATING TO PESTICIDE LIFE CYCLE	RISK LEVEL	MITIGATION MEASURES	RESPONSIBLE
		▪ Effective inspection regimes	MoALFC/NPCU CPCU
Poisoning incidents	L	▪ Staff training and IEC with components aimed at preventing poisoning.	MoALFC/NPCU CPCU
		▪ Enhance capacity for poison management by: o Training of all category of workers to identify danger signs and required response o Training health workers, designate and equip district reference points for treatment of incidents of pesticide poisoning o Conduct pre-post medical test for the control teams and regular blood test to check exposure/toxicity levels through the acetylcholinesterase blood test	MoALFC/NPCU CPCU
Social Ills (Spread of STIs), GBV/SEA, tension		▪ Develop and implement GBV Action Plan ▪ Follow the GOK protocols and Bank guidelines on COVID-19 to minimize exposure and infection during operations ▪ Create awareness on communicable diseases that may be spread as a result of influx of worker and measures for mitigation ▪ Establish GRM system to handle tensions that could arise due to the project workers and local communities.	MoALFC/NPCU CPCU
End-Use of Pesticides: Environmental Safety			
Environmental release from handling/spray activities affecting sensitive ecosystems, protected areas, national parks, wetlands, areas where organic farming is practised etc.	H	▪ Application of best practices (triple wash/rinse water re-use)	MoALFC/NPCU CPCU
		▪ Construct of pits (with charcoal) to dispose rinsate.	
		▪ Prohibition of decanting into streams and open drains	
		▪ Prohibit worker washing in streams	
		▪ Clear criteria for reprimand for non-compliance by spray workers	
		▪ Effective inspection regimes	MoALFC/NPCU CPCU NEMA KWS KFS KALRO

RISKS RELATING TO PESTICIDE LIFE CYCLE	RISK LEVEL	MITIGATION MEASURES	RESPONSIBLE
Non-recommended use of pesticides	M	▪ Secure storage, management and inventory system	MoALFC/NPCU CPCU
		▪ Effective enforcement	MoALFC/NPCU CPCU
		▪ Significant punitive measures against pilferage	MoALFC/NPCU CPCU National Police Service
		▪ Effective IEC on dangers and consequences of non-recommended use of pesticides	MoALFC/NPCU CPCU
Disposal			
Release of empty packaging materials in general environment or reused for non-recommended purposes.	H	▪ Strict auditing (see above) and accounting for empty sachet and packaging materials for sound disposal ▪ Crushing the used/empty containers and possible return to manufacturer arrangements ▪ Safe disposal of used PPEs	MoALFC/NPCU CPCU

Risk Level

High	
Medium	
Low	

Procedure for Preparation of Sub-Project of E&S Instruments

Using this ESMF which is in essence a guide, there would be need to develop site specific Environmental and Social Impact Assessment (ESIAs) for each area specific locust surveillance and control activities once the scope and location among others are known in order to ensure compliance with the NEMA EIA/EA regulations and World Bank's ESS. National Environment Management Authority (NEMA) has classified aerial spraying as a **High-Risk** activity (Agriculture) requiring the preparation of ESIA study report. For this reason, ELRP would be required to prepare ESIA for the spray operation areas in the 15 Counties. All the ESIAs would have to be prepared by a NEMA registered EIA/EA expert, reviewed and approved by PIU and submitted to NEMA and the World Bank for further review and approval prior to commencement of spray operations.

However, due to the emergency nature of the project, a waiver will be sought by the MoALFC from NEMA to instead use an the ESMF and the Integrated Pest Management Plan (IPMP) that have been prepared for this Project rather than conducting ESIA studies for each spray operation and subject the same to the approval process as per the EIA/EA regulations which is lengthy and would negate the emergency nature of and context of the project. A multi-disciplinary team will be constituted by the MoALFC to undertake monitoring of the desert locust control activities including environmental and social

monitoring of adverse impacts as provided for in the IPMP and sub project spray level IPMPs.

This ESMF provides guidance on how to screen targeted spray areas and determine the type of pesticide to be used based on the bio-physical characteristics of the spray area.

Through surveillance activities monitoring the presence of and movements of adult swarms, breeding and egg-laying areas and the movement of developing nymphs and hopper bands, all to support improved forecasting of breeding and migration and decision making on areas to be treated and appropriate and optimal control methods to break the cycle of the next generation will be undertaken and an informed decision made on areas to spray. When the surveillance teams arrive to such decisions, a screening checklist/form will be used/filled to map the sub project spray area and inform in making this determination on what type of pesticide to apply (See annex C). Screening will be undertaken by the environmental and social specialists who will be based at each of the Counties and part of the CPCU and reviewed and cleared by the environmental and social experts at the NPCU. Before spraying activities are carried out, screening shall be conducted based on the exclusion criteria in the ESCP, using the screening form (annex C). The following is a negative list of activities excluded for financing under the project:

- Activities that may cause long term, permanent and/or irreversible (e.g. loss of major natural habitat) impacts;
- Activities that have a high probability of causing serious adverse effects to human health and/or the environment, other than associated with spraying to control desert locust;
- Activities that may have significant adverse social impacts and/ or may give rise to significant social conflict;
- Activities that may affect lands or rights of Traditional Local Communities or other vulnerable and marginalized groups; and
- Activities that may involve involuntary resettlement or land acquisition or impacts on cultural heritage

This ESMF alongside the framework level IPMP already prepared will also guide preparation of sub project level (spray area) IPMPs which will be prepared by the environmental and social specialists who will be based at each of the Counties and part of the CPCU and reviewed and cleared by the environmental and social experts at the NPCU.

The preparation of sub project IPMPs will informed by the surveillance activities. Surveillance will be undertaken to monitor the presence of and movements of adult swarms, breeding and egg-laying areas and the movement of developing nymphs and hopper bands. Surveillance will support improved forecasting of breeding and migration and decision making on areas to be treated.

During the surveillance, if an area within the Counties affected is determined to be infested or likely to be infested by the desert locust, mapping as a standard operating procedure (SOP) of the geographical area (sub project area) specifically the bio-physical characteristics will be undertaken using innovative approaches to surveillance such as the

use of satellite maps, drones, eLocust3, Geographical Positioning Systems (GPS) enabled cameras. A screening form will be filled out describing the bio-physical characteristics and map attached which will inform whether to use the biopesticide (Metahirzium) or organophosphate (Fenitrothion) in the control operation. The biopesticide selected will be used in locations that have been screened and mapped and determined to have ecologically and agronomically sensitive ecosystems including surface water bodies, wetlands, forests and parks etc.

Capacity Building

Capacity development and strengthening remains a crucial component in this ESMF and will be integrated all through the project implementation phase. The Project will be implemented by the MoALFC which has a long experience of implementing World Bank financed projects under the safeguards policies, these include Kenya Climate Smart Agriculture Project (KCSAP), the National Agriculture and Rural Inclusive Growth Project (NARIGP) and the Regional Pastoral Livelihood Resilience Project (RPLRP). Currently the MoALFC is executing a similar desert locust control operation financed under the Contingency Emergency Response Component (CERC) under Kenya Climate Smart Agriculture Project. Thus, MoALFC has established a NPCU and recruited qualified Environmental Specialist, Social Specialist, Grievance Redress Management Officer and Gender Based Violence Expert. The Project is working with FAO on the desert locust operations who are providing technical support to MoALFC through the Multi-Institutional Technical Team (MITT) on the pesticide selection, applications and management. MoALC has adopted several FAO Desert Locust Guidelines, which are aligned to Good International Industry Practice (GIIP) in managing the environment, health and safety risks for this operation. They include:

- FAO Desert Locust Guidelines (2003)
- FAO Guidelines on Developing a Reporting System for Health and Environmental Incidents Resulting from Exposure to Pesticides, 2009
- FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
- FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)
- FAO Guidelines on Management Options for Empty Pesticide Containers
- FAO Guidelines on Desert Campaign organization and execution, FAO Rome 2001
- FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)
- WHO Guidelines for personal protection when handling and applying pesticides-International Code of Conduct on Pesticide Management

In order to strengthen the capacity of the NPCU, CPCU and other implementing agencies, the following capacity building efforts are recommended. The World Bank and FAO will train the NPCU on topics highlighted in the table below. The NPCU will thereafter provide training to the CPCU and sub county technical teams on the topics outlined below supported by FAO. To ensure that the message and quality of training is assured, NPCU will besides using FAO, will engage consultants familiar with Bank's ESF, ESS and the other relevant instruments to support the county-based trainings.

Table 0-3. Capacity Building

Training Topic	Target	Trainers
World Bank ESF, ESS	NPCU, MITT	World Bank

Monitoring of impacts of pesticides on soil, water, health, biodiversity, livestock etc.	NPCU, CPCU, NEMA, KWS, KFS, DVS, KALRO, KEPHIS	FAO
County Project Coordinating Unit		
World Bank ESF, ESS	CPCU	NPCU
ESMF, IPMP, GBV Action Plan, SMP, GRM	CPCU	NPCU
Monitoring of impacts of pesticides on soil, water, biodiversity, livestock etc	CPCU	NPCU
Sub County Technical Teams		
World Bank ESF, ESS	Sub County Technical Teams	NPCU and CPCU
Monitoring of impacts of pesticides on soil, water, biodiversity, livestock etc	Sub County Technical Teams	NPCU and CPCU
ESMF, IPMP, GBV Action Plan, SMP, GRM	Sub County Technical Teams	NPCU and CPCU

Monitoring and Reporting

MoALFC will be required to prepare and submit to the Bank regular monitoring progress reports on the environmental, social, health and safety (ESHS) performance of the Project, including but not limited to, the implementation of the ESCP, status of preparation and implementation of E&S documents required under the ESCP, stakeholder engagement activities, and the functioning of the grievance mechanism. Reporting will be quarterly and annually throughout the project implementation period. MoALFC will promptly notify the Bank (within 48 hours) of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers including child abuse, gender-based violence, pesticide spills or misuse, diversion of pesticides or any dispute between local communities and project workers.

Public Consultations and Disclosure

Stakeholder consultation was undertaken for this ESMF and IPMP virtually on the 7th July 2020 and the recommendations from the consultations were included in the ESMF document. Participants in the stakeholder consultations who raised the concerns in table below included representatives from among others: -

- County Governments
- Non-Governmental Organisations (including self-help groups and CBOs)
- Community leaders
- KALRO
- FAO
- ELRP/NPCU
- KCSAP
- World Bank

This ESMF and IPMP will be disclosed on MoALFC's website of and World Bank's external website upon its review and approval by the MoALFC and the World Bank. The ESMF and IPMP will also be disclosed in the project areas and made accessible to the beneficiaries.

Table 0-4. Summary of Stakeholder Consultation Concerns

Concerns	Response
Concern over impacts of spray operations on apiculture and need for adequate mitigation measures.	▪ The project will use biopesticides in areas where apiculture is practised.
Concern over impacts of spray operations on avifauna and need for adequate mitigation measures	▪ The project will use biopesticides in areas where birdlife especially those that are considered important are known to exist. There will be mapping of such areas prior to commencing spray operations.
Concern over impacts of spray operations on non-target organisms (poultry) feeding on contaminated dead locust and need for adequate mitigation measures	▪ Awareness creation targeting community members will be undertaken to inform on how to handle dead locusts including sweeping and disposing the locusts in pits/burning prior to releasing poultry to feed/locking poultry and other livestock during spraying and observing re-entry timelines.
Concern over impacts of spray operations on livestock feeding on contaminated pasture of locust and need for adequate mitigation measures	▪ Awareness creation targeting community members will be undertaken to inform on how to handle dead locusts including sweeping and disposing the locusts in pits/burning prior to releasing poultry livestock during spraying and observing re-entry timelines.
Concern on the quality of staff to be hired to undertake environmental monitoring	▪ MoALFC to conduct recruitment of competent staff including provision of training and capacity building to the staff upon recruitment.
Request to establish Sub County Technical Teams as part of the organisational structure and implementation set up	▪ MoALFC to address this issue in follow on deliberations and report recommendations to the Counties.
Reservations on use of National Youth Service in the implementation and request to employ local youth instead.	▪ MoALFC to address this concern in follow on deliberations and report recommendations to the Counties.

Grievance Redress and Management

A project wide Grievance Redress Mechanism (GRM) is being set up tailored to the different project interventions, geographical scope of each intervention and in accordance with the existing procedures. The GRM is designed to address concerns and complaints promptly and transparently with no cost or discrimination towards project affected communities. The NPCU and CPCU will be the first point of contact for grievance redress

with appeals being referred to a GRM officer stationed at the NPCU or CPCU. Grievances may also be reported to the national institutions mandated to received and resolve environmental and social complains including National Environment Complaints Committee (NECC) and the Environment and Land Court. In line with ESS2, the project will also establish and implement a worker grievance mechanism to enable project workers to address project-related workplace concerns, including sexual harassment.

Reports will be periodically shared by each agency on complaints and grievance logs with the NPCU for monitoring purposes. The NPCU will maintain a documented record of stakeholder engagement and GRM, including a description of the stakeholders consulted, a summary of the feedback/grievances received and a brief explanation of how and when the feedback was considered, or the reasons why the issue could not be resolved. For complaints related to GBV, reporting and response protocol including identification of SEA/H and GBV-sensitive channels to be integrated into the grievance mechanism, and requirements for enabling survivor-centered care.

Robust community engagements will be conducted before commencement of project activities, according to the project Stakeholder Engagement Plan, as well as sensitization on the availability of a project GRM to support the systematic uptake, processing and resolution of project-related complaints and grievances. A rapid information dissemination campaign will be designed and implemented in a medium with a wide reach for all spraying operations, preferably local radios on the techniques of spraying, the chemicals used and its impacts on human health, crops and livestock. Vulnerable populations such as the elderly and people with disabilities will be supported in sheltering from the impacts of the spraying. The community engagements will be conducted in accordance with the GoK covid-19 regulations as well as the Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings.

Project Implementation and Institutional Arrangements

The project will be implemented by MoALFC. Within the MoALFC a Project Implementation Unit responsible for day-to-day implementation of activities under the leadership of the National Project Coordinator (NPC) has been established and staffed with an Environmental Specialist, Social Specialist, GRM Expert and GBV Expert among other non-environment and social experts. For smooth integration of project operations with other ongoing efforts on this matter, the project will operate within the structures established by the MoALFC specifically to deal with the locust crisis in the country. These include the Multi-Institutional Technical Team (MITT) and the Locust Command Centre (LCC) under the Plant Protection Services (PPS) Division.

The MITT on desert locusts is the main policy and technical advisory body that supports the MoALFC to proactively address the locust crisis facing Kenya. Members of the MITT are drawn from the following institutions: Ministry of Agriculture-Plant Protection Services, Kenya Agricultural Research Organization (KALRO), Kenya Plant Health Inspectorate Service (KEPHIS), Pest Control Products Board (PCPB), DLCO-EA, Food and Agriculture Organisation (FAO), University of Nairobi (UoN), International Centre

for Insect Physiology and Ecology (Icipe), Centre for Agricultural and Biosciences International (CABI), Joint Agriculture Secretariat (JAS) and Council of Governors (CoG).

At the county level, the project will operate under the implementation structures established under KSCAP and NARIGP for the respective counties covered under each. As per the need, these county teams will also be expanded to include additional human resources to support the initiatives that use this locust response project. The county agriculture teams and the county project coordinating units will work closely with the ground stations to be set up for day to day operations and monitoring.

National Youth Service (NYS) which is a state-owned corporation operating as a disciplined service and has its own procedures for recruitment and deployment of its officers and clear reporting chain of command. The NYS officers will be used in the spray operation activities, specifically undertaking the spray operations and will be trained on all the necessary spray requirements as outlined in this ESMF and attached IPMP as appertains to safe spray operations. NYS officers will not provide any form of security support to the project and will be unarmed when undertaking the desert locust control activities. The LMP prepared (annex D), outlines the requirements for NYS officers to comply with while supporting this project. The NYS officers supporting the desert locust control activities will be sensitized and trained on the GBV/SEA/SH risks and requirements.

COVID-19 Restrictions and Implementation

In light of the COVID-19 pandemic and potential risks associated with social interactions during the implementation of the spray activities including community sensitisation and awareness creation, this project will comply with the GoK guidelines on COVID-19 as well as WB Technical Note;-Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings.

The ESMF report is organized as follows:

- *Executive summary*
- *Chapter 1-Introduction Chapter and description of the proposed project*
- *Chapter 2-Study Methodology*
- *Chapter 3-Baseline information*
- *Chapter 4-Description of National and International Regulatory Framework*
- *Chapter 5-World Bank Environmental and Social Safeguards Policies*
- *Chapter 6- Determination of Potential Environmental Impacts*
- *Chapter 7- Project Coordination and Implementation Arrangements*
- *Chapter 8 - Capacity building and training requirements*
- *Chapter 9- Public Consultations and Disclosure*
- *Chapter 10 – Reference*
- *Chapter 11-Annex*

1 INTRODUCTION

The Government of Kenya (GOK) through the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC) has received financing from the World Bank for the Emergency Locust Response Program (ELRP). ELRP is a Multiphase Programmatic Approach (MPA) which is a programmatic framework approach for a regional response to Desert Locust crisis with "first mover" countries for which Kenya is included as phase 1 of the ELRP MPA. The desert locust invasion in Kenya that has been recorded as the worst in 70 years has posed a severe food security threat to about 3 million people. The invasion started in 28 December 2019 from Ethiopia and Somalia and has since spread to twenty-eight counties. The invasion has posed a risk to food and nutrition security and livelihoods thus undermining the economic growth. The second generation started forming swarms in April 2020, coinciding with the main planting season in Kenya and many other parts in East Africa.

Although ground and aerial control operations are underway, most government efforts to combat the locust invasion are overwhelmed. Across Eastern Africa, as elsewhere in the Middle East and South Asia, authorities are undertaking coordinated campaigns of ground and aerial pesticide spraying but the scale of the infestation is well beyond national capacity. As the leading technical agency for desert locust monitoring and management, the FAO launched an appeal in January 2020, and as of mid-April, is calling for more than US$150 million to support crisis response measures through July 2020 in some countries (Ethiopia, Kenya, Somalia, Sudan, and Yemen), but sizeable gaps remain. To date, the FAO has collected US$111 million in cash or pledges, but short-and long-term resource needs remain substantial. In addition to urgent locust control measures, grants will be provided to select Common Investment Groups (CIGs) and other emergency assistance will be needed in the aftermath of locust damage to help meet the immediate needs of affected communities. Once those needs have been met, additional support for the restoration of livelihood and food production systems will be paramount.

1.1 Project Need Emergency Locust Response Program

The Desert Locust invasion in Kenya that has been recorded as the worst in 70 years has posed a severe food security threat to about 3 million people. The invasion started on 28 December 2019 from Ethiopia and Somalia and has since spread to 28 counties. The invasion has posed a risk to food and nutrition security and livelihoods thus undermining the economic growth. The second generation started forming swarms in April 2020, coinciding with the main planting season in Kenya and many other parts in East Africa.

The locust plague when combined with COVID-19, climate shocks, and FCV conditions will exacerbate adverse impacts on food supply, incomes, and food and nutrition security in affected areas. An immediate effect of locust swarms is to destroy vast amounts of food crops in the field immediately, and through attrition with animals deprived of access to pasture or fodder. Pastoralists engage in distress sales with consequent asset losses and falling income as herds lose weight and exhibit increased mortality. Their limited options include (a) migrating to find pasture, difficult when the entire region is experiencing similar problems, and which could lead to conflict with other pastoralist groups and with farmers; or (b) searching for alternative livelihoods if they are permanently decapitalized.

Pastoralists also tend to be amongst those likely to fall into poverty in times of severe, prolonged crisis. Border closures, quarantines, supply chain ruptures, and trade disruptions will restrict people's access to sufficient, diverse and nutritious sources of food while further compressing incomes.

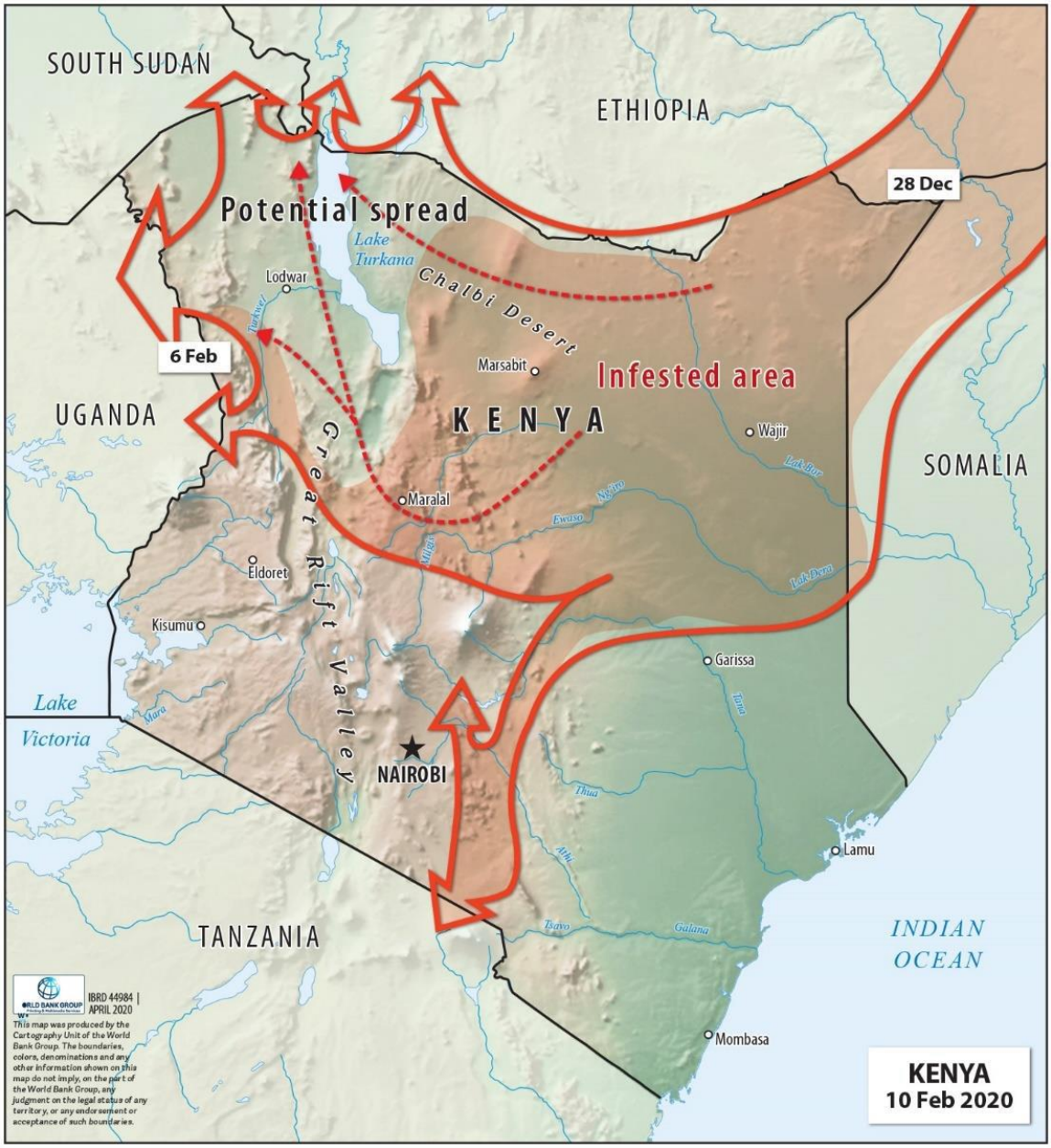


Figure 1-1. Extent of Desert Locust Upsurge in Kenya, February 2020 (FAO).

The consequences of inaction on locust control for farm and pastoral incomes and regional food supply are dire. FAO's mid-case scenario for the current locust crisis in East Africa without significant control measures would be depletion of 20-35 percent of pasture in affected areas, triggering abnormal livestock migration and animal losses or distress sales. It would also lead to crop failures, with a 30-50 percent cereals loss in affected areas. For the ten countries of GHoA and Yemen, the World Bank MPA team estimates potential annual losses (i.e. until the next locust- free main crop season) and damage (i.e. enduring

harm to herds) at US$8.49 billion, of which US$1.80 billion comes from staple crops (broader than the main cereals) losses, US$2.28 billion from livestock production and livestock export losses, and US$4.41 billion from damage to livestock assets. These estimates were developed without considering the multiplicative impacts of an escalating COVID-19 pandemic outbreak.

The poor are particularly vulnerable to livelihood loss and income shocks from locust damage as they have the least ability to save and smooth consumption in times of crisis. At times of crisis vulnerable households adopt negative coping mechanisms including reducing the quality and quantity of food consumed and removing children from school so that they can work, resulting in adverse long-term effects and deepening the challenge of breaking the intergenerational cycle of poverty. Child health and nutritional status typically deteriorate during a crisis, which hampers future productivity and welfare. In the Horn of Africa, the potential of severe localized losses of food, fodder and forage, could result in over three million farmers and half a million pastoralists being added to the existing population of 22.5 million already classified as severely food insecure (IPC3+).

The 2003-05 desert locust invasion in West Africa increased food insecurity and created pockets of famine in several Sahel countries. In Senegal, according to an assessment mission undertaken in 2004, some 124,300 rural households, 20 percent of the total population, needed emergency assistance. A study by the World Food Programme (WFP) in Mauritania, during the same period found close to 60 percent of the households interviewed were either food insecure or at risk of becoming so. The number of people requiring some form of assistance was as high as 400,000, or about 15 percent of the population.

Increasing food insecurity and loss of livelihood income will have a significant impact on human capital, as people forgo investments on adequate food, nutrition, and education. Increasing food prices would debilitate food consumption in poorer households, known to be net purchasers of food. With calorie intake that is already inadequate, higher food prices will push them towards less nutritious foods. The health and nutritional status of children especially can deteriorate significantly during a crisis-something that can cause long-term effects on future productivity and welfare. It will also push affected households to eat next season's seed, sell off productive assets, withdraw children from school, and other negative coping mechanisms to meet short-term needs.

1.2 ESMF Purpose and Rationale

ESMF was selected as the environmental and social instrument for assessing, managing and monitoring environmental and social risks and impacts of the Project and specifically component 1. Since the actual breeding and egg laying areas in the (villages, sub locations, locations, wards, sub-counties) referred to herein as sub project areas within the selected 15 Counties to be sprayed are not known, i.e. (the breeding and egg laying areas and will only be known when mapping and surveillance is undertaken), and since the two pesticides to be applied in infested areas are only determined after analyzing the breeding locations, ESMF is the most appropriate instrument to be developed during project preparation.

Kenya has selected to use the chemical pesticide Fenitrothion 96 percent Ultra Low Volume (ULV), which is a WHO class II, and the biopesticide Metarhizium which have been approved by the Bank.

This ESMF lays out screening processes and tools to be used by the MoALFC/NPCU to assess risks and impacts per activity. Using the ESMF, screening will be undertaken for all spray operation activities planned (referred to as sub projects) in order to guide preparation of specific E&S instruments for the selected sub projects. The E&S instruments to be prepared include sub project IPMPs.

This ESMF requires screening of the selected spray area (s) bio-physical characteristics in order to determine which between the two type of pesticides selected will be utilised i.e. either Fenitrothion 96 percent (ULV), which is a WHO class II, and the biopesticide (Metarhizium). The biopesticide is intended for use in areas screened and determined to have sensitive habitats (e.g. wetlands, forests, surface water bodies, parks, reserves, agronomical zones) etc. A Screening Form has been prepared (see annex C) for use during screening to map the sub project area. This will facilitate the recommendation of appropriate mitigation and monitoring measures for each activity.

This ESMF alongside the framework level IPMP already prepared will also guide preparation of sub project level (spray area) IPMPs which will be prepared by the environmental and social specialists who will be based at each of the CPCU and reviewed and cleared by the environmental and social experts at the NPCU.

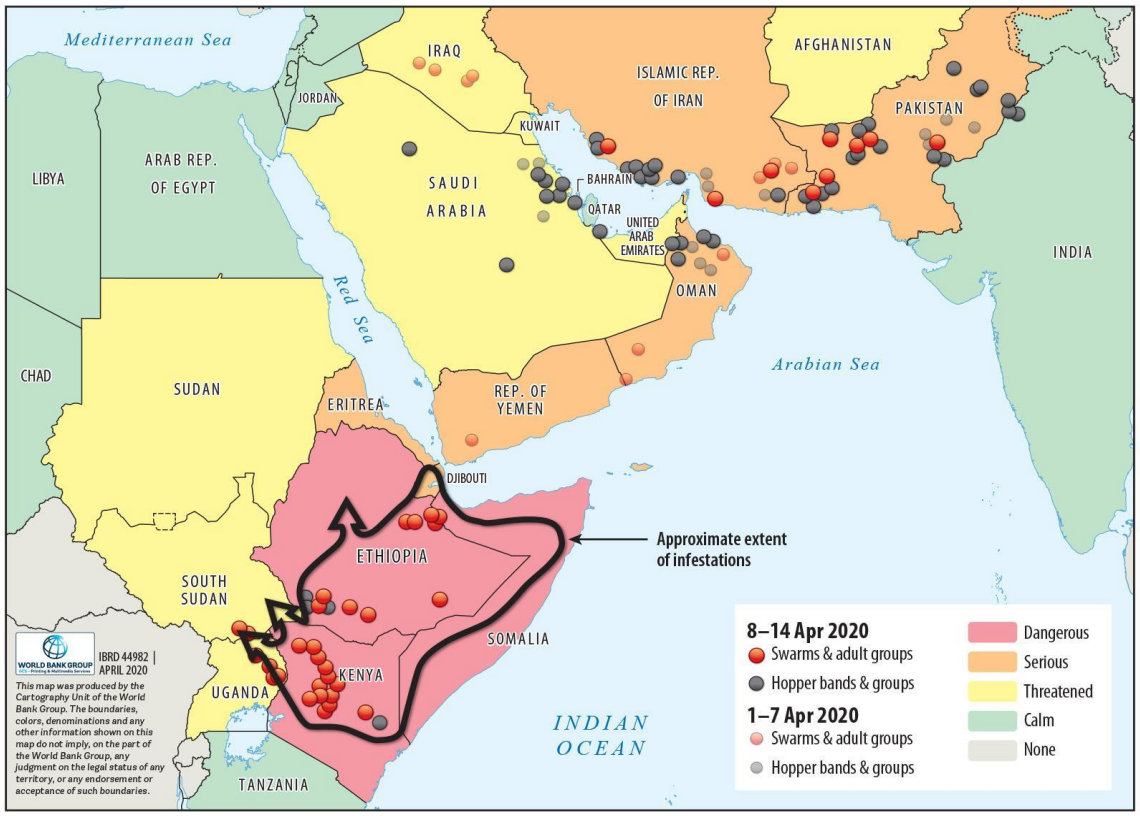
The ESMF describes the appropriate roles and responsibilities of the MoALFC/NPCU and other stakeholders and outlines the reporting procedures on environmental and social risk issues. It describes the managing and monitoring processes of environmental and social risks and impacts related to the project. It further determines the training, capacity building and technical assistance required for PCU to successfully implement the provisions of the ESMF; and provides practical information resources for implementing the ESMF. It also lays out the Project's staffing and institutional arrangements clarifying the relations between PIU and the World Bank, including their roles and responsibilities in view of the implementation of the ESMF. The ESMF has been prepared in accordance with applicable World Bank Environmental and Social Standards (ESS).

1.3 Project Description

The situation is both extremely alarming and deteriorating rapidly in areas affected by the locusts, according to the Food and Agriculture Organization of the United Nations. This is especially true for Kenya, Ethiopia, Somalia, and Yemen. New swarms are coinciding with the long rains, the spring cropping season, and the regeneration of pasture. This means that cropping conditions are broadly favorable across the region to vegetation growth, raising expectations of the occurrence of another generation of desert locusts. This alignment means that locusts at their most voracious stage (immature swarms) will have ample vegetation to support additional population growth.

In the absence of effective control measures to tamp down on locust populations and prevent their spread, the number of locusts will multiply exponentially (by as much as 400 times) through June 2020. In this scenario, the potential damage and losses to crops, livestock and related assets for the region could reach as high as US$8.5 billion by the end of the year. Under the alternative scenario of highly but not fully effective control measures, damages and losses (DALO) are still expected to reach US$2.5 billion. In addition, the risks of the crisis spreading to neighboring countries in coming weeks and months remains acute (Figure 1-2).

Figure 1-2. Approximate Extent of Current Infestation and Threat Levels, April 2020



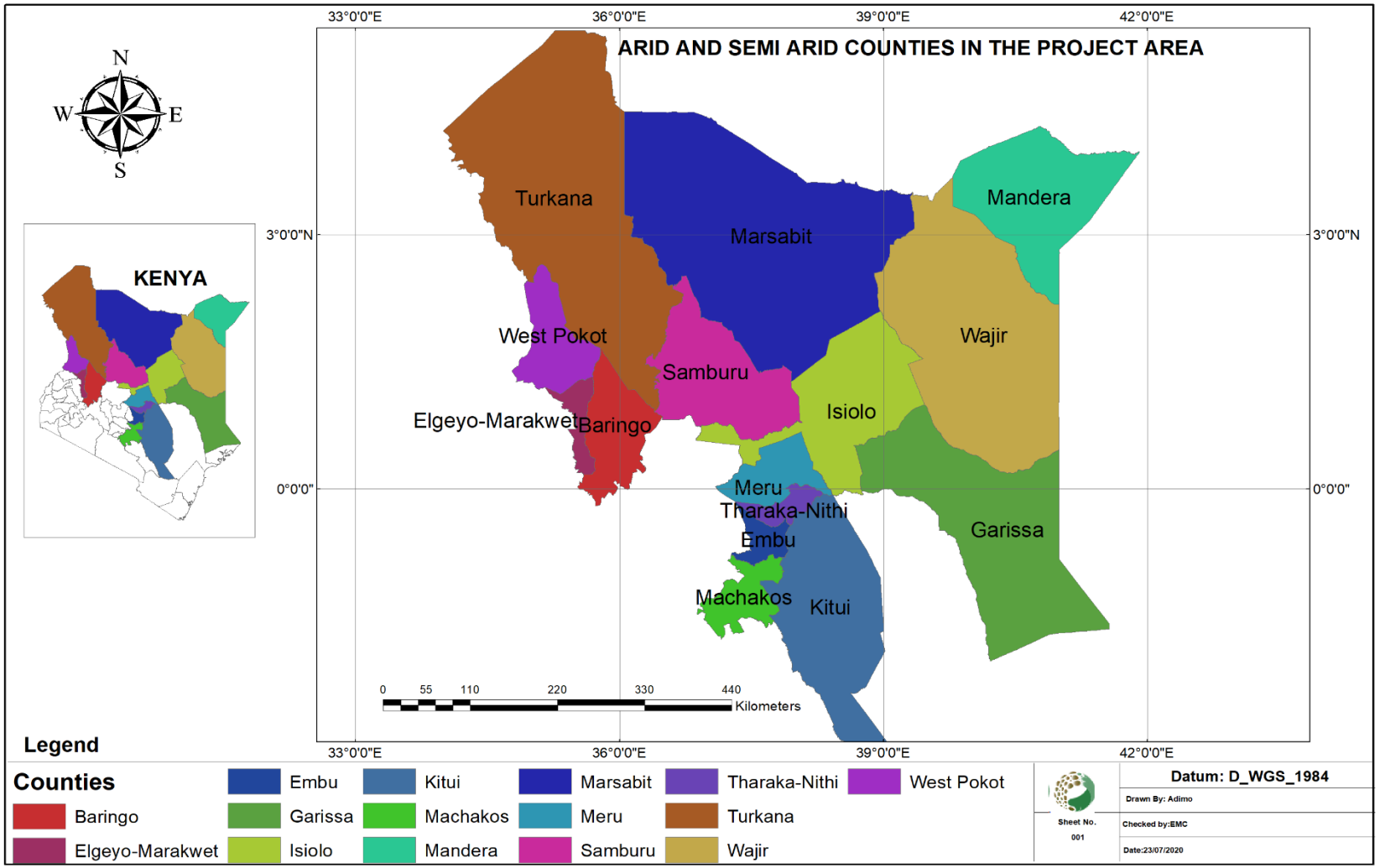
Source: Adapted from FAO 2020.

1.3.1 Country and Sector Context

The World Bank is well-positioned to respond to these needs in an integrated and regional fashion given its global, cross-sectoral expertise combined with understanding of country and context-specific conditions and needs. In addition, the World Bank has extensive experience in responding to crises (pandemics, natural disasters, economic shocks) while building resilience and improving future preparedness and response capability, respect and trust of client countries, and global partnerships (UN agencies/World Health Organization (WHO), other multilateral development banks, the International Monetary Fund (IMF), bilateral organizations, private sector). These responses also include response to locust crises, including the major regional upsurge in West Africa in 2003-05, discussed above. The proposed first instance response will build upon lessons learned from responding to other major cross-regional emergencies, including avian influenza in 2006-07, the food crises of 2008-2012, and the present COVID-19 pandemic.

The proposed ELRP is the main lending approach of a US$500 million overall response of the World Bank to respond to the threat posed by the Desert Locust upsurge and to strengthen systems for preparedness of eligible countries. The World Bank has supported the triggering of a Contingency Emergency Response Component (CERC) of US$13.77 million from the Kenya-Climate Smart Agriculture Project on March 13, 2020, for locust control, within three days of the Government of Kenya's (GoK) request on March 10, 2020.

Figure 1-3. Desert Locust Infested Counties



1.4 Sectoral and Institutional Context

1.4.1 Proposed Development Objective

ELRP's proposed project development objective (PDO) is to prevent and respond to the threat to livelihoods posed by the Desert Locust outbreak and to strengthen Kenya's system for preparedness. Citizen engagement will be monitored by tracking awareness raising communication campaigns conducted and grievances registered and resolved by the program. This PDO will be achieved through the implementation of four components that have been summarized below.

Component I: Desert Locust Surveillance and Control

This component will limit the growth of existing desert locust populations and curb their spread, while mitigating the risks associated with control measures and their impacts on human health and the environment.

Sub-component 1.1: Continuous Surveillance activities would provide early warning, inform effective control operations and mobilize assistance (under Component 2) to affected and at-risk communities to enable informed and climate-responsive locust management decision-making. Satellite images and the associated geospatial technologies would provide timely data to assess the risk of impending locust outbreaks. This information could be used for targeted preventative management actions in the locust breeding areas under changing climatic conditions. Habitat mapping will assess climate, soil and other variables to map susceptibility of land areas in space and time to locust outbreak (locust vulnerability map) or land areas that are already proliferated by locusts (locust impact map). Activities under this component would include but would not be limited to: i) monitoring observed breeding and egg-laying areas including breeding activities induced by weather variability and climate change to inform early action; ii) conducting ground surveys and other data collection to assess the locust situation and climate-induced habitat conditions; and iii) collecting and analyzing data to inform planning and ensure appropriate control methods are applied. Innovative approaches to surveillance-such as, the use of satellite maps, drones, eLocust3, GPS enabled cameras and meta-data analysis and climate information for locust risk mapping to better pinpoint outbreaks and to aid in damage assessments and response programming-would also be financed.

Sub-component 1.2: Control measures would reduce locust populations and prevent their spread to new areas through a range of targeted ground and aerial control operations. It would, whenever possible, emphasize neutralizing hopper bands using bio-pesticides before they develop into adult swarms, the control of which requires extensive use of conventional pesticides. Technology used would include insect growth regulators, bio-pesticides, or conventional chemical pesticides. Methods used would include ground and aerial spraying. This component would finance spraying equipment, protective gear, data collection systems, training and other goods and services needed to support control measures. A full list would be outlined in project procurement documents and would align with the framework level Integrated Pest Management Plan (IPMP) and related environmental and social risk and impact management instruments such as GBV Action Plan, Security Management Plan and Labour Management Procedures (LMP).

The program will adopt an IPMP approach. The project will use both synthetic chemical pesticides and biopesticides for the Desert Locust control activities. The formulation of the pesticides will be in Ultra-low Volume (ULV) formulations. Kenya has selected to use biopesticide Metarhizium *acridum*, which has minimal risks to the environment and the applicators and is safe to other species of insects, animals, and humans. Biopesticides will be the preferred treatment for hoppers and for spraying near or around ecologically sensitive areas and cropping areas. Kenya has also selected to use the chemical pesticide Fenitrothion 96 percent ULV, which is a WHO class II.

Sub-component 1.3: Risk reduction and management would monitor and assess the effectiveness of control measures and environmental and human health risks associated with locust control, and implement health, environmental and safety measures to reduce risks to an acceptable minimum. This sub-component will finance mostly technical assistance. Monitoring of control operations is necessary to assess whether adverse effects occur and under what circumstances so that they can be mitigated. Monitoring and building environment and climate literacy will also help increase outreach of reliable climate-smart pest management knowledge. Activities would include: i) testing of human health and soil and water for contamination from use of pesticides; ii) optimizing the selection of control strategies, protection measures, and pesticides based on situational and environmental assessments; and iii) providing safety and awareness training for spraying teams and other locust control personnel. Public awareness campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations.

Component 2: Livelihoods Protection and Rehabilitation

Beyond the immediate control measures deployed to curtail the proliferation and spread of the locusts, the next priority and the objective of Component 2 would be to help protect the poor and vulnerable in locust affected areas from human capital and asset loss, enhance their access to food, and restore livelihoods that have been damaged or destroyed by swarms. The objective of this component is to support affected farmers and livestock holding households restore their productive assets for enhanced adaptation and resilience.

The component will promote the adoption of climate-smart crop and livestock practices for reduced greenhouse gaseous (GHG) emissions, enhanced resilience, and the implementation of livelihood support/diversification initiatives. Livelihood diversification will emphasize alternative livelihood activities that are less dependent on changes in weather and climate variability. Support will also be provided for agroecosystem management approaches that enhance resilience of farm and landscape to changes in climate and pest.

Livelihoods restoration will therefore require support to households to rebuild their crop and livestock assets at the individual level but also restoration of communally owned assets, including degraded pasturelands and water sources which may have been lost due to the degradation.

This would be achieved by undertaking the following interventions: (i) Providing grants for input support through the existing mechanism of micro projects (as implemented under the ongoing National Agriculture and Rural Inclusive Growth Project (NARIGP) and Kenya Climate Smart Agriculture Project (KCSAP) to get crop and livestock production restored as soon as possible after the impact. The input support would typically include: (i) provision of climate-smart crop seeds/seedlings, fodder seeds/seedlings; (ii) provision of crop nutrition and protection inputs, animal health inputs, and in some cases, climate-smart animal breeds for restocking; (iii) providing grants for strengthening of farmer producer organizations (as implemented under the ongoing KCSAP and NARIGP projects) to facilitate access to inputs, services and output markets for sustainable restoration of their livelihoods; and (iv) community and multi-community investments through the existing mechanism of sub projects (as implemented under the ongoing KCSAP and NARIGP projects for restoration of degraded pasturelands and water sources. Technical resource persons having the requisite experience of carrying out such participatory identification processes at the county level will be identified and rigorously trained as per the processes laid out in the PIM to undertake this activity at the county level. As described above, the identified farmers and pastoralists will be mobilized into groups of 15 to 20 farmers called the Common Investment Group (CIGs) or the Vulnerable and Marginalized Group (VMGs) and facilitated to prepare micro projects for accessing the support. These grants will be provided to the CIGs and VMGs as per the procedures laid out in the Project Implementation Manual (PIM). In addition, the farmers mobilized under CIGs and VMGs and other impacted farmers/livestock rearers will also be linked to Farmer Producer Organizations (typically consisting of 500 to 2000 farmer or higher) with the objective of enhancing resilience by providing support along the entire value chain including linkages to markets in specific identified commodities.

Component 3: Coordination and Early Warning Preparedness.

Interventions under this component would include establishing and strengthening a Locust Control Unit (LCU) within the Plant Protection Services Division (PPSD) of MoALFC at the national level to prevent future outbreaks from spiralling out of control. Early warning systems will be developed and implemented to support prevention and rapid response to new and existing climate change-induced locust infestation, thereby limiting in-country and cross-border spread and intensification. Emphasis will be placed on building capacity to enable rapid and targeted short-term responses and long-term adaptation planning. Activities under the component will include: (i) bringing in specialized personnel in the areas of entomology, Geographical Information System (GIS), climate change and climate resilience within the LCU and undertake capacity building related to locust management activities at the national and county levels; (ii) working with the impacted counties and advocating for the establishment of similar locust control units at the county level; (iii) monitoring weather trends and normal desert locust territories to identify the conditions for an outbreak and early population increases; (iv) establishing communication/notification systems and protocols through international, regional, and national bodies so that warnings are not missed and that recipients of warnings understand the importance of the information (e.g., translating dense scientific material into comprehensible messages); (v) establishing linkages with international and regional bodies and developing standard operating procedures for a desert locust response; and (vi) supporting existing manufacturers to build

the capacity to produce sufficient quantities of quality biopesticide for use during future outbreaks.

Component 4: Project Management

This would finance the associated costs such as financial management, procurement, environmental and social management, and communications. The communications component, in particular, apart from external and internal communication activities can promote increased community awareness about locust response and what they need to do when their area has been treated with pesticides (e.g., do not eat the locusts or feed them to livestock, do not dump in water bodies, etc.), as well as coordination among responsible entities (international, regional, national, and subnational) to better respond to outbreaks. A rapid information campaign will be designed and disseminated in a timely manner and in accordance with local context and requirements, preferably through local radio in relevant languages, on the techniques and timing of spraying, the chemicals used, its impacts on human health, crops and livestock, as well as risk mitigation instructions. This will be coupled with targeted consultations with key community representatives (for instance, elders and traditional leaders in the case of indigenous peoples/pastoralists) to: (i) receive feedback to adapt the actions to local needs, with special attention to vulnerable groups such as the elderly and people with disabilities, who will be supported in sheltering from the impacts of the spraying; and (ii) targeting and implementation of appropriate livelihood interventions.

A separate ESMF has been prepared for component 2 while for component 3, due to the emergency nature of this project, the environmental and social instruments required may be deferred, the production and implementation of these instruments were presented as disbursement conditions for the relevant components in the Environmental and Social Commitment Plan (ESCP) developed.

1.5 Project Beneficiaries

The Project is expected to benefit all the pastoralists and farmers in the impacted counties in Kenya. The component 1, 3 and 4 will be implemented in all the counties that have experienced locust infestations. However, component 2 will be implemented in specific wards that are most impacted in the 15 of the most severely impacted counties in the country. The primary project beneficiaries will be affected farmers, pastoralists and households that have been affected by the locust upsurge and are food insecure. Vulnerable and marginalized households and female headed households will be prioritized in the targeting process.

1.6 Component 1 Implementation Arrangements

The Component 1 of the project will be implemented by the MoALFC through a two-tiered institutional arrangement: National, and County levels. At the National level, the MoALFC will be the main implementing agency while at the County level, County Governments will be the implementing agency. For smooth integration of project operations with other ongoing efforts on desert locust control, the component 1 will operate within the structures established by the MoALFC specifically to deal with the desert locust crisis in the country. These include the Multi-Institutional Technical Team (MITT) and the Locust Command

Centre (LCC) under the Plant Protection Services (PPS) Division. The MITT will be expanded to include other agencies such as National Environment Management Authority (NEMA), Kenya Wildlife Service (KWS), Kenya Forest Service (KFS), Kenya Agricultural Livestock Research Organisation (KALRO), Department of Veterinary Services (DVS) and Pests Control Products Board (PCPB) among others for monitoring effects of the chemicals being used in locust control on human health, water, soils, livestock and wildlife.

- **National Project Coordination Unit: -**A National Project Coordination Unit (NPCU) has been established comprising of officers responsible for day-to-day implementation of activities under the leadership of the National Project Coordinator (NPC). These include for component 1, the National Project Coordinator, Component 1 Leader, Environmental Specialist, Social Standards Specialists, GBV Expert, Grievance Redress Expert, Monitoring and Evaluation Specialist, Financial and Procurement Specialists.
- **County Project Coordination Unit: -** This Project will use the existing KCSAP and NARIG County Project Coordinating Unit (CPCU) structures that are established in all affected Counties headed by the County Project Coordinator (CPC) who will also double as either the Crops or Livestock Specialist. The CPCU members include, the CPC, Livestock/Crops Specialists, Environment and Social Standards Specialist, Monitoring and Evaluation Specialist, Finance and Procurement Officers. The CPCU will engage services of technical experts on need basis.

2 METHODOLOGY AND CONSULTATION

2.1 Literature Review

Review of the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the proposed project. A desk review of the Kenyan legal framework and policies was also conducted in order to the relevant legislations and policy documents that should be considered during project implementation. Among the documents that were reviewed in order to familiarise and further understand the project included:

World Bank Related Documents

- *Project Appraisal Document*
- *World Bank's Environmental and Social Standards*
- *Environment and Social Review Summary*
- *Environmental and Social Commitment Plan*
- *Environmental and Social Framework*
- *Stakeholder Engagement Plan*
- *Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings*
- *World Bank Group General Environmental Health and Safety (EHS) Guidelines*
- *Environmental and Social Framework reports for RPLRP, NARIGP and KCSAP*
- *Integrated Pest Management Plans for RPLRP, NARIGP and KCSAP*

Kenyan Legislative Documents

- *Constitution of Kenya*
- *Environmental Management and Coordination Act (1999)*
- *Water Act*
- *Pest Control Act*
- *Public Health Act*
- *The Agricultural Sector Development Strategy (ASDS)*
- *The National Agricultural Sector Extension Policy (NASEP)*
- *The National Productivity Policy (NPP)*
- *The Kenya Constitution, 2010 (Constitution of Kenya 2010)*
- *Chapter 324 – Plant Protection Act*
- *Chapter 346: Pest Control Products*
- *Chapter 326 – Seeds and Plants Variety Act*
- *The Pest Control Products (Licensing of Premises) Regulations, 1984*
- *The Pest Control Products (Labelling, Advertising and Packaging) Regulations, 1984*
- *The Pest Control Products (Importation and Exportation) Regulations, 1984*
- *The Pharmacy and Poisons Act*
- *Occupational Health and Safety Act*
- *Pest Control Products (Licensing of Premises) Regulations, 1984*
- *Pest Control Products (Disposal) Regulations, 2006*

Other Documents

- *United Nations Convention on Biological Diversity (1992)*
- *International Plant Protection Convention of FAO (1952)*
- *United Nations Framework Convention on Climate Change (1992)*
- *World Food Security and the Plan of Action of November 1996*

- *FAO Guidelines on Developing a Reporting System for Health and Environmental Incidents Resulting from Exposure to Pesticides, 2009*
- FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
- *FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)*
- *FAO Guidelines on Good Practice for Ground Application of Pesticides (2001)*
- *FAO Guidelines on Management Options for Empty Pesticide Containers*
- *FAO Guidelines on Desert Campaign organization and execution, FAO Rome 2001*
- *FAO Guidelines on Desert Locust Control (2003)*
- *FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)*
- *WHO Guidelines for personal protection when handling and applying pesticides-International Code of Conduct on Pesticide Management*

2.2 Stakeholder Consultations and Discussions

The draft ESMF and IPMP were consulted upon virtually on the 7th July 2020. This mode of consultation was due to the COVID-19 pandemic and the GoK regulations on social distancing. The World Bank has issued guidelines[3] for consultations as a result of the COVID-19 and these guidelines as well as GoK regulations were employed to facilitate meaningful stakeholder consultations.

[3] Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings

3 BASELINE DATA

This section describes the overall baseline condition of Arid and Semi-Arid Lands (ASALs) in Kenya in terms of bio-physical environment and socio-economic situation. The baseline information is focused on the ASALs of Kenya because the ELRP will be implemented in 15 of the 28 Counties mostly located in the ASAL regions of Kenya and infested by the desert locusts.

3.1 Location and Size

The total surface area of Kenya is about 587,000 km2, out of which the land area is about 576,000 km2 and the remainder is under water. The Arid and Semi-Arid Lands (ASALs) occupy over 80% of the country's landmass. It is home to about 36% of the population, 70% of the national livestock and 90% of wildlife. The annual rainfall in arid areas ranges between 150 mm and 550 mm and semi-arid areas between 550 mm and 850 mm per year. Temperatures are high throughout the year, with high rates of evapo-transpiration. Kenya has 23 ASAL counties, 9 of them classified as arid and 14 as semi-arid, as shown in Figure 3-1.

3.2 Physical Environment

3.2.1 Climate

The arid and semi-arid zones of Kenya (ASALs), are areas covering zones ACZs IV to VII, where annual rainfall ranges between 150 mm and 550 mm per year for arid zones, and 550 mm and 850 mm per year in semi-arid zones (UNDP, 2013). Annual rainfall is usually directly influenced by relief and the monsoon winds. In this respect and except for the Lake Victoria Basin that experiences one long rainy season, from March to September, the rest of the rainfall follows a strong bimodal pattern with the long rains falling in March-May and short rains in October-December. The mean annual rainfall is estimated at 621 mm, while the amount of rainfall that contributes to the surface and groundwater resources is estimated to range from 250 mm to 750 mm in arid and semi-arid areas and from 1000 mm to 1690 mm in the coastal belt, the highlands and the Lake Victoria basin. However, the actual contribution is less due to evapotranspiration.

3.3 Topography and Drainage

3.3.1 Topography

The terrain is composed of low plains that rise into central highlands that are, in turn, bisected by the Great Rift Valley.

3.3.2 Hydrology

Kenya consists of five major water catchment areas: Lake Victoria, Rift Valley, Athi River, Tana River and Ewaso Ng'iro Catchment Area figure 3-3 below. However, only two of these catchments can be rated to have surplus water resources: Lake Victoria and Tana River. The other three catchments have water deficits and often rely on inter-catchment water transfers to meet their basic water needs. The ASAL region in Kenya mainly fall within Rift Valley, Athi River, Tana River and Ewaso Ng'iro catchment or drainage basins.

Figure 3-1. Desert Locust Affected Counties in ASAL in Kenya

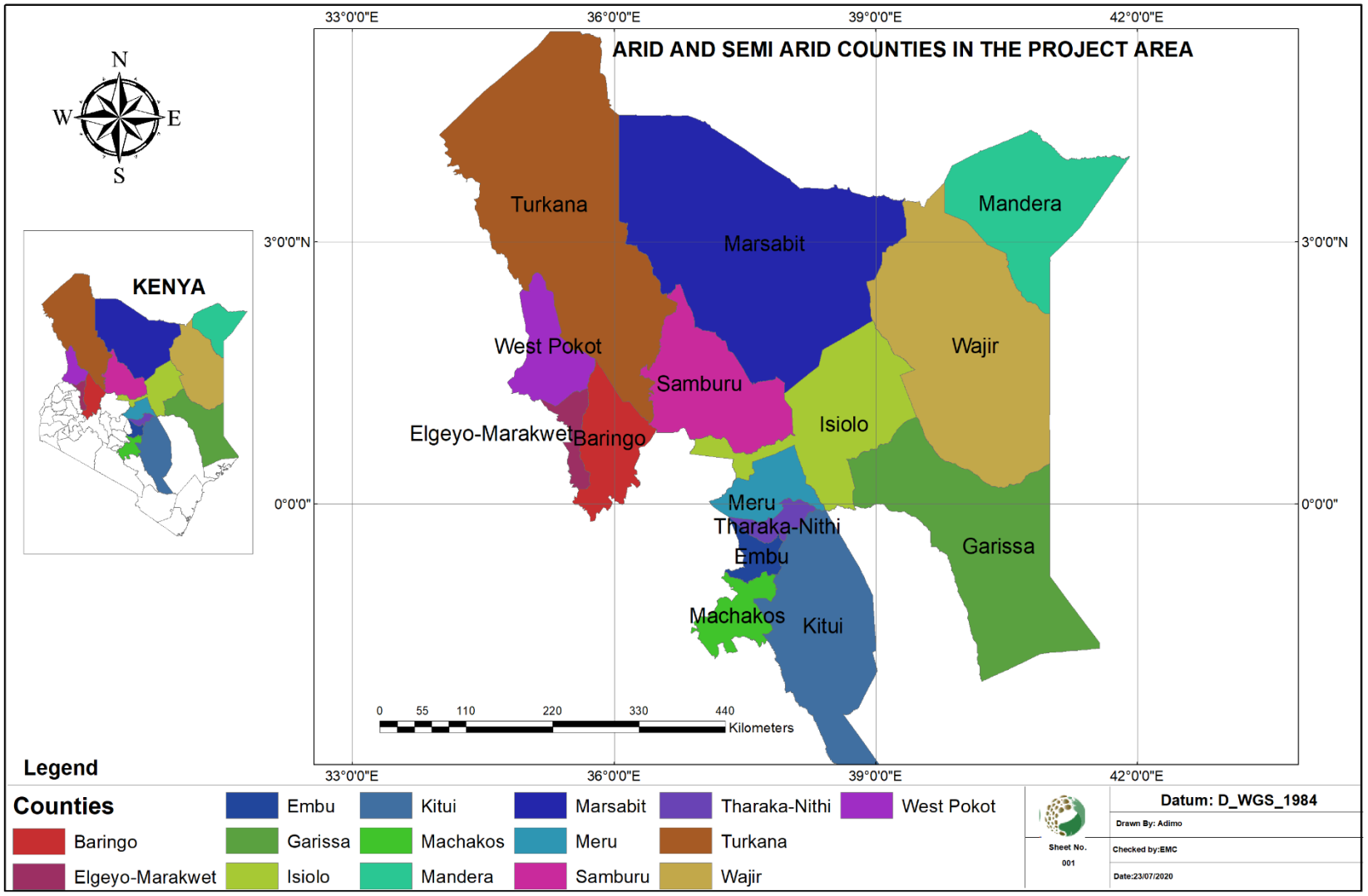


Figure 3-2. Elevation in ASAL Counties in Kenya

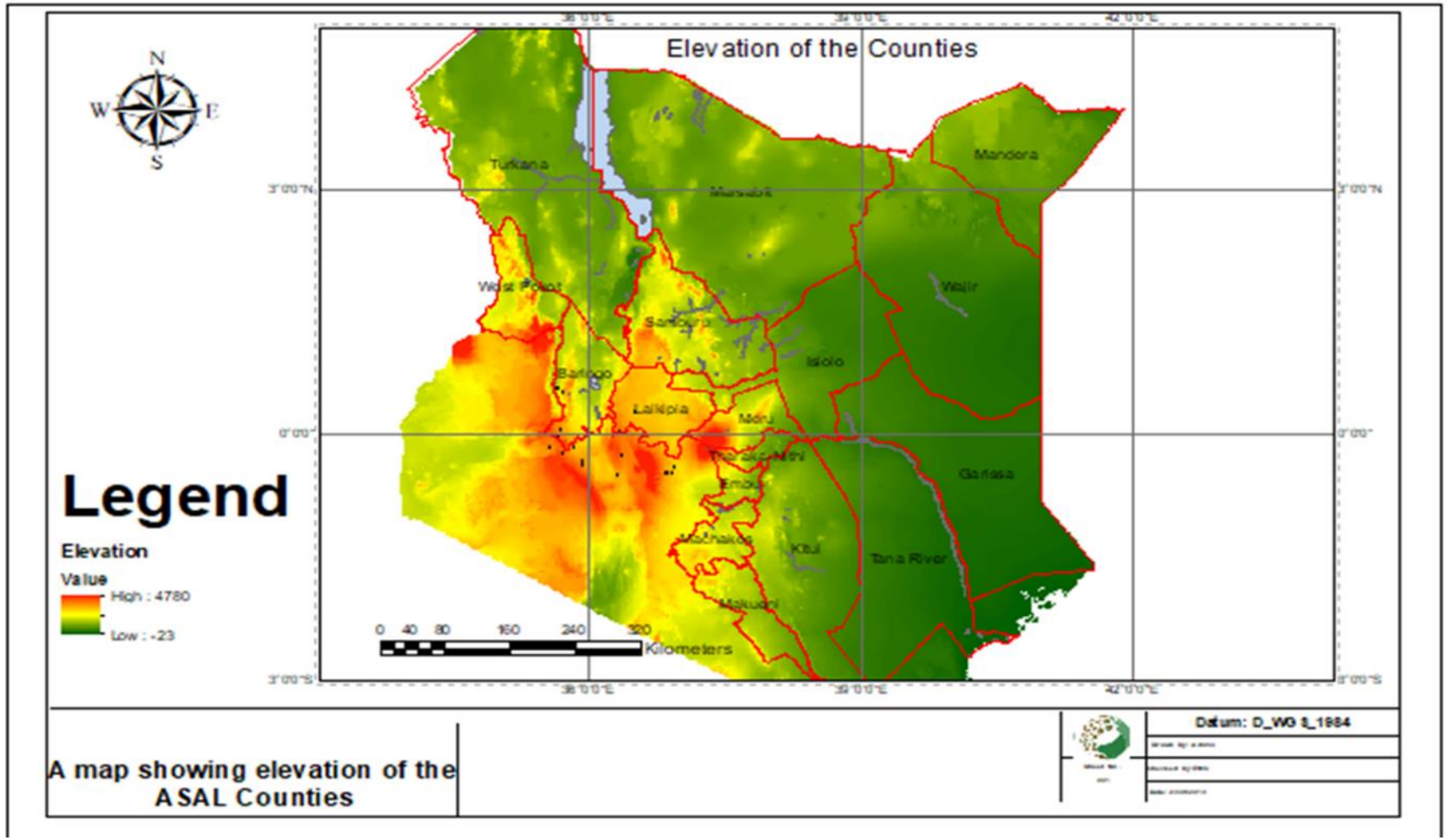
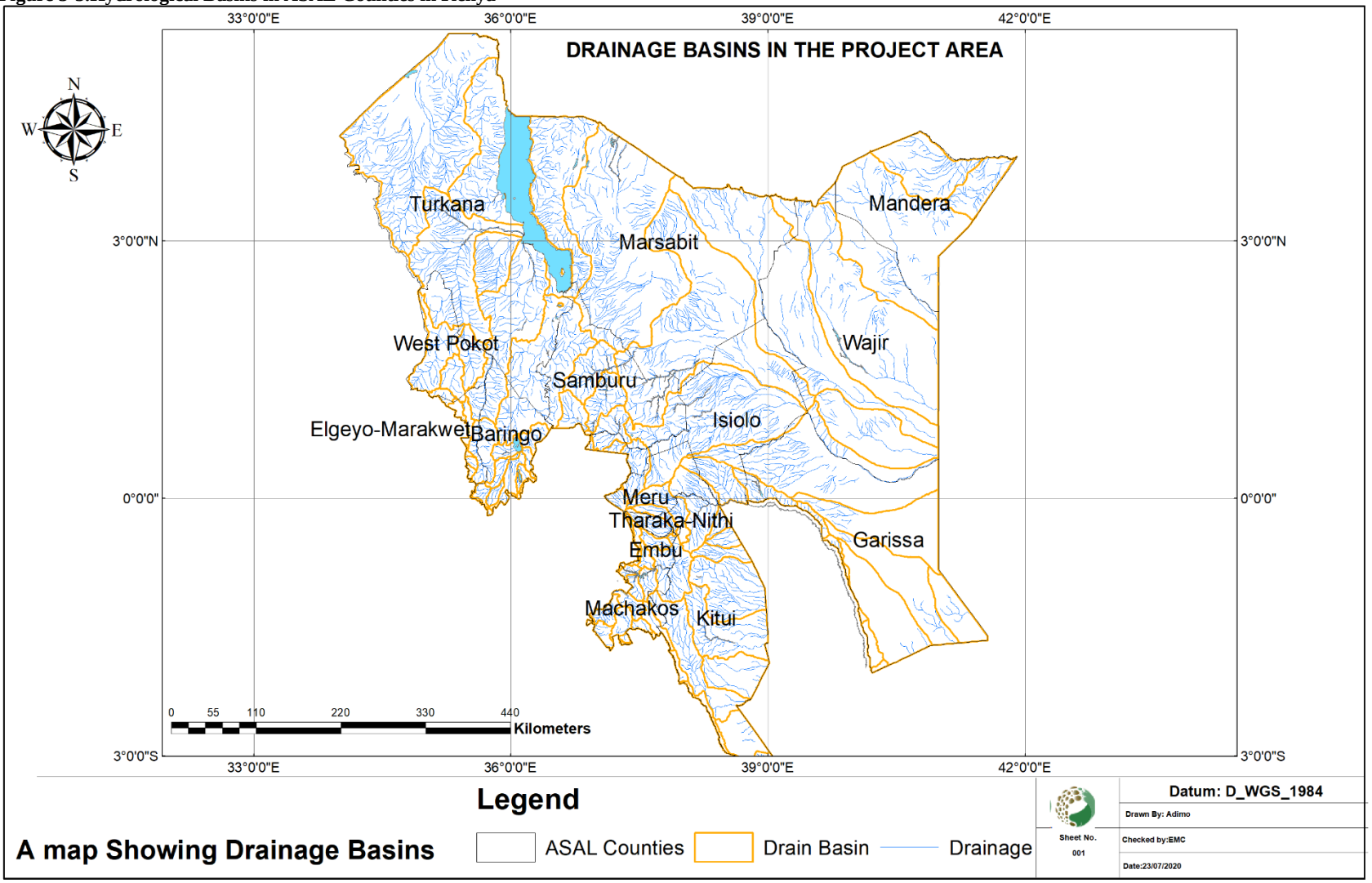


Figure 3-3.Hydrological Basins in ASAL Counties in Kenya



3.4 Perennial and Seasonal Rivers

In the 15 Counties where the emergency locust control operations are targeted, there are a number of perennial and seasonal rivers which are a source of livelihood to communities who rely on the water resources for agricultural production (crop cultivation), domestic use (livestock and human consumption) as well as source of food (fisheries). The rivers are also an important habitat for flora and fauna (aquatic resources). Socio-economic activities including settlements are located within close proximity to these water resources. The application of pesticides within the proximity of these water resources are likely to contribute to contamination of the water resources and trigger bio-physical and socio-economic impacts. The riverine ecosystems in the 15 Counties are described below.

3.4.1 River Perkerra

The Perkerra River is a river in the Great Rift Valley in Kenya that feeds the freshwater Lake Baringo. It is the only perennial river in the arid and semi-arid lands of the Baringo County. The Perkerra river supplies water to the Perkerra Irrigation Scheme in the Jemps flats near Marigat Township, just south of Lake Baringo. The river has a catchment area of 1,207 square kilometres (466 sq. mi). It rises in the Mau Forest on the western wall of the Rift valley at 8,000 feet (2,400 m), dropping down to 3,200 feet (980 m) at its mouth on the lake. The catchment area has steep slopes on the hillsides, flattening out lower down. Most of the water comes from the hill slopes, where annual rainfall is from 1,100 millimetres (43 in) to 2,700 millimetres (110 in). The region around the lake is semi-arid, with annual rainfall of 450 millimetres (18 in) and annual evaporation rates of 1,650 millimetres (65 in) to 2,300 millimetres (91 in). With the advent of Europeans in the area, both human and livestock populations increased. The high grass of the catchment was grazed down, erosion increased, and run-off rates also increased, causing periodic floods. The brushwood barrier system could not deal with the floods and the Njemps turned to pastoralism.

3.4.2 Tana River

Tana river flows at approximately 440 miles (708 km) from its headwaters in the Aberdare Range and Mount Kenya to the Indian Ocean. The river takes a north easterly course at first and plunges over the Kitaru (Seven Forks) fall (440 feet [134 m]) into a semi desert landscape that constitutes its middle course. The river then veers south and opens into a wide valley, where it meanders through a floodplain subject to inundations. Kenya's longest river, it reaches the Indian Ocean at Formosa Bay, Kipini, but a former outlet lies 20 miles (32 km) southwest.

3.4.3 Daua River

The Daua River is found in Northern section of Kenya Mandera County. It flows through three major countries: Kenya, Ethiopia and Somalia, with 81% falling into Ethiopian territory. It is known for its complex geological environment, evident through its diverse lithology and structural framework, coming from the river's closeness to multiple volcanic-tectonic events. The wide river has gentle slopes either side of its exposed bedrock. The Daua river flows south east to form part of the Ethiopia-Somalia border and part of Ethiopia-Kenya border. Awata, Digati, and Mormora are the only significant off-flowing rivers to Daua.

3.4.4 Kerio River

The Kerio River is one of the longest rivers in Kenya, originating near the equator. The River rises on the north slopes of the Amasya Hills to the west of Lake Bogoria. It flows northward through the Kerio Valley between Tugen Hills and Elgeyo Escarpment. The Elgeyo Escarpment rises to over 1,830 metres (6,000 ft) above the Kerio valley in places. The Kerio continues northward, often through deep and narrow valleys, to enter Lake Turkana in a delta just south of the delta formed by the Turkwel and Lokichar rivers.

3.4.5 Athi-Galana-Sabaki River

The Athi-Galana-Sabaki River is the second longest river in Kenya (after the Tana River). It has a total length of 390 kilometres (240 mi) and drains an area of 70 square kilometres (27 sq mi). The river rises in the Gatamaiyo Forest as the Athi River and enters the Indian Ocean as the Galana River (also known as the Sabaki River). The Athi River flows across the Kapiti and Athi plains, through Athi River town, and then takes a northeast direction where it is met by the Nairobi River. Near Thika the river forms the Fourteen Falls and turns south-south-east under the wooded slopes of the Yatta ridge, which shuts in its basin on the east. Apart from the numerous small feeders of the upper river, almost the only tributary is the Tsavo River, from the east side of Kilimanjaro which enters at about 3° S. It then turns east, and in its lower course is known as the Sabaki (or Galana) River, which traverses the sterile quartz-land of the outer plateau. The valley is low and flat, covered with forest and scrub, containing small lakes and backwaters connected to the river during the rainy season. During the rainy season, the stream rises as much as 10 metres (33 ft) in places, now strongly flowing with a turbid yellow colour; navigation is interrupted by the Lugard falls, actually a series of rapids. Flowing east, it enters the Indian Ocean 10 kilometres (6.2 mi) north of Malindi.

3.4.6 Turkwell River

The Turkwell River is a river flowing from Mt. Elgon in the border of Kenya and Uganda to Lake Victoria. The river is called the Suam River from its source to the border with the West Pokot County of Kenya. The Turkwell begins from the lush green slopes of Mount Elgon and the Cherengany hills, traverses the Southern Turkana Plains, crosses Loturerei Desert near Lodwar and empties to the world's largest desert lake, Lake Turkana. The river's flow is seasonally varied, and it is subject to flash floods in the rainy season. The Turkwel River receives input from the Malmalte River and discharges from the tailrace of the Turkwel Dam after power production. Discharges from the tailrace mean that flows in the upper reaches of the River Turkwel are typically perennial.

3.4.7 Kathita River

The Kathita River is the longest river in Meru County. The river flows in a north-easterly direction from a source high on Mount Kenya around Ithangune and Rutundu hills from where it flows easterly through thick equatorial rainforests towards Meru Town, and in a south-easterly direction into River Tana. It is the northernmost of the Mt. Kenya tributaries of the Tana River.

3.4.8 Kalabata River

The Kalabata water course is a sub-catchment of the Kerio basin. The Kalabata River is an ephemeral watercourse that is fed by direct precipitation, run-off and ephemeral flow from luggas that provide a drainage network from the south-west. Flow in the luggas is ephemeral and driven by short duration, intense seasonal rainfall. The Kerio and the Turkwel Rivers both ultimately discharge to Lake Turkana.

3.4.9 Ol Arabel River

Ol Arabel is a river in the Great Rift Valley of Kenya that feeds Lake Baringo. It gives its name to a forest covering its headwaters and to a region. The river forms a delta where it enters the southeast of Lake Baringo at 0.531113°N 36.115837°E, and this forms a dense marsh during periods when the lake level is relatively high. In the past the region was used by Il Chamus herders.

3.4.10 Suguta River

The Suguta River is a seasonal river in the Great Rift Valley in Kenya (Africa), directly south of Lake Turkana. It flows northward through the Suguta Valley in the rainy season, forming the temporary Lake Alablad, a dry lake that combines with Lake Logipi at the northern end of the valley. The Suguta River originates in a stream of near-boiling water that emerges from the side of Mount Silali, an extinct volcano. Some geologists speculate that the Kapedo hot spring, which drops through a set of waterfalls to the Sugutu river, is the outlet from Lake Baringo 60 kilometres (37 mi) to the south. At one point the Suguta River passes between two volcanoes and is fed from both sides by hot springs. In places the banks of the Suguta River are lined with palms. The river and its tributaries are home to a cichlid, the Suguta tilapia **(***Oreochromis niloticus sugutae*). Although the river dries up after the rainy season, the fish survive in pools. The river is also home to numerous crocodiles. Large flocks of flamingos inhabit the edge of the river.

3.4.11 Kinna Springs

Most of the springs in Isiolo County are situated within game reserves, and as such, are not accessible to local people. Older records show a total of 24 springs scattered along major rivers in Isiolo. However, 12 of these springs with negligible flows (MoWD 1991; Bake 1993) seem to have disappeared in recent years. This can be attributed to environmental degradation that has taken place due to overgrazing and poor land management. However, in a few cases, springs have been rehabilitated to improve water supplies, as was found at Kinna.

3.4.12 Lake Logipi

Lake Logipi is a saline, alkaline lake that lies at the northern end of the arid Suguta Valley in the northern Kenya Rift. It is separated from Lake Turkana by the Barrier volcanic complex, a group of young volcanoes that last erupted during the late 19th century or early 20th century. Saline hot springs discharge on the northern shoreline of Lake Logipi and at Cathedral Rocks near its southern limit and help to maintain water at times of extreme aridity. During the rainy season, the lake is also recharged from the Suguta River which flows northward along the Suguta Valley, periodically forming a temporary lake (Lake Alablab) that unites with Logipi.

Lake Logipi has a maximum depth of 3 to 5 m and is about 6 km wide by 3 km long. Its waters are of sodium bicarbonate composition with a pH of 9.5-10.5 and salinity (total dissolved salts) that varies from less than 20 g/l to greater than 50 g/l. Flamingos frequently inhabit the saline waters feeding on cyanobacteria (*Arthrospira* spp. - formerly termed Spirulina) and other plankton.

3.5 Land Use

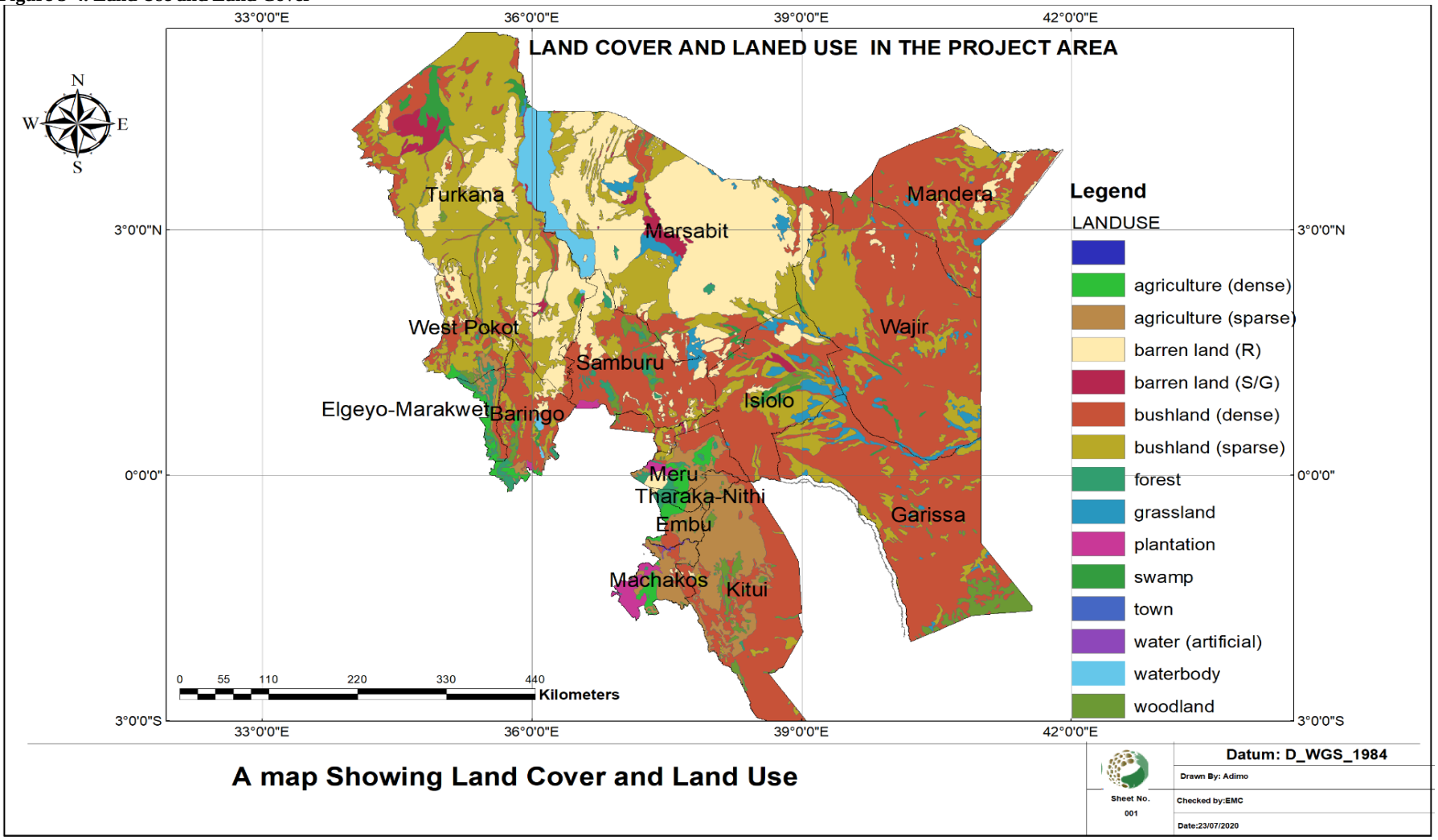
The majority of the population in Kenya's ASALs are pastoralists and agro-pastoralists but increasingly, farmers from the overcrowded higher potential areas have migrated into the drylands causing changes in land use, privatization of communal land and increasing pressure on land resources. Rain-fed agriculture is risky (as crops may fail two or more years in five) yet has become a dominant activity in semi-arid lands. Pastoralism depends totally on the natural ecosystem goods and services (pasture, browse, water). While livestock and cultivation (opportunistic, rain-fed or irrigated) are the mainstay, there are a variety of activities that are undertaken with a more direct market value. These activities include ecotourism and the collection and sale of gums, resins and henna.

In Kenya's dry zone, the climate is generally hot and dry. Temperatures in arid areas are high throughout the year, with high rates of evapotranspiration. In the dry areas the air is dry, humidity low and the vegetation has less cover on the ground, see figure 3-4. Table 3 shows the most important climatic eco-zones and corresponding vegetation. Kenya's land mass is commonly divided into seven agro-ecological zones, namely; humid, sub-humid, semi-humid, semi-humid to semi-arid, semi-arid, arid and very arid. Only about 16% of the land area is high and medium potential, while 84% is classified as ASAL. Arid lands are mainly inhabited by pastoralists and agro pastoralists. The arid and semi-arid lands (ASALs) account for about 80 percent of Kenya's land surface.

Table 3-1.Classification of Dryland Ecological Zones.

Classification	Mean annual Temperature Range (ºC)	Mean annual rainfall (mm)	Annual potential evapotranspiration (mm)	Typical vegetation	Potential for plant growth
Semi-humid to semi-arid	16-18	600-1000	1550-2200	Dry woodland and bushland	Medium
Semi-arid	18-20	450-900	1650-2300	Bushland	Medium to low
Arid	20-22	300-500	1900-2400	Bushland and scrubland	Low
Very arid	22-25	150-350	2100-2500	Desert scrub	Very low

Figure 3-4. Land Use and Land Cover



The lands are categorized as semi-arid areas with:

- Mixed rain-fed and irrigation agriculture and high economic and political disparities
- Semi-arid areas with encroaching agro-pastoral use by marginalized smallholders
- Semi-arid areas with predominantly pastoralist use in the economic and political periphery
- Semi-arid areas that include game parks and reserves and their surroundings.
- Tana River areas and a small part of central Kenya. These fall into two agro-ecological zones (AEZ); AEZ IV (mixed crop livestock production farming system) and AEZ V-VI (maize/cowpea/pigeon pea farming system).

3.6 Vegetation

Extensive areas of the ASALs are low-lying plains covered by thorn bushes and scattered trees, mainly Acacia and *Commiphora* species (Greenway 1993, White 1983).

3.7 Protected Areas

The most suitable land use in ASAL is livestock husbandry and wildlife conservation, and almost 90% of the 40 gazetted national parks and game reserves are located in the ASALs. About 8% of the Kenya's land mass is protected area for wildlife conservation. Protected areas are gazetted landscapes/seascapes that have been surveyed, demarcated and gazetted either as national parks and/or national reserves. Figure 3-5 show the gazetted areas in ASAL. These protected areas are critical habitats to floral and faunal species some which are categorised as endangered, endemic or threatened. The indiscriminate application of pesticides in these areas, could result in adverse impacts on the floral and faunal species.

Table 3-2. Protected Areas in Affected Counties

Protected Areas
Meru National Park is located east of Meru, 350 km (220 mi) from Nairobi. Covering an area of 870 km^2 (340 sq mi), it is one best known national parks in Kenya. Rainfall in this area is abundant with 635–762 mm (25.0–30.0 in) in the west of the park and 305–356 mm (12.0–14.0 in) in the east. The park has a wide range of wild animals including the African bush elephant, lion, African leopard, cheetah, eastern black rhinoceros, black rhinoceros, Grevy zebra and hippopotamus.
Tsavo East National Park forms the largest protected area in Kenya and is home to most of the larger mammals, vast herds of dust –red elephant, rhino, buffalo, lion, leopard, pods of hippo, crocodile, waterbucks, lesser Kudu, gerenuk and more than 500 species of birds. Tsavo East National Park occupies 13,747 sq km or 30 percent of Kenya's total park area.
Samburu National Reserve is situated at the southeastern corner of Samburu District in the Rift Valley Province of Kenya. It is bordered to the south by Ewaso Nyiro River, which separates it from the Buffalo Springs National Reserve. The reserve covers an area of 165 Km² and is located around 345Km from Nairobi. The park has a pleasant aura of vastness and seclusion. It boasts more than 450 bird species, – elephant, lion, leopard, buffalo and rhino and the northern specialist species known as the Samburu 5–the Grevy's zebra, Somali ostrich, reticulated giraffe, gerenuk and the beisa oryx. Birdlife is abundant with over 450 species recorded. Birds of the arid northern bush country are augmented by a number of riverine forest species. Lesser Kestrel and the Taita Falcon are species of global conservation concern and they both utilize the reserve. Five species categorized as vulnerable have recorded in the reserve. These are African Darter, Great Egret, White-headed Vulture, Martial Eagle and the Yellow-billed Ox-pecker. Critically endangered species under CITIES – Pancake tortoise (*malacochersus tornieri*) is found in the reserve.

Marsabit National Park is far to the north of Kenya, a densely forested mountain and three crater lakes provide a haven for a variety of birdlife, mammals and reptiles. The beautiful Marsabit National Park is a refuge for huge tusked bull elephants, diverse birdlife and reptiles.
Shaba National Reserve lies to the east of the Samburu National Park and covers an area of 130 square kilometers north of the Ewaso Ng'iro River. Together with the Samburu and Buffalo Springs, Shaba is located in Kenya's Northern Frontier Province, a rugged and little visited region. Driving to the park you will often see Samburu herding cattle through the thorn bush or watering camels in the river. The Ewaso Ng'iro River is life giving for the area. The permanent water ensures that an abundance of wildlife exists in the reserve at all times. The main attractions are reticulated giraffe, Grevy's zebra, Beisa oryx, the Somali ostrich and the gerenuk. Elephant are plentiful and black rhino, lion, leopard, cheetah, buffalo and hyena can all be seen. Dik diks are always dashing across the red roads whilst vervet monkeys scamper about under the trees.
Lake Baringo is, after Lake Turkana, the most northern of the Kenyan Rift Valley lakes, with a surface area of 130 square kilometres (50 sq mi) and an elevation of 970 metres (3,180 ft). The lake is fed by several rivers: the Molo, Perkerra and Ol Arabel. It has no obvious outlet; the waters are assumed to seep through lake sediments into the faulted volvanic bedrock. The lake is in a remote hot and dusty area with over 470 species of birds occasionally including migrating flamingos.
Lake Bogoria National Reserve covers 107km2 within a catchment basin that forms the arid and semiarid areas of northern Kenya. Although the area is protected, it is vulnerable to siltation and pollution. The river has only one major river that feeds it. The hot springs on the western edge of the lake attract a large number of visitors creating problems (solid wastes pollution, and destruction of fragile rocks at the hot-springs). The lake supports large numbers of flamingos and in some occasions as many as 2 million can be found feeding in the lake. The lake has no macrophytes but its phytoplanktonic flora is dominated by Spirulina platensis, which is dominant in most parts of the lake.
Located on the wild and rugged shores of **Lake Turkana** – the cradle of mankind - Sibiloi is home to important archaeological sites including Koobi Fora where the fossil remains have contributed more to the understanding of human evolution than any other site in the continent. The area is characterized by semi-desert habitat and open plains flanked by volcanic formations including Mount Sibiloi, where the remains of a petrified forest can be seen. Sibiloi serves as a stopover for migrant waterfowl and is a major breeding ground for the Nile crocodile. Terrestrial wildlife includes zebras, Grant gazelles, lions, leopards, stripped hyenas, Beisa Oryx, greater kudu, cheetahs and northern topi among others. A total of over 350 species of aquatic and terrestrial bird have been recorded in Lake Turkana. Sibiloi is surrounded by the Turkana, the Gabra and the Dassanach who are communities with very rich and unpolluted traditional cultures.
The Cherangani Hills, an old fault-block formation of non-volcanic origin, form an undulating upland plateau on the western edge of the Rift Valley. To the east, the Elgeyo Escarpment drops abruptly to floor of the Kerio Valley, while westwards the land falls away gently to the plains of Trans-Nzoia District. The hills reach 3,365 m at Cheptoket Peak in the north-central section. The hills are largely covered by a series of Forest Reserves. These are made up of 13 administrative blocks, totalling 95,600 ha in gazetted area. Of this, c.60,500 ha is closed-canopy forest, the remainder being formations of bamboo, scrub, rock, grassland, moorland or heath, with c.4,000 ha of cultivation and plantations. Kapkanyar, Kapolet and Kiptaberr Forest Reserves together form a large western block of forest, totalling c.20,000 ha. The avifauna of the Cheranganis is characteristic of the highland forests of Kenya west of the Rift Valley, comprising both central highland species and western species. Ecological surveys have recorded over 73 forest-dependent species, none of which is presently globally threatened. Regionally threatened species include *Gypaetus barbatus* (one of the last breeding populations in Kenya, nesting on the high peaks), *Stephanoaetus coronatus* (widespread in small numbers), *Glaucidium tephronotum* (recently recorded in Kapkanyar), *Campephaga quiscalina* (uncommon and local; recent records from Kapkanyar) and *Indicator conirostris* (uncommon).
Ol Donyo Sabuk National Park is dominated by a small mountain covered in montane forest, the Ol Donyo Sabuk National Park is home to 45 species of birds including the white-browed sparrow weaver, grey- headed sparrow weaver, African pied wagtail, mourning dove, augur buzzard, African hawk eagle and purple-breasted sunbird. Buffalo are the dominant animals in the ecosystem and other wildlife include bushbucks, leopards, olive baboons, aardvarks, porcupines, mongoose, pythons and monitor lizard. The mountain's summit also offers visitors scenic views of Mount Kenya.

Mwea National Reserve is located within Mbeere District, in Eastern Province, a distance of about 200km from Nairobi. The savannah ecosystem comprises of small hills with bushy vegetation and scattered large trees. Other areas are open grasslands while along the main rivers, large trees with thick undergrowth are found. Trees mainly found within the ecosystem are the different Acacia species and baobab trees. The ecosystem's main features are the meeting point of rivers Tana and Thiba, Kamburu and Masinga hydro-electric dams, which harbour variety of biodiversity. Major wildlife attractions include the elephants, Rothschild giraffes, Common zebras, Lesser kudu, Buffalo, Water Buck, Bush buck, Impala, Vervet Monkeys, Aardvark, Yellow baboons, Grants gazelle, Dik dik, Cape hare, Warthog, Black backed jackal, Duiker, Sykes monkeys, Genet cat, Slender mongoose, Stripped ground squirrel, Dwarf mongoose, Crested porcupine, Rock Hyrax, Tree Hyrax and tortoise. Hippos and crocodiles are also found in the dams and rivers. Different birds and reptile species have been recorded in the reserve.

3.8 Birdlife

Chemical pesticides including Fenitrothion 96% an organophosphate which will be used in the project is likely to severely affects birdlife in the project area. Worldwide, hundreds of incidents of OP and CM induced bird poisoning are reported. OP inhibit the enzyme, acetylcholinesterase and in acute poisoning 50-70% inhibition occurs. Sub lethal effects of these pesticides are endocrine disruption, alterations in feeding behavior and compromised immune systems which affect avian reproduction. Critical bird habitat is affected by pesticide use. Pesticides cause the local extinction, behavioral changes, loss of safe habitat and population decline in several birds. Pesticides and their residues can affect birds and their young directly or indirectly by contaminating food sources. Exposure to pesticides during reproductive stages affects hatching success and fledging survival, as well as increases the chance of reproductive failure. Alteration of feeding behavior, compromised immune system and increased predation further reduces the ability of these birds to maintain healthy populations. As behaviour is the result of integration of many inputs, it is considered as a potentially sensitive indicator of pesticide toxicity (Warner et al., 1966).

The 15 targeted Counties are home to different species of birdlife and has Important Bird Area (IBA) and Endemic Bird Areas (EBA) which are distributed in a large part of the ASAL as shown in Figure 3.6.

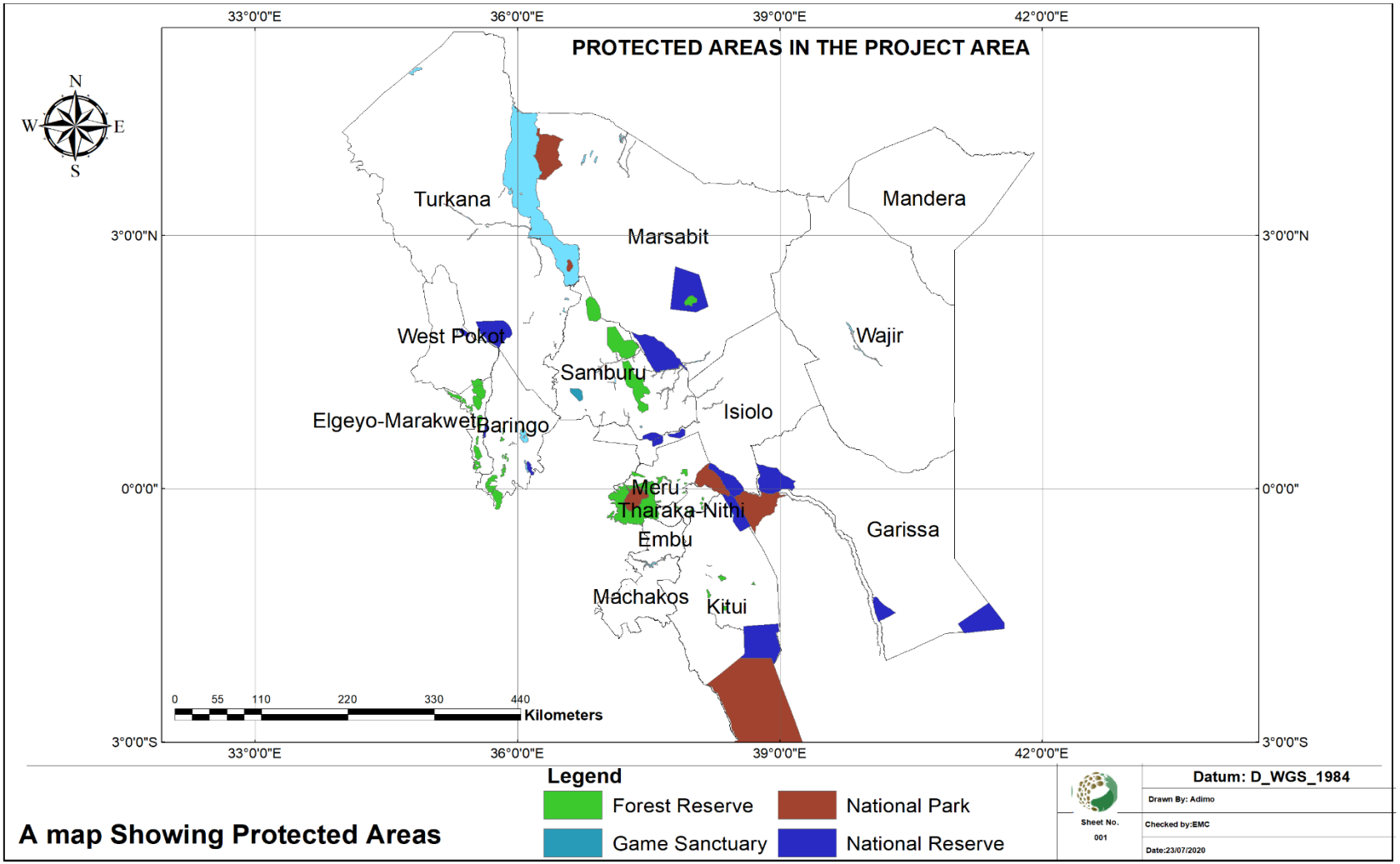
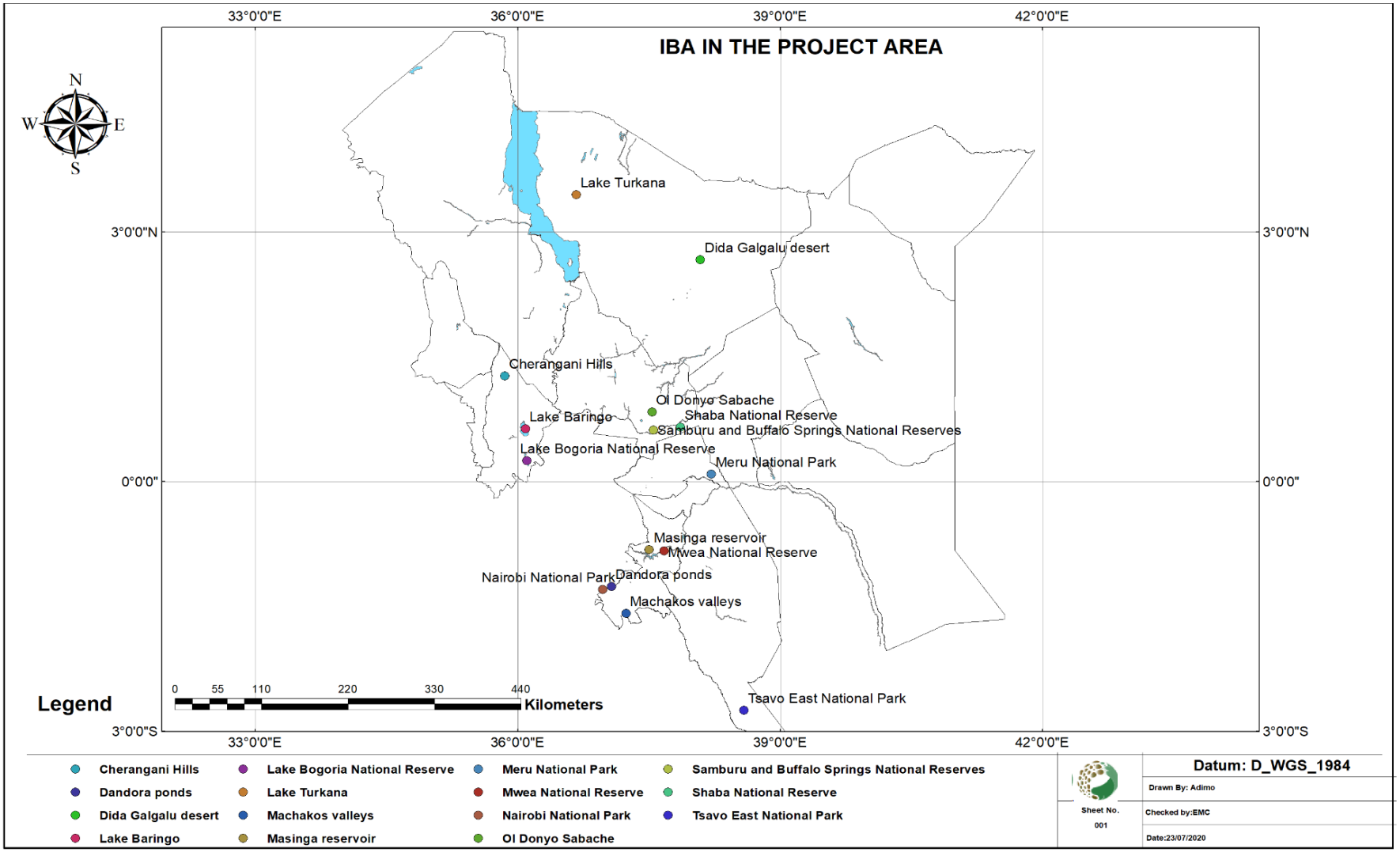


Figure 3-5. Protected Areas in ASAL Counties in Kenya



A map Showing IBA Sites

Figure 3-6.IBA in ASAL Counties in Kenya

3.9 Socio-Economic Background

3.9.1 Livelihood Systems

The economy of arid areas is dominated by mobile pastoralism, while in the better-watered and better-serviced semi-arid areas a more mixed economy prevails, including rain-fed and irrigated agriculture, agro-pastoralism, bio-enterprise, and conservation or tourism-related activities (GoK,2012). Other groups within the ASALs depend on fishing, hunting and gathering for their subsistence. Livelihood assets are the available capital resources people use to make a living. These have been classified into five categories (DFID, 1999): natural, physical, social, financial and human capital. Pastoralist systems contain huge amounts of critical human (language, indigenous technical knowledge, culture) and natural (uniquely adapted breeds of plants and animals) capital.

Pastoralism: Those in which 50% or more of household gross revenue comes from livestock or livestock related activities. Large areas are suitable only for nomadic livestock production.

Agro-pastoralists: These are more settled pastoralists with permanent crop fields close to their homesteads. They also keep livestock, which enable them to survive when crops fail, as it so often happens. More land can be reclaimed for crop cultivation by developing irrigation infrastructure in the ASALs however water is the main limiting factor in ASALS. Ownership of water sources is usually vested in the local community rather than in the household. These pastoralists/agro-pastoralists own about 50% of the national cattle and small ruminant herd and 100% of the camel population. An estimated 70% of cattle (12.2 million heads), 87% of sheep (14.3 million), 91% of goats (25 million) and 100% of camels (2.9 million) of the national livestock population are found in ASALs. The livestock sector provides an important source of livelihoods for 90% of the people who live there (KAPP, 2016). Pastoralism, agro-pastoralism and dryland agriculture are the key livelihood strategies adapted to climate conditions in ASALs. Pastoralism is a livestock-based production system. The contribution of ruminant livestock to national agricultural production has been underestimated in the past (CSDES, 2016).

Pastoralism and artisanal fisheries are among the few land use systems that should be compatible with wildlife conservation, but this is not the case despite the fact that 75% of Kenya's wildlife are found in the drylands (Kenya Republic of 2005) and 92% of Kenya's Protected Area estate (Parks and Reserves), and 50% of Kenya's gazetted forests are found in the drylands. Wildlife impose large costs on livestock-based land use, yet with relatively few benefits in return. As a result, there has been a large reduction of wildlife from all the rangeland districts of Kenya (IUCN, 2007).

Fisher folk: Confined to lakes and rivers such as Lake Turkana, Tana and Athi Rivers. Problems include diminishing fish stock levels in the natural water bodies and high siltation due to soil erosion causing turbidity and low fish productivity e.g. Lakes Baringo and Turkana, and River Tana. Fishing in pastoral areas has been facing some challenges, the major ones being diminishing stocks in natural water bodies as a result of high siltation levels and low productivity

Pastoralists in transition: With the increasing population in arid areas, pastoral families can no longer cope with a purely meat and milk diet. Cultivation, land adjudication and wildlife management have also contributed to a continuous decline of dry season grazing areas, and as a consequence decrease in possibilities to subsist on the pastoral system. Due to the decimation of cattle and other livestock, women play an active role to ensure family survival by participating more aggressively in activities such as beekeeping, camel rearing and trading in livestock, particularly small stock, as well as non-livestock products such as hay, mats, charcoal, clothing, and vegetables. Some of the very poorest people in the region are those who are no longer engaged in the pastoral economy and rely on wage labour or petty trade.

Urban destitute/Urban populations and reliance on trade: An increasing number of ASAL populations living around urban centres are turning to trade in such centres to supplement their income.

Periodic hunters and gatherers: In periods of extreme drought, a few communities turn to wild fruits and leaves in a bid to cushion themselves from starvation.

Emerging Livelihood Options: The ASALs have enormous potential for renewable energy, from both solar and wind. Other natural resources include sand and gravel for construction, soda ash, gums, resins, gemstones, medicinal plants, and potentially oil and gas. Mineral and mining activities provide significant and emerging livelihood options for ASAL communities. The recent discovery of substantial oil, coal and gas deposits is likely to diversify livelihoods among ASAL communities. Other mineral exploitation activities include sand harvesting, gravel-digging, prospecting for gold and precious stones, marble-quarrying and titanium, limestone and soda ash mining.

3.9.2 Poverty, Health and Gender

Poverty

The ASALs have the lowest development indicators and the highest incidence of poverty in the country. On average, 65% of the ASAL population live below the poverty line compared to the national average of 26%. ASALs contain 18 of the 20 poorest constituencies in Kenya; some counties in the north, such as Turkana, Marsabit, Wajir and Mandera, have between 74% and 97% of people living below the absolute poverty line. The economic activities that are found in drylands are not recognized for their true value and do not attract outside investment, therefore further undermining their productivity. Poverty in the drylands is compounded by poor physical infrastructure, limited services compared to the rest of the country, and lack of organized markets including lack of market information. This is heightened by inter-community conflict over water and rich-patch vegetation, something that is likely to become more serious with the negative impacts of climate change.

Health

Health indicators in Northern Kenya are very poor, particularly for women and children, with high maternal, infant and child mortality, high levels of acute malnutrition, and low immunization coverage. The average distance to a health facility in Northern Kenya is

52km, ten times further than the national target of 5km; the percentage of children delivered with trained care in ASAL is less than one-third of the national average; there are also significant differentials between the arid and non-arid parts of Rift Valley and Eastern regions of Kenya. ASALs of Kenya is also characterized by a high prevalence of trachoma and diseases such as kalazar. Levels of HIV/AIDS infection in the north are lower than the national level but thought to be rising. Risk factors include rural-urban migration, mobility, and congested refugee camps (GoK, 2012). Most communities have social protection systems to care for the vulnerable, although these are coming under greater pressure. The disabled and those with HIV/AIDS still face high levels of stigma.

Gender

Though livestock ownership and control is mainly the domain of men, women also own livestock through marriage or inheritance. While men's work is more associated with herd management and decision-making, the gender division of labour is not clear cut, as women are often involved in decision-making related to livestock and spend as much time as men on animal care. Women are responsible for milking, food processing and distribution, managing small stock, and for daily food provisioning in the homestead. Men's responsibilities include planning and decision-making with regard to livestock movement, feeding and watering, castration, vaccination, slaughter, building of enclosures, digging wells and livestock marketing. Young men and women as well as children perform most of the herding.

To a large degree, it is men who control the income from livestock and its products, although women have a say in how the income is spent. Conflicts over the use of income are one of the factors for the high level of divorce in the ASAL and contribute to women's poverty. Access to social services is very poor, coupled with the low per capita infrastructure network in the ASAL compared to other parts of the country (IUCN, 2007). Gender roles are changing under the impact of urbanization and commercialization. The latter in particular may reduce women's control over resources they previously managed, such as dairy production. The welfare of women and girls is also directly threatened by environmental problems, which increase the pressures of providing for the household, particularly water and fuel-wood collection. High levels of unemployment and few opportunities to generate income mean youth, especially young men, are challenging traditional power and decision-making systems, which have previously resided with elderly men. Some of these young men have been involved in inter and intracommunity cattle raids; others are getting caught up in other anti-social vices.

Gender Based Violence

The communities are patrilineal with men mainly focusing on livestock issues while women perform domestic duties including milking animals, fetching water and firewood, looking after home herds of sheep and goats, a few engage in small scale farming and trade. Most men are sole decision makers with most women lacking access to assets and also do not participate in decision making. Gender based violence exists and is normalized with cases of sexual gender-based violence in form of rape and defilement existing in the ASAL regions.

4 DESCRIPTION OF THE ADMINISTRATIVE, POLICY AND REGULATORY FRAMEWORK

This chapter outlines and highlights the relevant institutional and legal as well as policy framework in Kenya which has a direct bearing on the Emergency Locust Response Program. The chapter further highlights the World Bank Environmental and Social Standards (ESSs) relevant to the project including a comparative analysis and gaps existing between the ESSs and host country regulations and suggestions on bridging the gaps. Finally, a section on international laws and conventions that bear relevance to the implementation of this project have also been highlighted in this chapter.

4.1 The Legal, Regulatory and Policy Framework

4.1.1 Constitutional Provisions

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

> Every person has the right to a clean and healthy environment which includes the right -
> a) *To have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and*
> b) *To have obligations relating to the environment fulfilled under Article 70*

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

Section 69 (1): The State shall—

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

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

Section 70 provides for enforcement of environmental rights thus:
(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

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

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

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

Essentially, the new Constitution has embraced and provided further anchorage to the spirit and letter of EMCA 1999 and EMCA (amendment) Act, 2015 whose requirements for environmental protection and management have largely informed Sections 69 through to 71. In Section 72 however, the new constitution allows for enactment of laws towards enforcement of any new provisions of the Supreme Law.

4.1.2 Environment Management and Coordination Act (No. 8 of 1999), EMCA (Amendment) Act 2015, Cap 387.

This is an Act of Parliament providing for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. This Act is divided into 13 Parts, covering main areas of environmental concern as follows: Preliminary (I); General principles (II); Administration (III); Environmental planning (IV); Protection and Conservation of the Environment (V), Environmental impact assessments (EIA), audits and monitoring (VI); Environmental audit and monitoring (VII); Environmental quality standards (VIII); Environmental Restoration orders, Environmental Easements (IX); Inspection, analysis and records (IX); Inspection Analysis and Records (X); International Treaties, Conventions and Agreements (XI) National Environment Tribunal (XII); Environmental Offences (XIII). The Act provides for the setting up of the various ESIA Regulations and Guidelines which are discussed below:

Environmental (Impact Assessment and Audit) Regulations 2003
The Environmental (Impact Assessment and Audit) Regulations 2003 state in Regulation 3 that "the Regulations should apply to all policies, plans, programmes, projects and activities specified in Part III and V of the Regulations'' basically lists the guidelines of undertaking, submission and approval of the ESIA Reports a key requirement outlined in this ESMF.

Environmental Management and Co-ordination (Waste Management) Regulations 2006
These are described in Legal Notice No. 121 of the Kenya Gazette Supplement No. 69 of September 2006. These Regulations apply to all categories of waste as provided in the Regulations. These include:

- *Industrial wastes;*
- *Hazardous and toxic wastes;*
- *Pesticides and toxic substances;*
- *Biomedical wastes;*
- *Radio-active substances.*

The proposed Project will have to abide by these regulations in dealing with waste management especially the provisions of wastes which may be generated during their construction and operation phases of the sub project investments.

Environmental Management and Coordination, (Water Quality) Regulations 2006
These are described in Legal Notice No. 120 of the Kenya Gazette Supplement No. 68 of September 2006. These Regulations apply to drinking water, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife and water used for any other purposes. This includes the following:

- *Protection of sources of water for domestic use;*
- *Water for industrial use and effluent discharge;*
- *Water for agricultural use.*

These Regulations outline:

a) *Quality standards for sources of domestic water;*
b) *Quality monitoring for sources of domestic water;*
c) *Standards for effluent discharge into the environment;*
d) *Monitoring guide for discharge into the environment;*
e) *Standards for effluent discharge into public sewers;*
f) *Monitoring for discharge of treated effluent into the environment.*

In fulfilling the requirements of the regulations, the project proponent will have to undertake monitoring of both domestic water and wastewater and ensure compliance with the acceptable discharge standards.

Environmental Management and Coordination, Conservation of Biological Diversity (BD) Regulations 2006
These regulations are described in Legal Notice No. 160 of the Kenya Gazette Supplement No. 84 of December 2006. These Regulations apply to conservation of biodiversity which includes Conservation of threatened species, Inventory and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefit sharing and offences and penalties.

Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulations 2009
These regulations provide for the protection and management of wetlands, riverbanks, lakeshores and sea-shore management and detail guidelines on the same.

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009
These regulations prohibit making or causing any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. It also prohibits the Contractor from excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment or excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. Under the regulation the Contractor will be required to undertake daily monitoring of the noise levels within the Project area during construction period to maintain compliance.

4.1.3 Occupational Health and Safety Act, 2007
This is an Act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The Act has the following functions among others:

- *Secures safety and health for people legally in all workplaces by minimization of exposure of workers to hazards (gases, fumes and vapours, energies, dangerous machinery/equipment, temperatures, and biological agents) at their workplaces.*
- *Prevents employment of children in workplaces where their safety and health is at risk.*
- *Encourages entrepreneurs to set achievable safety targets for their enterprises.*
- *Promotes reporting of work-place accidents, dangerous occurrences and ill health with a view to finding out their causes and preventing of similar occurrences in future.*
- *Promotes creation of a safety culture at workplaces through education and training in occupational safety and health.*

Failure to comply with the OSHA, 2007 attracts penalties of up to KES 300,000- or 3-months jail term or both or penalties of KES 1,000,000-or 12-months jail term or both for cases where death occurs and is in consequence of the employer. The Occupational Safety and Health Act (OSHA) 2007 repealed the Factories and Other Places of Work Act. Anything done under the provisions of the Factories and Other Places of Work Act including subsidiary legislation issued before the commencement of the OSHA 2007 shall be deemed to have been done under the provisions of this Act.

The Factories and Other Places of Work Act had over the years passed several subsidiary rules and regulations for effective implementation of the Act. All shall, as long as it is not inconsistent with OSHA 2007 remain in force until repealed or revoked by subsidiary legislation under the provisions of OSHA 2007 and shall for all purposes be deemed to have been made under this Act.

These regulations include:

- *The Factories (Cellulose Solutions) Rules 1957;*

- *The Factories (Wood Working Machinery) Rules 1959;*
- *The Factories (Dock) Rules 1962;*
- *The Factories (Eye Protection) Rules 1978;*
- *The Factories (Electric Power) (Special) Rules 1978;*
- *The Factories (Building Operations and Works of Engineering Construction) Rules 1984;*
- *The Factories and Other Places of Work (Health & Safety Committees) Rules 2004;*
- *The Factories and Other Places of Work (Medical Examination) Rules 2005;*
- *The Factories and Other Places of Work (Noise Prevention and Control) Rules 2005;*
- *The Factories and Other Places of Work (Fire Risk Reduction) Rules 2007;*
- *The Factories and Other Places of Work (Hazardous Substances) Rules 2007.*

The scope of OSHA 2007 has been expanded to cover all workplaces including offices, schools, academic institutions and plantations. It establishes codes of practices to be approved and issued by the Director, Directorate of Occupational Health and Safety (DOHS) for practical guidance of the various provisions of the Act.

Other parameters within the Act relevant to the project include:

1. *Duties of employers, owners or occupiers of workplace;*
2. *Establishment of safety and health committees;*
3. *Annual safety and health audit of workplaces;*
4. *Safety and Health obligations for persons who may come to premises for work and are not employees of that particular workplace;*
5. *Reporting of any accident, dangerous occurrence or occupational poisoning caused in the workplace to the area Occupational Health and Safety Office. These incidents should be entered in the General Register. In case of fatal accident information to the area Safety and Health Office should be within 24 hrs. and a written notice to the same within 7 days;*
6. *The duties of manufactures, designers, importers and suppliers to ensure that all articles and substances for use at workplace are safe and will not cause injury to health and the environment;*
7. *Duties of self-employed persons;*
8. *Duties of employed persons;*
9. *Prohibition of interference or misuse of any appliance, convenience or any other facility provided to secure Safety, Health and Welfare at work by any person (occupier, self-employed person or employed);*
10. *The administration of the Act is the responsibility of a Director and other appointed and gazetted officials (Occupational Health and Safety Officers);*
11. *The registration of all workplaces by the Director Directorate of Occupational Health and Safety (DOHS) forming the basis of his work statistics;*
12. *Machinery safety to include:*
    - *Safe use of machinery, plant and equipment;*
    - *Prime makers and transmission machines;*
    - *The maintenance, construction of fencing safeguards;*
    - *The statutory requirements of various machines, plants and equipment (hoists and lifts, chains and ropes, cranes, steam receivers and containers, air receivers, cylinders for compressed liquefied and dissolved gases and refrigeration plants).*

13. *Chemical safety including:*

(i) Handling, transportation and disposal of chemicals and other hazardous substances;
(ii) Importance of Materials Safety Data Sheets (MSDS);
(iii) Labelling and marking of chemical substances;
(iv) Classification of hazardous chemicals and substances;
(v) Establishment and adoption of exposure limits on hazardous substances in a workplace;
(vi) Control of air pollution, noise and vibrations;
(vii) Redeployment on medical advice.

4.1.4 Public Health Act Chapter 242, 2012

The Public Health Act provides for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out researches and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health. The Public Health Act regulates activities detrimental to human health. The owner(s) of the premises responsible for environmental nuisances such as noise and emissions, at levels that can affect human health, are liable to prosecution under this act. An environmental nuisance is defined in the act as one that causes danger, discomfort or annoyance to the local inhabitants or which is hazardous to human health. This Act controls the activities of the project with regard to human health and ensures that the health of the surrounding community is not jeopardized by the activities of the project such as water development.

4.1.5 Pest Control Products Act Chapter 346, 2012

This Act covers the use, application, importation and trade in pest products. It includes regulation on:

- Prescribing for the purposes of this Act the nomenclature of pests, classes and kinds of pests and pest control products;
- Prescribing the form in which applications for registration shall be made and the information to be furnished therewith;
- Respecting the registration of pest control products and establishments in which any pest control products are and led by manufacturers or dealers and prescribing the fees therefore, and respecting the procedures to be followed for the review of cases involving the refusal, suspension or cancellation of the registration of any such product or establishment;
- Prescribing the form, composition, and all other standards relating to the safe use of pest control products, including toxic residue effects;
- Respecting the manufacture or treatment of any pest control product to facilitate its recognition by change in colouration or other means;
- Respecting the standards for efficacy and safety of any pest control product;
- Respecting the manufacture, storage, distribution, display and use of any pest control product;
- Respecting the packaging, labelling and advertising of pest control products;

- Respecting the taking of samples and the making of analyses for the purposes and provisions of this Act;
- Prescribing the information to be supplied and the form of such information in respect of any pest control product that is to be imported into Kenya;
- Prescribing the circumstances and conditions under which pest control products that have met the requirements of the Cattle Cleansing Act may be deemed to be registered as prescribed under this Act;

4.1.6 Pest Control Products (Registration) Regulations, 1984

The Pest Control Products (Registration) Regulations, 1984 [L.N. 46/1984, L.N. 109/1984, L.N. 123/2006.] – defines the process of registering pest control products. Key features of the subsidiary legislation include:

- Section 5-establishes the PCPB, whose functions include assessing and evaluating pest control products, and considering applications for the registration of pest control products. The pesticide to be used is registered for use in Kenya as per this regulation.
- Regulation 2-provides definitions for various pest control products including biochemical pesticide and micro- and microbial bio pesticides
- Regulation 4-outlines the procedure for the registration of pest control products including bio pesticide-specific registration pathways
- Regulation 7 - provides for instances when the PCPB can issue or refuse to issue a certificate of registration
- Regulation 8-stipulates the validity period for certificates of registration
- Regulation 10 - lists instances where the PCPB may refuse to register a pest control product
- Regulation 11-states instances where the PCPB may suspend or revoke a certificate of registration
- Regulation 14-provides that a holder of a certificate of registration is to keep a record of all the quantities of pest control products they store, manufacture or sell. This record is to be maintained for five years from the time it is made and must be made available to the PCPB at such times and in such manner as the PCPB may require.

The PCPB publishes the list of pest control products registered in the country on its website. This list is published to stakeholders in the plant health sector in order to easily identify the pesticides that have been evaluated by the PCPB for safety, efficacy, quality and economic value. By accessing the PCPB website, any person can access categorised downloadable list of registered products, including those for use in crop production, animal health and public health. Contained in the list is information on trade names of products, their registration numbers, the name(s) of active ingredient(s) and their concentrations, formulation type, authorized uses including crops and target pests, the name of the registrant and the period of registration.

4.1.7 Pest Control Products (Licensing of Premises) Regulations, 1984

The Pest Control Products (Licensing of Premises) Regulations, 1984 [Section 15, L.N. 45/1984, L.N. 124/2006.] – Section 2 prohibits any person from using any premises for

purposes of manufacturing, formulating, packaging and storing pest control products without a license issued under these regulations.

4.1.8 Pest Control Products (Labelling, Advertising and Packaging) Regulations, 1984

The Pest Control Products (Labelling, Advertising and Packaging) Regulations, 1984 [L.N. 89/1984, L.N. 127/2006.] – address the design of pesticide packages (packaging and labelling). Regulation 3 requires all pest control products to bear a label which has been approved by the PCPB. In addition, the regulation specifies the information required on the label. Regulation 9 provides for cases where the physical properties of a pest control product may not be recognized when it is being used. In such circumstances the pest control product must be denatured by means of colour, odour or other methods the PCPB may approve so as to provide a signal or warning of its presence. Regulation 11 specifies the conditions under which a pest control product shall be distributed. Regulation 13 specifies the technical requirements for packaging (e.g. packaging material shall be sufficiently durable and manufactured to contain the pest control product safely under practical conditions of storage, display and distribution). Regulation 14 states the general prohibitions (e.g. words stating, implying or inferring that a pest control product is approved, accepted or recommended by the government shall not appear on a package or label in any advertisement respecting a pest control product).

4.1.9 Pest Control Products (Importation and Exportation) Regulations, 1984

The Pest Control Products (Importation and Exportation) Regulations, 1984 [L.N. 146/1984, L.N. 125/2006.] contain provisions specifically addressing the import and export of pesticides. Regulation 2 prohibits the importation and exportation of pest control products unless licensed. Regulations 4 and 5 establishes the application process for a license in respect of importation or exportation of a pest control product and how the PCPB will deal with applications and issue of licenses respectively. Regulation 8 provides for instances where the PCPB may cancel or suspend a licence (e.g. where the licensee has been convicted of an offence/has committed a breach of any of the terms or conditions of the license).

4.1.10 Pharmacy and Poisons Act Chapter 244, 2012

The Pharmacy and Poisons Act contains provisions addressing the sale of poisons for agriculture and horticulture. Section 28 prescribes the manner in which a person intending to trade in pesticides may apply to the Pharmacy and Poisons Board for a license to deal with pesticides. The section further prescribes instances when the Board may refuse to issue or renew or may revoke a license to trade in pesticides. Section 13 prescribes the safe custody of poisons. The section provides that no person engaged in a trade, business or profession shall knowingly have in their possession or under their control a poison.

4.1.11 Pest Control Products (Licensing of Premises) Regulations, 1984

Pest Control Products (Licensing of Premises) Regulations, 1984 contains further provisions addressing the handling of pesticides - Regulation 7 requires that every person operating premises dealing with pesticides must have an adequate knowledge of the

chemistry, toxicology, efficacy and general use of the pest control product. Further, the regulations contain provisions identifying pesticide-related activities permissible only to operators holding a valid license. Regulation 3 prescribes the application process for the licensing of premises intended to be used for manufacturing, formulating, packaging, selling or storing pest control products. Regulation 7 requires persons intending to handle, use, distribute, transport or deal in a pest control product under restricted class to apply to the PCPB for a permit as per the prescribed **Form D** in the schedule.

4.1.12 Pest Control Products (Disposal) Regulations, 2006

Pest Control Products (Disposal) Regulations, 2006-Regulation 2 provides that those disposing pesticides for commercial purposes must be in possession of a license, and the use of any pesticide disposal method must be approved by the PCPB. Further, the Guidelines for on-farm Disposal of Pesticide Wastes and Containers, PCPB prescribe best practice when it comes to the disposal of unwanted or unused pesticide concentrates (obsolete stock). Further, guidelines for on-farm disposal of pesticide wastes and containers, PCPB. The guidelines prescribe that pesticide containers and packaging materials should never be used to contain water, food or feed stuffs for human or animal use. Additionally, while cleaning containers, the following guidelines must be noted:

- wear protective clothing
- avoid spillages and leaks
- completely empty containers and packages before disposing
- take care to avoid splashing or creating dust
- place cleaned containers in a dry secure compound prior to disposal
- At the container disposal site:
  - Containers should be punctured after rinsing to make them unusable, and crushed to reduce bulk
  - Combustible packaging materials should be burnt in a licensed incinerator. If not possible, containers should be made unusable, reduced in bulk and buried
  - Integrity of containers to be buried should be destroyed
  - Aerosols should not be punctured

4.1.13 Employment Act, 2007

This Act declares and defines the fundamental rights of employees; minimum terms and conditions of employment; to provide basic conditions of employment of employees; and to regulate the employment of children, among other rights. Key sections of the Act elaborate on the employment relationship; protection of wages; rights and duties in employment; termination and dismissal and protection of children, among others. This Act will guide the management of workers, especially during the construction period.

While the EMCA supersedes all other environmental legislation, numerous other laws and regulations in addition to those described above influence the various aspects and activities of the Project, which include the following among others:

i) Trade Licence Act, Cap 497;
ii) Penal Code Cap 63 (rev. 1985) ;
iii) Standards Act, Chapter 496 (1974);
iv) Building Code (1968);
v) Work Injury and Benefits Act (2007);

vi) Food, Drugs and Chemical Substances Act, Cap 254 (rev 1992);
vii) Use of Poisonous Substances Act, Cap 247(rev. 1983);
viii)Transport Licensing Board Act (Cap. 404).

4.1.14 HIV and AIDS Prevention and Control Act 2011

The object and purpose of this Act is to (a) promote public awareness about the causes, modes of transmission, consequences, means of prevention and control of HIV and AIDS; (b) extend to every person suspected or known to be infected with HIV and AIDS full protection of his human rights and civil liberties by (i) prohibiting compulsory HIV testing save as provided in this Act; (ii) guaranteeing the right to privacy of the individual; (iii) outlawing discrimination in all its forms and subtleties against persons with or persons perceived or suspected of having HIV and AIDS; (iv) ensuring the provision of basic health care and social services for persons infected with HIV and AIDS; (c) promote utmost safety and universal precautions in practices and procedures that carry the risk of HIV transmission; and (d) positively address and seek to eradicate conditions that aggravate the spread of HIV infection.

Section 7 of the Act focuses on HIV and AIDS education in the workplace and states that (1) The Government shall ensure the provision of basic information and instruction on HIV and AIDS prevention and control to (a) employees of all Government Ministries, Departments, authorities and other agencies; and (b) employees of private and informal sectors. (2) The information provided under this section shall cover issues such as confidentiality in the workplace and attitudes towards infected employees and workers.

4.1.15 Sexual Offences Act 2006

An Act of Parliament that makes provision about sexual offences, aims at prevention and the protection of all persons from harm from unlawful sexual acts, and for connected purposes. Section 15, 17 and 18 below are mainly focused on sexual offenses on minor (children).

Under Section 15 it is an offence for Any person who -
(a) knowingly permits any child to remain in any premises, for the purposes of causing such child to be sexually abused or to participate in any form of sexual activity or in any obscene or indecent exhibition or show;
(b) acts as a procurer of a child for the purposes of sexual intercourse or for any form of sexual abuse or indecent exhibition or show;
(c) induces a person to be a client of a child for sexual intercourse or for any form of sexual abuse or indecent exhibition or show, by means of print or other media, oral advertisements or other similar means;
(d) takes advantage of his influence over, or his relationship to a child, to procure the child for sexual intercourse or any form of sexual abuse or indecent exhibition or show;
(e) threatens or uses violence towards a child to procure the child for sexual intercourse or any form of sexual abuse or indecent exhibition or show;
(f) intentionally or knowingly owns, leases, rents, manages, occupies or has control of any movable or immovable property used for purposes of the commission of any offence under this law

Under Section 17 it is an offence for Any person who -
(a) intentionally causes or incites another person to become a prostitute; and
(b) intentionally controls any of the activities of another person relating to that persons prostitution; and does so for or in expectation of gain for him or herself or a third person, is guilty of an offence and is liable upon conviction to imprisonment for a term of not less than five years or to a fine of five hundred thousand shillings or to both.

Under Section 18 it is an offence for Any person who -
(1) Any person who intentionally or knowingly arranges or facilitates travel within or across the borders of Kenya by another person and either -
(a) intends to do anything to or in respect of the person during or after the journey in any part of the world, which if done will involve the commission of an offence under this Act; or
(b) believes that another person is likely to do something to or in respect of the other person during or after the journey in any part of the world, which if done will involve the commission of an offence under this Act, is guilty of an offence of trafficking for sexual exploitation.
(2) A person guilty of an offence under this section is liable upon conviction, to imprisonment for a term of not less than fifteen years or to a fine of not less than two million shillings or to both.

4.1.16 Labour Relations Act 2012

An Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratisation of trade unions and employers organisations or federations, to promote sound labour relations through the protection and promotion of freedom of association, the encouragement of effective collective bargaining and promotion of orderly and expeditious dispute settlement, conducive to social justice and economic development and for connected purposes. This Act in Section II Part 6 provides for freedom of employees to associate; section 7 provides for protection of rights of employees; Part 9 provides for adjudication of disputes and Part 10 provides for protection of the employees to hold strikes and lock outs.

4.1.17 National Gender and Equality Commission Act 2011

The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.

4.2 Relevant Sector Policies

4.2.1 Kenya Vision 2030

The Sessional Paper Number 10 of 2012 on the Kenya Vision 2030 under the economic pillar identifies specific interventions which in the agricultural sector include increasing productivity of crops and livestock, introducing land use polices for better utilization of high and medium potential lands, developing more irrigable areas in arid and semi-arid lands for both crops and livestock, and improving market access for smallholders through better post-harvest and supply chain management. It also prioritizes flagship projects in the

sector, specifically: enactment of the consolidated agricultural reform bill, fertilizer cost-reduction investment, disease-free zones, land registry, land-use master plan and arid and semi-arid lands development project. The Policy makes reference to climatic change and directs responses. The Policy under the social pillar, with respect to environmental management proposes to intensify conservation of natural resources, such as establishing voluntary carbon markets, intensify research on impact of and response to climatic change and pilot adaptation programmes.

4.2.2 National Policy on Environment and Development Sessional Paper No. 6 of 1999

Currently, a far-reaching initiative towards an elaborate national environmental policy is contained in the Sessional Paper No. 6 of 1999 on Environment and Development. It advocates for the integration of environmental concerns into the national planning and management processes and provides guidelines for environmentally sustainable development. The challenge of the document and guidelines is to critically link the implementation framework with statutory bodies namely, the National Environmental Management Authority (NEMA), Kenya Wildlife Service (KWS), Kenya Forestry Service (KFS); the National Environment Complaints Committee (NPCC) and the National Environmental Tribunal (NET).

4.2.3 Agricultural Sector Development Strategy

The Agricultural Sector Development Strategy (ASDS) 2010-2020 sets out to implement the Kenya Vision 2030 in the agricultural sector. It identifies two strategic thrusts for its vision of a food-secure and prosperous nation, i.e. increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises and developing and managing the key factors of production. It commits government to implement "National Climate Change Response Strategy" which would include mainstreaming of tradition early warning and mitigation systems, identification of priorities for climate adaptation and mitigation with specific measures for vulnerable groups, awareness creation, conducting of periodic climate change threat and risk assessments and their mitigation as well as research and development in the area.

4.2.4 National Climatic Change Strategy

The Strategy sets out to reduce the vulnerability to impacts of climatic change and to catalyse transition to cleaner, lower emission and less carbon-intensive development in the country. Government commits in the Strategy to enhance climatic resilience and adaptive capacity and put in place mechanisms for sustainable utilization of natural resources. The Strategy directs integration of climate change risk and vulnerability assessment in the Environment Impact Assessment and the Strategic Environment Assessment. It lays the blame for emissions of green-house gases largely to agriculture, more so livestock, and in land-use change and suggests deterrent taxation and friendly regulatory environments for low carbon-pollutant activities.

4.2.5 National Agricultural Research Systems Policy

This policy provides the foundation for research in the agricultural sector. It aims at achieving reforms in the Kenyan agricultural research systems to support the development

of an innovative, commercially oriented, and modern agricultural sector. The Policy aims at achieving objectives that include problem-solving and impact driven research agenda, fast-tracking national adoption of available technologies and knowledge and enhancing capacity to access and adopt knowledge and appropriate technologies available world-wide. It directs re-focusing of research to solve problems, the harnessing of indigenous knowledge while upholding professional ethics and the adoption of innovative methods of knowledge transfer.

4.2.6 National Agricultural Sector Extension Policy

This policy implements the ASDS on matters of agricultural extension services. It directs extension service providers to apply sustainable, dynamic, innovative and effective extension approaches and methods, especially those promoting demand-driven and beneficiary led approaches in the selection of technologies and extension messages. It promotes decentralization of extension by using clientele groups (e.g. common interest groups, smallholder associations and primary cooperatives) and general public outreach for cost-effectiveness, taking into consideration the importance of indigenous knowledge and technologies.

4.2.7 National Productivity Policy

The Sessional Paper Number 3 of 2013 on the National Productivity Policy responds to low productivity and directs corrective measures. The Policy aims to achieve accelerated economic growth through high investment and productivity growth, being the incremental growth of 5% per year up from current less than 1%. It also aims at increased productivity awareness and consciousness level in the country from the current level of about 1 percent to 60 percent of the population. It proposes training programmes outside the formal education system for skills transfer to the labour force. It will also support technological change and innovation.

4.2.8 National Food and Nutritional Security Policy

The Sessional Paper Number 1 of 2012 on the National Food and Nutritional Security Policy aims at achieving safe food in sufficient quantity and quality to satisfy the nutritional needs for optimal Agricultural Policies & Legislation: The Policy directs the promotion of sustainable food production systems with particular attention to increasing soil fertility, agro-biodiversity, organic methods and proper range and livestock management practices. The Policy also directs that different approaches to food production are adopted based on the agro-ecological diversity which should include promoting.

4.3 Relevant Institutions-Environmental

4.3.1 Environmental Assessment Institutional Framework

There are over 20 institutions and departments, which deal with environmental issues in Kenya. Some of the key institutions include the Ministry of Environment and Forestry (MoEF), Kenya Forest Services (KFS), Kenya Wildlife Service (KWS), National Museums of Kenya (NMK), National Environment Management Authority (NEMA), Ministry of Water and Irrigation (MoWI), Water Resources Authority (WRA) and the public universities, among other organisations. There are also local and international NGOs involved in environmental issues in Kenya. In 2001, the Government established specific

administrative structures to implement the EMCA. The main administrative structures are described in the following sections.

4.3.2 National Environment Management Authority

The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

4.3.3 County Environmental Committees

The County Environmental Committees also contribute to decentralised environmental management and enable the participation of local communities. These environmental committees consist of the following:

i) *Representatives from all the ministries;*
ii) *Representatives from local authorities within the province/district;*
iii) *Two farmers / pastoral representatives;*
iv) *Two representatives from NGOs involved in environmental management in the province/district;*
v) *A representative of each regional development authority in the province/district.*

4.3.4 National Environment Complaints Committee on Environment

The National Environmental Complaints Committee (NECC) was established under Section 31 of the Environmental Management and Co-ordination Act, 1999. It was formerly known as the Public Complaints Committee (PCC), but its name changed in the EMCA (Amendment) No. 5 of 2015). It is an important institution in the assessment of the condition of the environment in Kenya. It plays an important role in the facilitation of alternative dispute resolution mechanisms relating to environmental matters. The NECC makes recommendations to the Cabinet Secretary and thus contribute significantly to the formulation and development of environmental policy.

4.3.5 National Environmental Tribunal

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA licence or by a local community upon the grant of an EIA licence to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

4.3.6 Environment and Land Court

The Kenya Constitution establishes Environment and Land Court. Article 162 of the constitution provides for the creation of specialized courts to handle all matters on land and the environment. Such a court will have the status and powers of a High Court in every respect. Article 159 on the principles of judicial authority, indicates that courts will

endeavour to encourage application of alternative dispute resolution mechanisms, including traditional ones, so long as they are consistent with the constitution. Section 20, of the Environment and Land Court Act, 2011 empowers the Environment and Land Court, on its own motion, or on application of the parties to a dispute, to direct the application of including traditional dispute resolution mechanisms.

Table 4-1.Other Institutions

Agency	Role	Specific functions list (relating to pest and pesticide management)
Ministry of Agriculture		
Pest Control Products Board (PCPB)	➢ Regulates the importation, exportation, manufacture, distribution, transportation, sale, disposal and use of products used for the control of pests and mitigate potential harmful effects to the environment.	➢ Enhance compliance of pest control products to set standards and facilitate trade. ➢ Ensure safe, quality and efficacious pest control products are available to users ➢ Enhance responsible use of pest control products and food safety ➢ Improve management of pest control products lifecycle
KALRO	➢ Research in plant health issues related to pesticide	➢ Efficacy trials of agricultural pesticides for field and stored crops and fertilizers
Ministry of Environment and Forestry		
Ministry of Health		
Government Chemists Department	➢ Provision of laboratory services in the fields of public and environmental health	➢ Test substances and materials for chemical composition, compliance with legal specifications and their suitability for various uses ➢ Analyses of samples for compliance to public health requirements
Directorate of Occupational Safety and Health Services (DOSHS)	➢ Ensures safety, health and welfare of workers predisposed to pesticides.	➢ Identify, evaluate and control biological and chemical factors in the work environment which may affect the safety and health of employed persons and the general environment.
Ministry of Industry, Investment and Trade		
Kenya Bureau of Standard (KEBS)	➢ Prepare standards relating to pesticides and their promotion at all levels	➢ Develop pesticide standards. Testing pesticide residues, and toxic elements in foods Certification of products

The government agencies involved in pest and pesticide management are supported by several international and regional institutions, including FAO, ILRI, ICIPE, IITA, CYMMIT, CIP, ICRAF (WAC), CIAT, ICRISAT and DLCO. It should be noted that FAO will play a leading and instrumental in use of the pesticides for desert control under this project.

4.4 Institutional Responsibilities with respect to Social Issues

The constitution provides for a number of institutions to address issues of vulnerable and marginalised groups including grievance redress mechanisms. Key constitutional mechanisms for redress of issues related to marginalization include the (a) Commission on Administrative Justice-Office of the Ombudsman; (b) National Land Commission; and (c) Committee on Revenue Allocation.

4.4.1 Commission on Administrative Justice-Office of the Ombudsman

Kenya has a formal Feedback and Complaints Handling Mechanism. The Commission is the national/constitutional stakeholder instrument for grievance redress. Its mandate is to receive and address complaints against public officers and public institutions to improve service delivery. Three types of complaints can be made to the office of the Ombudsman including: (i) Citizen against State/public officers and institutions; (ii) Public officers against fellow public officers; and, (iii) Public institutions against other public institutions. **Table 4-2** below provides the steps and process for feedback and complaints redress by the Ombudsman. The Ombudsman has a three step and time bound mechanism for feedback and grievance redress, as shown below.

Table 4-2. Feedback and Complaints Redress by the CAJ (the Ombudsman)

Step 1	Complainant fills in a Complaint Form • Complaint is assessed for compliance with CAJ Mandate; • If within mandate, CAJ commences inquiries and complainant is issued with copy of communication – CAJ 2 [Sec. 43]; • If NOT within CAJ mandate, Complainant is advised accordingly and/or referred to appropriate government agencies; • If a response is not received from the respondent after 14 working days, CAJ sends a first reminder giving the respondent 7 days to comply; • If no response is received after this, a final reminder of 7 days is sent; • If there is still no response after 28 days, summonses are issued to the respondent in line with [Sec. 27(a)].
Step 2	If after the summonses the respondent still fails to comply, the Ombudsman proceeds to: • Determines the complaint in the absence of the respondent; • Institutes legal proceedings against the respondent [according to Sec. 52]; • Cites the respondent as an unresponsive State or Public Office or Officer, and/or declares such State or Public Officer to be unfit to serve in the Public Service;
Step 3	*How the Ombudsman undertakes grievance redress action:* In resolving a complaint, the Ombudsman may: • Conduct investigations according to articles [A.59 (2)(i)] [Sec 8 b)] [A.252(1)(g)] [Sec. 53 (1)]; • Demand and obtain information or documents [S.26 (d)]; • Conduct an inquiry [A.252(1)(g)] • Undertake mediation, negotiation and conciliation [A.252 (1) (b)]; • Constitute a hearing panel; • Invite or summon any person or persons to attend to the Commission [S.26 (f)]; • Obtain orders from the Court authorizing Searches or Seizures [Sec.26 (e)]. • Obtain warrants of arrest for breach of any summons or orders of the Commission.

4.4.2 National Gender Equality Commission

National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution. NGEC

derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities

4.4.3 Kenya National Commission on Human Rights

The Kenya National Commission on Human Rights (KNCHR) is an autonomous national Human rights institution established under article 59 of the Constitution of Kenya 2010 with the core mandate of furthering the promotion and protection of human rights in Kenya. The Commission plays two key broad mandates;

- It acts as a watchdog over the Government in the area of human rights.
- Provides key leadership in moving the country towards a human rights state.

The main goal of KNCHR is to investigate and provide redress for human rights violations, to research and monitor the compliance of human rights norms and standards, to conduct human rights education, to facilitate training, campaigns and advocacy on human rights as well as collaborate with other stakeholders in Kenya.

4.5 World Bank Group EHS Guidelines

The Environmental Health and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain the performance levels and measures that are normally acceptable to the WB Group, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. The EHS General Guidelines remain relevant to this project and were utilised in the development of the ESMF and IPMP. Sub project IPMPs will during implementation include the EHS General guidelines that are available at www.ifc.org/ehsguidelines.

4.6 World Bank COVID-19 Public Consultations and Engagement Guidelines

The COVID-19 pandemic has led to development of procedures, protocols and guidelines by World Bank that borrowers are required to follow when implementing bank projects until such a time that the pandemic will be managed. The Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings will be employed in this project.

4.7 International Environmental and Social Management Requirements

Kenya is a signatory to several international treaties and conventions and guidelines that are relevant to this project as described below.

4.7.1 Convention on Biological Diversity

The Convention on Biological Diversity adopts a broad approach to conservation. It requires Parties to the Convention to adopt national strategies, plans and programs for the

conservation of biological diversity, and to integrate the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programs and policies. The proposed program is expected to conserve biodiversity, especially the rare and endangered species in the project area and its environs. In addition, United Nations Convention on Biological Diversity (CBD) provides a regulatory framework for the conservation of biological resources at the international level.

4.7.2 United Nations Framework Convention on Climate Change

The convention seeks to regulate levels of greenhouse gases (GHGs) concentration in the atmosphere, to avoid the occurrence of climate change at levels that would harm economic development, or that would impede food production activities. In essence, the locust thrives on vegetative and forage parts of plant and therefore depleting carbon sinks. Abating the invasion menace will not safe vegetation cover but allow for rejuvenation of the damaged forage.

4.7.3 International Plant Protection Convention (IPPC) of FAO

The IPPC is an international treaty to secure action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control.

4.7.4 World Food Security and the Plan of Action of November

This declaration seeks to secure effective prevention and progressive control of plant and animal pests and diseases, including especially those which are of trans-boundary nature, such as desert locust, where outbreaks can cause major food shortages, destabilize markets and trigger trade measures. It promotes regional collaboration in plant pests and animal disease control and the widespread development and use of safe pest management methods such as integrated pest management practices.

4.7.5 FAO Guidelines on Good Practice for Aerial Application of Pesticides

When using an approved pesticide, the objective is to distribute the correct dose to a defined target with the minimum\of wastage due to drift using the most appropriate spraying equipment. Acceptable spray distribution is relatively easy to achieve with most ground-based directed spraying, but spray application with fixed and rotary wing aircraft presents more complex problems. The purpose of this guide is to identify some of the problems and to suggest means of addressing them. Although the number of aircraft licensed for aerial spraying has decreased recently, where large uniform areas have to be rapidly treated, aircraft application is usually considered to be more fuel-efficient than ground spraying.

4.7.6 FAO Guidelines on Good Practice for Ground Application of Pesticides

The guidelines are aimed at decision-makers, managers, field supervisors and spray operatives. However, it must be emphasized that in some countries, legislation is already in place to control safe and efficient pesticide use and application. Accordingly, local legislation, or voluntary codes must be the first point of reference with this set of guidelines offered as additional information. This is an important point, as compliance with local legislation may have legal significance in the event of a claim against the poor field performance of a pesticide.

4.7.7 FAO Guidelines on Management Options for Empty Pesticide Containers

This guideline provides advice on the management of one-way pesticide containers following the deployment of their contents. Unless empty pesticide containers are managed correctly, they are hazardous to both mankind and the environment. There is a danger that empty containers could be reused for storing food and water, which could result in pesticide poisonings. Containers abandoned in the environment can lead to pesticide pollution in soil and groundwater. A container management scheme can minimize these risks and is part of the "life-cycle concept" as addressed in the International Code of Conduct on the Distribution and Use of Pesticides.

4.7.8 FAO Guidelines on Desert Campaign Organization and Execution

This guideline is intended for use by those individuals who have the responsibility of organizing a locust control campaign in their country. Field staff, administrators, donors and other international organizations may find some of the information useful in understanding what is involved in the organization and implementation of locust campaigns. The guideline deals almost exclusively with aerial control campaigns because only aerial control can cope with large numbers of locusts in which the aim is not only to protect crops but to reduce the size of the total locust population and bring an end to the upsurge or plague. It concentrates on the resources required for a campaign as well as the organization and deployment of these resources.

4.7.9 FAO Guidelines on Desert Locust Control

This guideline is intended mainly for use by field staff involved in Desert Locust control operations, including field officers supervising control operations and pilots and engineers of spray aircraft. Some parts will be useful reference material for training new staff and providing refresher training for experienced locust officers. The information and reference data may also be useful for senior managers planning and overseeing campaigns and for donor representatives assessing technical needs. The guideline contains practical advice on equipment and techniques used to carry out locust control which is safe (minimum negative effect on humans and the environment), effective (controls locusts successfully) and efficient (effective with minimum cost).

4.7.10 FAO Desert Locust Guidelines on Safety and Environmental Precautions

This guideline is primarily intended for use by decision-makers, field officers and monitoring staff involved in the organization and execution of Desert Locust control operations. Two subjects are addressed in this guideline. First, the reduction of environmental and human health risks from insecticide use during locust control is discussed. Practical recommendations are given on how to address risk reduction during the campaign preparation phase, how to implement it during the control operations, and how to evaluate it in post-campaign follow-up. The second subject is environmental and human health monitoring during locust control operations. Monitoring of control operations is necessary to assess whether adverse effects occur and under what circumstances. Such information is essential for improving control techniques and approaches.

5 APPLICABLE WORLD BANK ENVIRONMENTAL & SOCIAL STANDARDS

This chapter describes the World Bank Environmental and Social Standards (ESS) that are applicable to this project. Table 5-1 below shows the Banks Environmental and Social Standards that are applicable as a result of the proposed project.

5.1 Applicable World Bank's Environmental and Social Standards

The ELRP is a program targeting 15 Counties in Kenya and expected to have project investments in the entire country for as long as the selected sites are feasible. However, the likely or potential locations of many of the proposed investments are unknown at this point in time. In order to reduce, minimise and mitigate adverse risks and impacts and undue harm of its development projects to the environment, all Bank-financed projects are guided by applicable environmental and social standards (ESS) under the Environmental and Social Framework (ESF).

Table 5-1. Relevant Environmental and Social Standards

ESS	Rationale
Assessment and Management of Environmental and Social Risks and Impacts. (**ESS1**)	The pesticide applications will cover large swathes of the country, approximately 15 counties impacted by the desert locust infestations. The use of the pesticides will potentially impact local populations dependent on natural resources for their livelihoods such as pasture, vegetation and crop fields. The project will identify and map out ecologically sensitive and agronomically sensitive areas such as water bodies, national parks, reserves and crop fields. The use of biopesticides (Metarhizium) in the project will significantly minimise the adverse impacts on the environment. Biopesticides are usually less toxic than conventional pesticides, only affect the target pests and closely related organisms, in contrast to broad spectrum (conventional pesticides may affect organisms as different as birds, insects and mammals) and are often effective in very small quantities and often decompose quickly resulting in lower exposure and largely avoiding the pollution problems caused by conventional pesticides. However, the use of Fenitrothion (an organochlorine) and a conventional pesticide in the project is likely to lead to significant risk to human health and a high potential for adverse ecological effects. The potential negative environmental risks and impacts associated with these desert locust control activities

	include: (i) Potential spillage or leakage of pesticides (considered hazardous materials) during transportation, handling, storage of the pesticides, dosage during treatment and disposal of used pesticide containers/drums, this will likely lead to the contamination of the environment and potential health hazards to the pesticide applicators and communities. (ii) risk of diversion of pesticides for other uses; (iii) inappropriate use of pesticides; (iv) potential high risk of accumulation of obsolete stocks. In terms of social risks, with the locust invasion in affected counties, compounded by the current COVID-19 crisis, effective communication with affected people, culturally appropriate communication for pastoralists and other traditional local communities, stakeholder consultation and engagement activities will be especially challenging to ensure timely and meaningful consultations to meet project and stakeholder needs. Additionally, if the aerial spray is applied improperly it can destroy crops, livestock, human health and surface water. Surveillance and control measures can exacerbate exposure of women/girls to insecurity as they may be forced to walk long distances to access food and search for pasture. This including the low status of women, pre-existing high prevalence of GBV, acceptability of GBV (e.g. early/forced marriage, intimate partner violence) and high levels of poverty, are likely to heighten the community's vulnerability to sexual exploitation and abuse (SEA)/GBV. With the possible deployment of external personnel -including agricultural extension workers, contracted workers and specialists, paramilitary cadets- to conduct ground spraying in these areas, women and girls may face growing levels of SEA, also as a negative coping strategy. Therefore, an GBV action plan (with costs integrated into the project budget) will be prioritized as a first step after project approval and implemented before new interventions begin. This needs to be expedited immediately, so as not to delay the implementation of component 1.
Labor and Working Conditions **(ESS2)**	Use and application of the pesticides could result in potential adverse effects on the health of the control teams where both ground and aerial spraying may take place. Spray workers who are directly involved in spraying operations will be exposed to the pesticides, and thus also run the highest risk of being poisoned.

	Other risks by workers may include Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA/H)/Harassment which may be and further exacerbated by possible use of National Youth Service workers. (see ESS 4). The COVID-19 pandemic also presents a risk to workers who in the application or pesticides and interacting with local communities may get exposed to the COVID-19. World Bank Technical Guidelines on interactions during COVID-19 as well as GoK guidelines on the same will be observed during project implementation. Equally, security concerns for workers is likely and of concern as a result of interactions between the spray teams (workers) and local communities which could lead to tensions and present security threats to the workers and further exacerbated by possible use of National Youth Service workers. The project will develop and implement a Labor Management Procedures to address labor and working conditions.
Resource Efficiency and Pollution Prevention and Management **(ESS3)**	The project will finance procurement of large quantities synthetic chemical pesticides and biopesticides and equipment to support the application of the pesticides. Most of the Counties in Northern and Central part of the Country infested with the desert locust have areas that are designated as ecologically sensitive that include national parks, reserves, wetlands and agronomically sensitive areas for the use of pesticides use. The use of pesticides is likely to lead to contamination and pollution of water bodies including wetlands, rivers, lakes etc. The Ministry will identify and map out these areas and evaluate locust management options, based on the type of organisms at risk and the likely locust targets that may appear in the area.
Community Health and Safety **(ESS4)**	Use and application of the pesticides could result in potential adverse effects on the health of local communities where both ground and aerial spraying may take place. Community health and safety risks including, inter alia, risks to livestock, crop, fodder, and humans associated with inappropriate use of pesticides during spraying; risks of labor misconduct; related sexual exploitation and abuse; risks of security personnel are likely to be experienced.

	Most of the project activities will be implemented in rural and remote areas, of which many have been prone to social tensions and communal and political conflict, inhabited by different social groups, as well as IDPs and refugees. The locust upsurge in affected counties, compounded by the current COVID-19 crisis, may further expose women/girls to insecurity as they may be forced to walk long distances to access food and search for pasture. This including the low status of women, pre-existing high prevalence of Gender Based Violence, acceptability of Gender Based Violence (e.g. early/forced marriage, intimate partner violence) and high levels of poverty, are likely to heighten the community's vulnerability to sexual exploitation and abuse (SEA)/Gender Based Violence. With the possible deployment of external personnel-including agricultural extension workers, contracted workers and specialists, National Youth Service (NYS) paramilitary cadets to conduct ground spraying in these areas, women and girls may face growing levels of SEA, also as a negative coping strategy. While the NYS has a modus operandi, the project would review this and strengthen where necessary, to ensure that their participation in project activities will not result in adverse consequences to community health and safety, including in matters relating to GBV and SEA/SH. A GBV Action Plan will be prepared and implemented if found pertinent. The project will promote the avoidance of SEA by relying on the WHO Code of Ethics and Professional Conduct for all workers as well as the provision of gender-sensitive infrastructure such as segregated toilets in ground stations. The interaction between local communities and workers may also lead to increase of communicable diseases.
Biodiversity Conservation and Sustainable Management of Living Natural Resources **(ESS 6)**	The use of the pesticides (especially conventional pesticides) will potentially adversely impact natural resources including ecologically sensitive and agro-ecological zone, sensitive areas/habitats such as water bodies, national parks, reserves, wetlands etc. which are present in the targeted 15 Counties.

	The MoALFC will identify and map out the sensitive ecological areas that include national parks, reserves, wetlands and agronomically sensitive areas, important fruit-growing areas; beekeeping areas; areas with export crop or livestock production and areas with organic farming). The sensitive ecological and agronomically will not be sprayed with chemical pesticides but will be evaluated and given treatment of the biopesticides that are less harmful.
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (**ESS7**)	Especially pastoralists, will be especially hard hit as their livelihoods are inextricably linked to land and pasture, which is being damaged by locust swarms. Pastoralists' options would be limited to: (a) migrating to find pasture, which could lead to conflict with other pastoralist groups; or (b) searching for alternative livelihood if they are permanently decapitalized due to the loss of fodder for their animal.
Stakeholder Engagement and Information Disclosure **(ESS 10)**	A key risk under this standard, relates to potential inadequate, ineffective, insufficiently inclusive, and inappropriate stakeholder and community engagements and disclosure of information leading to exclusion of truly vulnerable, marginalized and minority members of the community from expressing their views and concerns relating to the project and to their exclusion from sharing in project benefits, amplified by the context of limited resources against widespread need. Others include elite capture where project benefits are diverted to less-needy individuals and locations and poor access to beneficiaries for meaningful community engagements and difficulty in monitoring for social harm.

5.1.1 *World Bank's Assessment and Management of Environmental and Social Risks and Impacts*

The Bank will classify all projects (including projects involving Financial Intermediaries (FIs)) into one of four classifications: High Risk, Substantial Risk, Moderate Risk or Low Risk. In determining the appropriate risk classification, the Bank will take into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs. Other areas of risk may also be relevant to the delivery of environmental and social mitigation measures and outcomes, depending on the specific project and the context in which it is being developed.

5.2 Environmental and Social Risks Classification

5.2.1 Environmental Risk Classification

The application of the pesticides will cover large swathes of the Country, approximately 15 Counties impacted by the desert locust infestations and the use of the pesticides will potentially impact local populations dependent on natural resources for their livelihoods such as pasture, vegetation and crop fields and as such the project environmental risk is considered **Substantial.**

The Project will finance the use of two pesticides (already approved by the Bank) for the desert locust control activities, a **chemical pesticide** Fenitrothion 96% which is a WHO **class II**, formulated as ULV and a **biopesticide** Metarhizium. The biopesticide risks to the environment and applicators are minimal as it contains a fungus that is highly specific to this species of locust and safe to other species of insects, animals and humans. The use of Fenitrothion 96%, an organophosphate for locust control will present environmental and social risks including (i) Potential spillage or leakage of pesticides (considered hazardous materials) during transportation, handling, storage of the pesticides, dosage during treatment and disposal of used pesticide containers/drums, this will likely lead to the contamination of the environment and potential health hazards to the pesticide applicators and communities. (ii) Potential risks of polluting ecologically sensitive habitats such as wetlands, national parks, reserves and water bodies. (iii). The application of the pesticides if not properly managed could contaminate community water sources such as shallow boreholes, pasture and browse for livestock and wildlife and affect agronomically sensitive areas where crops may be grown for export. (iv). The use and application of pesticides if not properly managed could contaminate and lead to poisoning of the pesticide application teams and on local communities where both ground and aerial spraying may take place. To manage this risk the project will provide appropriate and adequate Personal Protective Equipment (PPEs). SOPs for spraying activities and will use biopesticides in the area identified as sensitive ecological agronomical to minimize and mitigate any potential negative impacts. Mitigation measures will be put in place through provision of adequate and appropriate PPE, induction and training of the field control teams, conducting regular tests of cholinesterase for the operators and field locust control teams and undertake rotation of operators involved in organophosphate pesticide applications to avoid overexposure to pesticides. Mitigation measures will be put in place through provision of adequate and appropriate PPE, induction and training of the field control teams, conducting regular tests of cholinesterase for the operators and field locust control teams and undertake rotation of operators involved in Organophosphate pesticide applications to avoid overexposure to pesticides. The project will also finance the procurement of pesticide application equipment (plane, personal protective equipment, vehicles) etc.

5.2.2 Social Risk Classification

The principle social risks associated with the project fall broadly into one main category: - (i) risks to the community and workers from the locust control measures under Component 1, sub-component 1.2 (control measures). Under Component 1, labour influx associated with these control measures is a primary risk, as it may impact upon the community through sexual exploitation and abuse of vulnerable women and girls or spreading of communicable diseases (including HIV/STDs and COVID-19) to otherwise isolated rural communities

with limited access to health services. Labor field officers who are directly involved in spraying operations tend to be the most exposed to insecticides, and thus also run the highest risk of being poisoned. Other field staff can also be exposed. Necessary PPE will be provided to all field officers directly involved in spraying. In addition to OHS aspects, staff will also sign a code of conduct in relevant languages and receive training on the same. Each project will prepare a LMP before the commencement of project activities. It will apply to all Project workers whether full-time, part-time, temporary or seasonal.

Out of these risks, the most concerning is the risk of sexual exploitation and abuse, and other forms of violence, perpetrated by project workers[4] in ground operations. Members of the National Youth Service (NYS), commonly referred to as a paramilitary organization, will be used to provide support in undertaking the locust control activities that may include management of the field operation offices and ground spraying. This will be categorized as part of Government workers whose terms and benefits are aligned with Government procedures. NYS is a fully fledged semi-autonomous state corporation established by the NYS Act 2018 with clear deployment, reporting and management structure. Even though section 38 of the NYS Act 2018 prohibition against torture or other cruel, inhuman or degrading treatment, NYS has, on several occasions, been cited in the press as perpetrating human rights violations whilst on official deployments. The NYS have been undertaking locust related activities with ministry and FAO staff across the project area, including under the recent Contingency Emergency Response Component (CERC). The living arrangements for deployed NYS are understood to be essentially unregulated, spending several days in the field and often camping in school grounds. It is for this reason that the social risk classification for the project is **high.**

Environmental and social risks associated with Component 2 and 3 are not covered in this ESMF.

The overall Environmental and Social Risk Classification is rated as **High**.
The overall project risk rating is high. The overall risk is high because the risk rating for Social is HIGH. The reasons for the high-risk rating are described in the above section. The project will mitigate the risks by: (i) ensuring constant technical support to the implementation teams at the National and county levels from the World Bank task team, and the strong involvement and ownership of the county leadership, namely the Governors and the County Executive Committee members for Agriculture; (ii) strengthening the capacity of the National PCU through the placement of additional dedicated Social Safeguard Specialists, Environment Safeguard Specialists, GBV Specialist, GRM Specialist, Procurement Specialist and other technical specialists for this project apart from the specialists that are already in place under KCSAP; and (iii) ensuring that the implementation of the risk mitigation measures proposed under the environment and social safeguard sections are monitored regularly and regular feedback on the quality of implementation of these measures are provided to the client.

[4] ELRP is planning to recruit spray operators from the local areas. Workers also include MoALFC and those form other agencies including from respective County Governments

5.3 Environmental and Social Risk Management Instruments

Prior to appraisal GoK prepared and disclosed an Environmental and Social Commitment Plan (ESCP), Environmental and Social Review Summary (ESRS) and Stakeholder Engagement Plan (SEP), which includes guidance on outreach activities and the establishment of grievance redress mechanisms (GRM) prior to undertaking Desert locust control activities. There are other environmental and social risk instrument that will complement this ESMF and IPMP and include Gender Based Violence (GBV) Action Plan and Labor Management Procedures (LMP), Security Management Plan (SMP) which have been prepared. Further, during implementation, spray areas specific (sub project) IPMPs will be prepared. The sub project specific IPMPs will include as annexes Waste Management Plans, Emergency Preparedness Plans and Occupational Health and Safety Plans.

Table 5-2. Gap Analysis of Environmental and Social Standards and Kenyan National Laws

ESS and Requirements	National Laws and Requirements	Gaps
Social and Environmental Assessment and Management System (ESS1) ***Use of Borrower's Environmental and Social Framework*** When a project is proposed for Bank support, the Borrower and the Bank will consider whether to use all, or part, of the Borrower's ES Framework in the assessment, development, and implementation of a project. Such use may be proposed provided this is likely to address the risks and impacts of the project and enable the project to achieve objectives materially consistent with the ESSs. ***Environmental and Social Assessment*** The Borrower will carry out an environmental and social assessment of the project to assess the environmental and social risks and impacts of the project throughout the project life cycle. The assessment will be proportionate to the potential risks and impacts of the project, and will assess, in an integrated way, all relevant direct, indirect, and cumulative environmental and social risks and impacts throughout the project life cycle, including those specifically identified in ESSs2–10. ***Environmental and Social Commitment Plan*** The Borrower will develop and implement an ESCP, which will set out measures and actions required for the project to achieve compliance with the ESSs over a specified time frame. The ESCP will be agreed upon with the Bank and will form part of the legal agreement. The draft ESCP will be disclosed as early as possible, and before project appraisal. ***Project Monitoring and Reporting*** The Borrower will monitor the environmental and social performance of the project in accordance with the legal	***Use of Borrower's Environmental and Social Framework*** **Environmental Management and Co-ordination Act 1999;** Provides for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects. **Environmental Impact Assessment Guidelines and Administrative Procedures, 2002.** The guidelines provide the steps in implementation of an EIA, Monitoring and Environmental Audit Provides for carrying out of an EIA Study where a Project will have significant environmental impacts. ***Project Monitoring and Reporting*** The Environmental Management and Coordination Act provides for ESIA studies including as part of ESMP clear procedures to monitor	No significant gaps between ESS 1 and the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
agreement (including the ESCP). The extent and mode of monitoring will be agreed upon with the Bank and will be proportionate to the nature of the project, the project's environmental and social risks and impacts, and compliance requirements. The Borrower will ensure that adequate institutional arrangements, systems, resources, and personnel are in place to carry out monitoring. Where appropriate and as set out in the ESCP, the Borrower will engage stakeholders and third parties, such as independent experts, local communities, or nongovernmental organizations (NGOs), to complement or verify its own monitoring activities. Where other agencies or third parties are responsible for managing specific risks and impacts and implementing mitigation measures, the Borrower will collaborate with such agencies and third parties to establish and monitor such mitigation measures. ***Stakeholder Engagement and Information Disclosure*** As set out in ESS10, the Borrower will continue to engage with, and provide sufficient information to stakeholders throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential environmental and social risks and impacts of the project.	and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. ***Environmental (Impact Assessment and Audit Regulations), 2003*** Environmental Audit (EA) is the systematic documentation, periodic and objective evaluation of activities and processes of an ongoing project. The purpose of EA is to determine the extent to which the activities and programs conform to the approved environmental management plan. An initial environmental audit and a control audit are conducted by a qualified and authorized environmental auditor or environmental inspector who is an expert or a firm of experts registered by NEMA. In the case of an ongoing project NEMA requires the proponent to undertake an initial environmental audit study to provide baseline information upon which subsequent environmental audits shall be based. The proponent shall be issued with an acknowledgement letter and an improvement order where necessary. ***Stakeholder Engagement and Information Disclosure*** The Environmental Management and Coordination Act provides for ESIA studies to include stakeholder engagement and disclosure of information.	
Labour and Working Conditions (ESS2) recognises that the pursuit of economic growth through employment creation and income generation should be balanced with protection for basic rights of workers. • ESS2 provides specific requirements on occupation health and safety, expanding upon the World Bank Group's Environmental, Health and Safety Guidelines. • It introduces labor management procedures. • It requires non-discrimination and equal opportunity.	**Occupational Safety and Health Act (OSHA), 2007**; • Provides for the safety, health and welfare of workers and all persons lawfully present at workplaces. • Provides for the registration of workplaces. • provides for maintenance of cleanliness of workplaces, adequate lighting and ventilation, provision of sanitary conveniences, • Outlines safety requirements in use of machinery to prevent accidents and injuries.	No significant gaps between ESS 2 and the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
• ESS2 includes provisions on the treatment of direct, contracted, community, and primary supply workers, and government civil servants. • ESS2 recognizes workers' organizations. It requires a grievance mechanism for all project workers. • ESS2 includes protection of project workers, including vulnerable workers, such as women, and persons with disabilities. • Prevents the use of all forms of forced labor and child labor	**<u>The Factories and Other Places of Work (Noise Prevention and Control) Rules, 2005</u>** Rules provide for the maximum noise exposure levels for workers in places of work and for the provision of protective equipment for those exposed to high noise levels. Provide that an occupier shall also institute noise reduction measures at the source of noise in the workplace. **<u>Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009</u>** • Prohibits the generation of unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. • Provides for the maximum noise levels permissible in various environmental set ups such as residential areas, places of worship, commercial areas and mixed residential	
Working Conditions and Management of Workers Relationship The Borrower will develop and implement written labor management procedures applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS.9. The procedures address the way in which this ESS will apply to different categories of project workers, including direct workers, and the way in which the Borrower will require third parties to manage their workers.	***Working Conditions and Management of Workers Relationship*** Kenya's employment and labour laws workers are guided by clear labor management procedures.	
Non-Discrimination and Equal Opportunity Decisions relating to the employment or treatment of project workers will not be made on the basis of personal characteristics unrelated to inherent job requirements. The	***Non-Discrimination and Equal Opportunity*** The constitution of Kenya does not allow discrimination of any form and prohibit discrimination on race, sex, ethnicity, religion, and several other criteria, and further the labor laws also provide for equal	

ESS and Requirements	National Laws and Requirements	Gaps
employment of project workers will be based on the principle of equal opportunity and fair treatment, and there will be no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, or disciplinary practices. The labor management procedures will set out measures to prevent and address harassment, intimidation, and/or exploitation. Where national law is inconsistent with this requirement, the project will seek to carry out project activities in a manner that is consistent with the requirements to the extent possible. The borrower will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women. The principles of non-discrimination apply to migrant workers. ***Workers Organisation*** In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference, the project will be implemented in accordance with national law. In such circumstances, the role of legally established workers' organizations and legitimate workers' representatives will be respected, and they will be provided with information needed for meaningful negotiation in a timely manner. Where national law restricts workers' organizations, the project will not restrict project workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment. The Borrower should not seek to influence or control these alternative mechanisms. The Borrower will not discriminate or retaliate against project workers who participate, or seek to	opportunity and non-discrimination of any form for workers with respect to employment including any form of intimidation or harassment. However, the laws do not explicitly prohibit discrimination based on sexual orientation or gender identity." ***Workers Organisation*** Kenya's employment and labour laws fully provide for grievance redress mechanism establishment in all workplaces through freedom to join associations or trade unions and enter into collective bargaining agreements.	

ESS and Requirements	National Laws and Requirements	Gaps
participate, in such workers' organizations and collective bargaining or alternative mechanisms. The borrower will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns and inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. ***Protecting the Work Force*** **Child Labour and Minimum Age** A child under the minimum age will not be employed or engaged in connection with the project. The labor management procedures will specify the minimum age for employment or engagement in connection with the project, which will be the age of 14 unless national law specifies a higher age. **Forced Labor** The borrower will not employ forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor-contracting arrangements. The borrower will not employ trafficked persons. ***Grievance Mechanisms*** A grievance mechanism will be provided for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace concerns. Such workers will be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against reprisal for its use. Measures will be put in place to make the grievance mechanism easily accessible to all such project workers.	**Child Labour and Minimum Age** **Employment Act, 2007 defines a "child"** to mean a person who has not attained the age of eighteen years. This is the same definition in the children Act, 2001 and the Industrial Act. The law does not prohibit employment of children between the ages of 16-18 per se. It prohibits child labour which occurs when certain factors accompany such employment apply. **Forced Labor** Any form of forced labour, including trafficking, is prohibited by the labour laws. ***Grievance Mechanisms*** Kenya's employment and labour laws provide for all workers the freedom and to right to join associations and trade unions where they can air their grievances without fear of victimisation.	

ESS and Requirements	National Laws and Requirements	Gaps
Occupational Health and Safety The borrower to provide a safe and healthy work environment taking into account inherent risks in its particular sector and specific classes of hazards in the work areas. Measures relating to occupational health and safety will be applied to the project. The OHS measures will take into account the General Environmental Health and Safety Guidelines (EHSGs) and, as appropriate, the industry specific EHSGs and other Good International Industry Practice (GIIP). The OHS measures applying to the project will be set out in the legal agreement and the Environmental and Social Commitment Plan (ESCP). ***Contracted Workers*** The Borrower will make reasonable efforts to ascertain that third parties who engage contracted workers are legitimate and reliable entities and have in place labor management procedures applicable to the project that will allow them to operate in accordance with the requirements of this ESS. ***Community Workers*** Projects may include the use of community workers in a number of different circumstances, including where labor is provided by the community as a contribution to the project, or where projects are designed and conducted for the purpose of fostering community-driven development, providing a social safety net or providing targeted assistance in fragile and conflict-affected situations. Given the nature and objectives of such projects, the application of all requirements of ESS2 may not be appropriate. In all such circumstances, the Borrower will require measures to be implemented to ascertain whether such labor is or will be provided on a voluntary basis as an outcome of individual or community agreement.	**Occupational Health and Safety** The Occupational Safety and Health Act has clear provisions and requirements for ensuring health and safety of workers and stipulate the requirements of the employer with respect to the same. ***Contracted Workers*** Kenya's employment and labour laws provide for protection of the rights of all categories of workers, including contracted workers. ***Community Workers*** Kenyan labour laws do not interfere with agreements made between workers and employers for as long as the agreement is in line with the employment act.	

ESS and Requirements	National Laws and Requirements	Gaps
Primary Supply Workers As part of the environmental and social assessment, the Borrower will identify potential risks of child labor, forced labor, and serious safety issues which may arise in relation to primary suppliers.	***Primary Supply Workers*** Kenya's labour laws provide and ensure that rights of all categories of workers are protected including workers employed by primary suppliers. Child labour, forced labour and workers safety are considered a criminal offence by the labour and employment laws as well as occupational safety and health legislation.	
Resource Efficiency and Pollution Prevention and Management (ESS3) recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention, and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. The Borrower will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures in accordance with the mitigation hierarchy. The measures will be proportionate to the risks and impacts associated with the project and consistent with GIIP, in the first instance the Environmental Health and Safety Guidelines (EHSGs). • Include requirement on management of wastes, chemical and hazardous materials. • Provides for avoidance or minimization and/generation of hazardous and non-hazardous waste • Minimize and manage the risks and impacts associated with pesticide use • Provides for measures to avoid or minimize adverse impacts on human health and the environment by	Kenya has a variety of legal and regulatory statutes that address and enforce Pollution Prevention and Management including (Air, Water, Hazardous and Non-Hazardous Waste, Chemical and Hazardous Materials, Pesticides) as described below. **Environmental Management and Co-ordination (Water Quality) Regulations 2006** • Provides for the protection of ground and surface water resources. • Provides the water quality standards for sources of domestic water. • Provides that an EIA shall be carried out and license obtained to abstract water or carry out activities that may have adverse impacts on the quantity or quality of water in lakes, rivers, streams, springs and wells • Provides the water quality standards for effluent discharged into the aquatic environment. **Environmental Management and Co-ordination (Waste Management) Regulations 2006** • Provides for standards for handling, transportation and disposal of various types of wastes including pesticide wastes and other hazardous wastes. • Requirements to ensure waste minimization or cleaner production, waste segregation, recycling or composting. • Provides for licensing of vehicle transporting waste. • Provides for the licensing of waste disposal facilities. **Environmental Management and Coordination (Controlled Substances) Regulations 2007 (Legal Notice No 73 of 2007)**	No significant gaps between ESS 3 and the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
avoiding or minimizing pollution from project activities. • Provides for measures to promote more sustainable use of resources, including energy and water. • Requires that project that involving significant pest management issues, the Project will prepare IPMP • Requires that the Ministry will not use pesticides or pesticides products or formulations unless such use is in compliance with WBG EHSGs • Requires not to use any pesticides products that contain active ingredients that are restricted under applicable international conventions or protocols • Provides for measures to reduce project related GHG emissions. ***Pollution Prevention and Management*** The Borrower will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSGs, whichever is most stringent. This applies to the release of pollutants to air, water, and land due to routine, nonroutine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts. ***Air Pollution Management*** In addition to the resource efficiency measures described above, the Borrower will consider alternatives and implement technically and financially feasible and cost-effective11 options12 to avoid or minimize project-related air emissions during the design, construction, and operation of the project. ***Management of Hazardous and Non-hazardous Waste.*** The Borrower will avoid the generation of hazardous and non-hazardous waste. Where waste generation cannot be avoided,	• Provides for measures for storage, handling packaging and disposal of products with ozone-depleting substances. **Environmental Management and Coordination (Air Quality) Regulations, 2014** • Provides for ambient air quality tolerance limits. • Prohibits air pollution in a manner that exceed specified levels. • Prohibits air pollution in controlled areas including residential areas, hospitals, National Parks, reserves and sanctuaries, conservation areas and central business districts • Provides for the control of vehicular emissions. • Provides for prevention of dispersion of visible particulate matter or dust from any material being transported.	

ESS and Requirements	National Laws and Requirements	Gaps
the Borrower will minimize the generation of waste, and reuse, recycle and recover waste in a manner that is safe for human health and the environment. Where waste cannot be reused, recycled or recovered, the Borrower will treat, destroy, or dispose of it in an environmentally sound and safe manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material. ***Management of Chemicals and Hazardous Materials*** The Borrower will avoid the manufacture, trade, and use of chemicals and hazardous materials subject to international bans, restrictions or phaseouts unless for an acceptable purpose as defined by the conventions or protocols or if an exemption has been obtained by the Borrower, consistent with Borrower government commitments under the applicable international agreements. ***Management of Pesticides*** Where projects involve recourse to pest management measures, the Borrower will give preference to integrated pest management (IPM) or integrated vector management (IVM) approaches using combined or multiple tactics.		
Community Health and Safety (ESS4) recognises that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to	Kenya has a number of legal and regulatory statutes that address community health and safety, hazard material management and safety, safety services, traffic and road safety, ecosystem services, community exposure to diseases, emergency preparedness and security personnel. **The Public Health Act (Cap 242)** • Provides for the prevention of the occurrence of nuisance or conditions dangerous/injurious to humans. • Provides that the relevant local authority shall take all lawful, necessary and reasonably practicable measures.	No significant gaps between ESS 4 and the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
people who, because of their particular circumstances, may be vulnerable. ESS 4 Objectives include: • To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances. • To promote quality and safety, and considerations relating to climate change in the design and construction of infrastructure, including dams. • To avoid or minimize community exposure to project-related traffic and road safety risks, diseases, and hazardous materials. • To have in place effective measures to address emergency events. • To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities. ***Community Health and Safety*** The Borrower will evaluate the risks and impacts of the project on the health and safety of the affected communities during the project life cycle, including those who, because of their particular circumstances, may be vulnerable. The Borrower will identify risks and impacts and propose mitigation measures in accordance with the mitigation hierarchy. ***Infrastructure, Equipment Design and Safety*** The Borrower will design, construct, operate, and decommission the structural elements of the project in accordance with national legal requirements, the EHSGs and other GIIP, taking into consideration safety risks to third parties and affected communities. Structural elements of a project will be designed and constructed by competent	**Environmental Management and Coordination Act 1999;** Provides for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects. **Environmental Impact Assessment Guidelines and administrative procedures, 2002.** The guidelines provide the steps in implementation of an EIA, Monitoring and Environmental Audit Provides for carrying out of an EIA Study where a Project will have significant environmental impacts and the Project Report does not disclose adequate mitigation measures **Environmental Management and Co-ordination (Water Quality) Regulations 2006** • Provides for the protection of ground and surface water resources. • Provides the water quality standards for effluent discharged into the aquatic environment. **Environmental Management and Co-ordination (Waste Management) Regulations 2006** • Provides for standards for handling, transportation and disposal of various types of wastes including hazardous wastes. • Requirements to ensure waste minimization or cleaner production, waste segregation, recycling or composting. • Provides for licensing of vehicle transporting waste. • Provides for the licensing of waste disposal facilities. **Environmental Management and Coordination (Controlled Substances) Regulations 2007 (Legal Notice No 73 of 2007)**	

ESS and Requirements	National Laws and Requirements	Gaps
professionals and certified or approved by competent authorities or professionals. Structural design will take into account climate change considerations, as appropriate. ***Hazardous Materials Management and Safety*** The borrower will avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. ***Safety of Services*** Where the project involves provision of services to communities, the Borrower will establish and implement appropriate quality management systems to anticipate and minimize risks and impacts that such services may have on community health and safety. In such circumstances, the Borrower will also apply the concept of universal access, where technically and financially feasible. ***Traffic and Road Safety*** The Borrower will identify, evaluate, and monitor the potential traffic and road safety risks to workers, affected communities, and road users throughout the project life cycle and, where appropriate, will develop measures and plans to address them. The Borrower will incorporate technically and financially feasible road safety measures into the project design to prevent and mitigate potential road safety risks to road users and affected communities. ***Ecosystem Services*** The project's direct impacts on ecosystem services may result in adverse health and safety risks to and impacts on affected communities. With respect to this ESS, ecosystem services are limited to provisioning and regulating services as defined in ESS1. Where appropriate and feasible, the Borrower will	• Provides for measures for storage, handling packaging and disposal of products with ozone-depleting substances. **<u>Environmental Management and Coordination (Air Quality) Regulations, 2014</u>** • Provides for ambient air quality tolerance limits. • Prohibits air pollution in a manner that exceed specified levels. • Prohibits air pollution in controlled areas including residential areas, hospitals, National Parks, reserves and sanctuaries, conservation areas and central business districts • Provides for the control of vehicular emissions. • Provides for prevention of dispersion of visible particulate matter or dust from any material being transported. ***Traffic and Road Safety*** Kenya has a Traffic Act and National Transport and Safety Authority (NTSA) Act which ensures the implementation of all traffic rules and regulations including protecting communities from road safety hazards and risks. ***Ecosystem Services*** **<u>Environmental Management and Coordination Act Environmental Management and Coordination Act 1999;</u>** Provides for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring.	

ESS and Requirements	National Laws and Requirements	Gaps
identify the project's potential risks and impacts on ecosystem services that may be exacerbated by climate change. Adverse impacts will be avoided, and if they are unavoidable, the Borrower will implement appropriate mitigation measures. ***Community Exposure to Disease*** The Borrower will avoid or minimize the potential for community exposure to waterborne, water based, water-related, and vector-borne diseases, and communicable and non-communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. Where specific diseases5 are endemic in communities in the project area, the Borrower is encouraged to explore opportunities during the project life cycle to improve environmental conditions that could help minimize their incidence. ***Emergency Preparedness and Response*** The Borrower will identify and implement measures to address emergency events. An emergency event is an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks, or spills, which may occur for a variety of different reasons, including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather, or lack of early warning. The measures will be designed to address the emergency event in a coordinated and expeditious manner; to prevent it from injuring the health and safety of the community; and to minimize, mitigate, and compensate for any impacts that may occur. ***Security Personnel***	**Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects. ***Community Exposure to Disease*** **The Public Health Act (Cap 242)** • Provides for the prevention of the occurrence of nuisance or conditions dangerous/injurious to humans. • Provides that the relevant local authority shall take all lawful, necessary and reasonably practicable measures. • Kenya Guidelines on Management of COVID-19 provides for approaches towards managing the spread of COVID-19 including social distancing and quarantine. ***Emergency Preparedness and Response*** **Environmental Management and Coordination Act 1999;** Provides for development of emergency preparedness and response plans for minimizing risks to communities and ensure participation of communities in response. ***Security Personnel***	

ESS and Requirements	National Laws and Requirements	Gaps
When the Borrower retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by these security arrangements to those within and outside the project site. In making such arrangements, the Borrower will be guided by the principles of proportionality and GIIP, and by applicable law in relation to hiring, rules of conduct, training, equipping, and monitoring of such security workers. The Borrower will not sanction any use of force by direct or contracted workers in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat. The Borrower will (i) make reasonable inquiries to verify that the direct or contracted workers retained by the Borrower to provide security are not implicated in past abuses; (ii) train them adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms) and appropriate conduct toward workers and affected communities; and (iii) require them to act within the applicable law and any requirements set out in the Environmental and Social Commitment (ESCP).	**The Private Security Regulation Act 2016** provides for conduct of contracted security personnel including hiring, training, use of force and association with communities. The regulations include and require that security personnel undergo mandatory background checks by the National Intelligence Service (NIS) and obtain a certificate of good conduct form NIS before consideration for employment.	
Biodiversity Conservation and Sustainable Management of Living Natural Resource (ESS6) recognises protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance, and importance.	Kenya has a number of legal and statutory laws that govern biodiversity including conservation, and sustainable management as described below. **The Wildlife Conservation and Management Act, 2013** • Prohibits pollution of wildlife habitats and ecosystems. **The Forest Conservation and Management Act, 2016** • Prohibits the destruction of protected tree species or family of trees • Provides for the sustainable management of indigenous forests and woodlands **The Environmental Management and Co-ordination (Wetlands) Regulations, 2009** applies to all wetlands in Kenya whether	No significant gaps between ESS 6 and the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
ESS 6 also addresses sustainable management of primary production2 and harvesting of living natural resources. ESS6 recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, whose access to, or use of, biodiversity or living natural resources may be affected by a project. The potential, positive role of project-affected parties, including Indigenous Peoples, in biodiversity conservation and sustainable management of living natural resources is also considered. **Objectives** • To protect and conserve biodiversity and habitats. • To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. • To promote the sustainable management of living natural resources. • To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities. **Requirements** ***General*** The environmental and social assessment as set out in ESS1 will consider direct, indirect, and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example, habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution and incidental take, as well as projected climate change impacts. It will determine the significance of biodiversity or habitats based on their vulnerability and	occurring in private or public land. The objective of the regulations is to provide for the conservation and sustainable use of wetlands and their resources in Kenya and promote the integration of sustainable use of resources in wetlands into the local and national management of natural resources for socio-economic development.	

ESS and Requirements	National Laws and Requirements	Gaps
irreplaceability at a global, regional, or national level and will also take into account the differing values attached to biodiversity and habitats by project-affected parties and other interested parties. ***Assessment of Risks and Impacts*** Through the environmental and social assessment, the Borrower will identify the potential project related risks to and impacts on habitats and the biodiversity that they support. In accordance with the mitigation hierarchy, the Borrower will make the initial assessment of project risks and impacts without taking into account the possibility of biodiversity offsets. The assessment undertaken by the Borrower will include identification of the types of habitats potentially affected and consideration of potential risks to and impacts on the ecological function of the habitats. The assessment will encompass any areas of potential biodiversity importance that may be affected by the project, whether or not they are protected under national law. The extent of the assessment will be proportionate to the risks and impacts, based on their likelihood, significance, and severity, and will reflect the concerns of project affected parties and other interested parties. ***Primary Suppliers*** Where a Borrower is purchasing natural resource commodities, including food, timber, and fiber, that are known to originate from areas where there is a risk of significant conversion or significant degradation of natural or critical habitats, the Borrower's environmental and social assessment will include an evaluation of the systems and verification practices used by the primary suppliers.	***Assessment of Risks and Impacts*** **Environmental Management and Coordination Act 1999;** Provides for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects. ***Primary Suppliers*** **Environmental Management and Coordination Act 1999;** Provides for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects.	
Indigenous peoples/Sub-Saharan African historically underserved traditional local communities (ESS7)	While the term "Indigenous Peoples" is not used in Kenya, the legal framework recognizes particular concerns and rights of minorities	Gaps between ESS 7 and the various

ESS and Requirements	National Laws and Requirements	Gaps
recognises that the situation of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities varies from region to region and from country to country. The particular national and regional contexts and the different historical and cultural backgrounds will form part of the environmental and social assessment of the project. In this way, the assessment is intended to support identification of measures to address concerns that project activities may exacerbate tensions between different ethnic or cultural groups. • To ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. • To avoid adverse impacts of projects on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, or when avoidance is not possible, to minimize, mitigate, and/or compensate for such impacts. • To promote sustainable development benefits and opportunities for Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities in a manner that is accessible, culturally appropriate, and inclusive. • To improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with the Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities affected by a project throughout the project's life cycle. • To obtain the Free, Prior, and Informed Consent (FPIC) of affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities in the three circumstances described in this ESS.	and marginalized groups. The Constitution defines a marginalized community as: "A community that, because of its *relatively small population* or for any other reason, has been unable to fully participate in the integrated social and economic life of Kenya as a whole; A *traditional community* that, out of a need or desire to preserve its unique culture and identity from assimilation, has remained outside the integrated social and economic life of Kenya as a whole; An *indigenous community* that has retained and maintained a traditional lifestyle and livelihood based on a hunter or gatherer economy; or *Pastoral persons and communities*, whether they are (i) nomadic; or (ii) a settled community that, because of its relative geographic isolation, has experienced only marginal participation in the integrated social and economic life of Kenya as a whole" (Article 260; emphasis added). The Constitution of Kenya adopted in 2010 requires the State to address the needs of vulnerable groups, including "minority or marginalized" and "particular ethnic, religious or cultural communities" (Article 21.3). Specific provisions include: affirmative action programs and policies for minorities and marginalized groups (Articles 27.6 and 56); rights of "cultural or linguistic" communities to maintain their culture and language (7, 44.2 and 56); protection of community land, including land that is "lawfully held, managed of used by specific communities as community forests, grazing areas or shrines," and "ancestral lands and lands traditionally occupied by hunter-gatherer communities" (63); promotion of representation in Parliament of "…(d) ethnic and other minorities; and (e) marginalized communities" (100); and an equalization fund to provide basic services to marginalized areas (204).	national laws mainly with regards to Free, Prior Informed Consent (FPIC).

ESS and Requirements	National Laws and Requirements	Gaps
• To recognize, respect, and preserve the culture, knowledge, and practices of Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities, and to provide them with an opportunity to adapt to changing conditions in a manner and in a time frame acceptable to them. **Requirements** **General** A key purpose of this ESS is to ensure that Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities present in or with collective attachment to the project area are fully consulted about, and have opportunities to actively participate in, project design and the determination of project implementation arrangements. The scope and scale of consultation, as well as subsequent project planning and documentation processes, will be proportionate to the scope and scale of potential project risks and impacts as they may affect Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities ***Projects Designed Solely to Benefit Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities*** Where projects are designed to provide benefits only to Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, the Borrower will proactively engage with the relevant Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities to ensure their ownership and participation in project design, implementation, monitoring, and evaluation. The Borrower will also consult with them as to the cultural appropriateness of proposed services or facilities and will seek to identify and address any economic or social		

ESS and Requirements	National Laws and Requirements	Gaps
constraints (including those relating to gender) that may limit opportunities to benefit from, or participate in, the project. When Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities are the sole, or the overwhelming majority of, project beneficiaries, the elements of the plan may be included in the overall project design, and preparation of a stand-alone Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities Plan is not necessary. ***Projects Where Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities Are Not the Sole Beneficiaries*** When Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities are not the only beneficiaries of the project, planning requirements will vary with circumstances. The Borrower will design and implement the project in a manner that provides affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities with equitable access to project benefits. The concerns or preferences of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities will be addressed through meaningful consultation and project design, and documentation will summarize the consultation results and describe how Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' issues have been addressed in project design. Arrangements for ongoing consultations during implementation and monitoring will also be described. The Borrower will prepare a time-bound plan, such as an Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities plan setting out		

ESS and Requirements	National Laws and Requirements	Gaps
the measures or actions proposed. In some circumstances, a broader integrated community development plan will be prepared, addressing all beneficiaries of the project and incorporating necessary information relating to the affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. ***Avoidance of Adverse Impacts*** Adverse impacts on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities will be avoided where possible. Where alternatives have been explored and adverse impacts are unavoidable, the Borrower will minimize and/or compensate for these impacts in a culturally appropriate manner proportionate to the nature and scale of such impacts and the form and degree of vulnerability of the affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. ***Mitigation and Development Benefit*** The Borrower and affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities will identify mitigation measures in alignment with the mitigation hierarchy described in ESS1, as well as opportunities for culturally appropriate and sustainable development benefits. The scope of assessment and mitigation will include cultural impacts as well as physical impacts. The Borrower will ensure the timely delivery of agreed upon measures to affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.	***Avoidance of Adverse Impacts*** The Constitution of Kenya adopted in 2010 requires the State to address the needs of vulnerable groups, including "minority or marginalized" and "particular ethnic, religious or cultural communities" (Article 21.3). **Environmental Management and Coordination Act 1999;** Requires undertaking of ESIA studies and identification of risks and impacts including on communities. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects. ***Mitigation and Development Benefits*** The Constitution of Kenya adopted in 2010 requires the State to address the needs of vulnerable groups, including "minority or marginalized" and "particular ethnic, religious or cultural communities" (Article 21.3). **Environmental Management and Coordination Act 1999;** Requires undertaking of ESIA studies and identification of risks and impacts including on communities. **Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* and provides for a full ESIA study for high risk projects.	

ESS and Requirements	National Laws and Requirements	Gaps
Meaningful Consultation Tailored to Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. To promote effective project design, to build local project support or ownership, and to reduce the risk of project-related delays or controversies, the Borrower will undertake an engagement process with affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, as required in ESS10. This engagement process will include stakeholder analysis and engagement planning, disclosure of information, and meaningful consultation in a culturally appropriate and gender and intergenerationally inclusive manner. For Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, the process of meaningful consultation will also: (a) Involve Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' representative bodies and organizations (e.g., councils of elders or village councils, or chieftains) and, where appropriate, other community members; (b) Provide sufficient time for Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' decision-making processes; and (c) Allow for Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' effective participation in the design of project activities or mitigation measures that could potentially affect them either positively or negatively. ***Circumstances Requiring Free, Prior, and Informed Consent (FPIC)*** Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities may be particularly vulnerable to the loss of, alienation from, or exploitation of their land and access to natural and cultural resources. In recognition of this vulnerability, in addition to	***Meaningful Consultation Tailored to Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.*** **Environmental Management and Coordination Act 1999; Environmental Management and Coordination (Amendment) Act 2015** *(legal Notice No 5 of 2015)* Requires that while undertaking ESIA studies meaningful consultations be undertaken with the stakeholders and project affected persons. ***Circumstances Requiring Free, Prior, and Informed Consent (FPIC)*** Environmental Management and Coordination Act 1999; Environmental Management and Coordination (Amendment) Act 2015 *(legal Notice No 5 of 2015).*	

ESS and Requirements	National Laws and Requirements	Gaps
the General Requirements of this ESS (Section A) and those set out in ESSs 1 and 10, the Borrower will obtain the FPIC of the affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities in circumstances in which the project will: (a) Have adverse impacts on land and natural resources subject to traditional ownership or under customary use or occupation; (b) Cause relocation of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities from land and natural resources subject to traditional ownership or under customary use or occupation; or (c) Have significant impacts on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities' lives. In these circumstances, the Borrower will engage independent specialists to assist in the identification of the project risks and impacts. ***Grievance Mechanism*** The Borrower will ensure that a grievance mechanism is established for the project, as described in ESS10, which is culturally appropriate and accessible to affected Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, and takes into account the availability of judicial recourse and customary dispute settlement mechanisms among Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.	Requires that while undertaking ESIA studies meaningful consultations be undertaken with the stakeholders and project affected persons. Does not Free, Prior, Informed Consent. ***Grievance Mechanism*** **National Environment Tribunal-** Established under EMCA provides avenue for grievances redress on environment related matters. **National Environment Complaints Committee-**Established under EMCA provides avenue for grievances redress on environment related matters. **Environment and Land Court Act-**Establishes environment and land courts across the country for the sole purpose of addressing grievances related to environment and land.	

ESS and Requirements	National Laws and Requirements	Gaps
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities and Broader Development Planning. The Borrower may request Bank technical or financial support in the context of a specific project or as a separate activity, for preparation of plans, strategies, or other activities intended to strengthen consideration and participation of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (as they may be referred to in the national context) in the development process. This may include a variety of initiatives designed, for example, to: (a) strengthen local legislation to establish recognition of customary or traditional land tenure arrangements; (b) address the gender and intergenerational issues that exist among Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; (c) protect indigenous knowledge including intellectual property rights; (d) strengthen the capacity of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities to participate in development planning or programs; and (e) strengthen the capacity of government agencies providing services to Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.	**Kenya National Commission for Human Rights**-Established to address grievances related to human rights including historical injustices on land, culture etc. **Commission for Administration of Justice Act**-Established office of the Ombudsman-The Commission is the national/constitutional stakeholder instrument for grievance redress. ***Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities and Broader Development Planning.*** The Constitution of Kenya adopted in 2010 requires the State to address the needs of vulnerable groups, including "minority or marginalized" and "particular ethnic, religious or cultural communities" (Article 21.3). Specific provisions include: affirmative action programs and policies for minorities and marginalized groups (Articles 27.6 and 56); rights of "cultural or linguistic" communities to maintain their culture and language (7, 44.2 and 56); protection of community land, including land that is "lawfully held, managed of used by specific communities as community forests, grazing areas or shrines," and "ancestral lands and lands traditionally occupied by hunter-gatherer communities" (63); promotion of representation in Parliament of "…(d) ethnic and other minorities; and (e) marginalized communities" (100); and an equalization fund to provide basic services to marginalized areas (204).	
Stakeholder Engagement and Information Disclosure. (ESS 10).		No significant gaps between ESS 10 and

ESS and Requirements	National Laws and Requirements	Gaps
This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Objectives • To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties. • To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance. • To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them. • To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format. • To provide project-affected parties with accessible and inclusive means to raise issues and grievances and allow Borrowers to respond to and manage such grievances. ***Engagement during Project Preparation*** ***Stakeholder Identification and Analysis*** The Borrower will identify the different stakeholders, both project-affected parties and other interested parties. As set out	The Environmental Management and Coordination Act provides for ESIA studies to conduct robust stakeholder engagement and information disclosure. Public participation is a key requirement during the ESIA process and outlined in the EIA/EA regulations 2003. The EIA/EA regulations require that: (l) During the process of conducting an environmental impact assessment study under these Regulations, the proponent shall in consultation with the Authority, seek the views of persons who may be affected by the project. (2) In seeking the views of the public, after the approval of the project report by the Authority , the proponent shall - (a) publicize the project and its anticipated effects and benefits by - (i) posting posters in strategic public places in the vicinity of the site of the proposed project informing the affected parties and communities of the proposed project; (ii) publishing a notice on the proposed project for two successive weeks in a newspaper that has a nation-wide circulation; and (iii) making an announcement of the notice in both official and local languages in a radio with a nation-wide coverage for at least once a week for two consecutive weeks; (b) hold at least three public meetings with the affected parties and communities to explain the project and its effects, and to receive their oral or written comments; (c) ensure that appropriate notices are sent out at least one week prior to the meetings and that the venue and times of the meetings are convenient for the affected communities and the other concerned parties; and (d) ensure, in consultation with the Authority that a suitably qualified coordinator is appointed to receive and record both oral and written comments and any translations thereof received during all public meetings for onward transmission to the Authority	the various national laws.

ESS and Requirements	National Laws and Requirements	Gaps
in paragraph 5, individuals or groups that are affected or likely to be affected by the project will be identified as 'project-affected parties' and other individuals or groups that may have an interest in the project will be identified as 'other interested parties'. ***Stakeholder Engagement Plan*** In consultation with the Bank, the Borrower will develop and implement a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts. A draft of the SEP will be disclosed as early as possible, and before project appraisal, and the Borrower will seek the views of stakeholders on the SEP, including on the identification of stakeholders and the proposals for future engagement. If significant changes are made to the SEP, the Borrower will disclose the updated SEP. ***Information Disclosure*** The Borrower will disclose project information to allow stakeholders to understand the risks and impacts of the project, and potential opportunities. The Borrower will provide stakeholders with access to the following information as early as possible before the Bank proceeds to project appraisal, and in a time frame that enables meaningful consultations with stakeholders on project design. ***Meaningful Consultation*** The Borrower will undertake a process of meaningful consultation in a manner that provides stakeholders with opportunities to express their views on project risks, impacts, and mitigation measures, and allows the Borrower to consider and respond to them. Meaningful consultation will be carried	***Information Disclosure*** **THE ENVIRONMENTAL (IMPACT ASSESSMENT AND AUDIT) REGULATIONS, 2003 PART IV 21.** (l) The Authority shall, within fourteen days of receiving the environmental impact assessment study report, invite the public to make oral or written comments on the report. (2) The Authority shall, at the expense of the proponent - (a) publish for two successive weeks in the Gazette and in a newspaper with a nation-wide circulation and in particular with a wide circulation in the area of the proposed project, a public notice once a week inviting the public to submit oral or written comments on the environmental impact assessment study report; and (b) make an announcement of the notice in both official and local languages at least once a week for two consecutive weeks in a radio with a nation-wide coverage. (3) The invitation for public comments under this regulation shall state - (a) the nature of the project; (b) the location of the project; (c) the anticipated impacts of the project and the proposed mitigation measures to respond to the impacts; (d) the times and place where the	

ESS and Requirements	National Laws and Requirements	Gaps
out on an ongoing basis as the nature of issues, impacts, and opportunities evolves.	full report can be inspected; and (e) the period within which the Authority shall receive comments. (4) The notice to be published in the newspaper as specified under sub regulation (3) shall be in Form 8 set out in the First Schedule to these Regulations. 22. (l) Upon receipt of both oral and written comments as specified Public hearing. by section 59 and section 60 of the Act, the Authority may hold a public hearing (2) A public hearing under these Regulations shall be presided over by a suitably qualified person appointed by the Authority. (3) The date and venue of the public hearing shall be publicized at least one week prior to the meeting - (a) by notice in at least one daily newspaper of national circulation and one newspaper of local circulation; (b) by at least two announcements in the local language of the community and the national language through radio with a nationwide coverage. (4) The public hearing shall be conducted at a venue convenient and accessible to people who are likely to be affected by the project. (5) A proponent shall be given an opportunity to make a presentation and to respond to presentations made at the public hearing. (6) The presiding officer shall in consultation with the Authority determine the rules of procedure at the public hearing. (7) On the conclusion of the hearing, the presiding officer shall compile a report of the views presented at the public hearing and submit the report to the Director General within fourteen days from the date of the public hearing. ***Engagement during Project Implementation and External Reporting***	

ESS and Requirements	National Laws and Requirements	Gaps
Engagement during Project Implementation and External Reporting The Borrower will continue to engage with, and provide information to, project-affected parties and other interested parties throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential environmental and social risks and impacts of the project. ***Grievance Mechanism*** The Borrower will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. For this purpose, the Borrower will propose and implement a grievance mechanism to receive and facilitate resolution of such concerns and grievances. ***Organizational Capacity and Commitment*** The Borrower will define clear roles, responsibilities, and authority, as well as designate specific personnel to be responsible for the implementation and monitoring of stakeholder engagement activities and compliance with this ESS.	NEMA's EIA/EA regulations 2003 provide for annual environmental audits of all projects during implementation and throughout project life cycle. Further, the regulations require that the reporting (audits) be undertaken by external parties registered with NEMA. ***Grievance Mechanism*** The Environmental Management and Coordination Act provides for ESIA studies establishment of a robust grievance redress mechanism. **National Environment Tribunal-** Established under EMCA provides avenue for grievances redress on environment related matters. **National Environment Complaints Committee-**Established under EMCA provides avenue for grievances redress on environment related matters. **Environment and Land Court Act-**Establishes environment and land courts across the country for the sole purpose of addressing grievances related to environment and land. **Kenya National Commission for Human Rights-**Established to address grievances related to human rights including historical injustices on land, culture etc. **Commission for Administration of Justice Act-**Established office of the Ombudsman-The Commission is the national/constitutional stakeholder instrument for grievance redress. ***Organizational Capacity and Commitment*** Roles and responsibilities including clear authority lines and personnel for implementation of stakeholder engagement is required in preparation of ESIA and part of ESMP.	

6 POTENTIAL ENVIRONMENT AND SOCIAL RISKS AND IMPACTS

This chapter highlights the potential environmental and social risks and impacts of the ELRP (component 1) as well as the mitigation and monitoring measures that could be employed to manage the risks and impacts.

6.1 Beneficial Impacts

The project is financing activities that will have positive impacts and benefits to the areas currently infested with the desert locust. The proposed locust control activities will eliminate swarms of locust that have destroyed vegetation, crops and restore livelihoods that have been destroyed in the country. Through the project livelihood restoration and recovery component, the project could positively and negatively affect pastoralist and farmers communities that have seen their livelihood destroyed by large swarms of locust. Particularly disadvantaged and vulnerable groups could include internally displaced people (IDP), refugees, pastoralists and women and girls across these groups.

6.2 Adverse Environmental Risks and Impacts

The potential adverse environmental and social risks and impacts of the project highlighted below. These are the adverse risks and impacts likely to be experienced by the 15 Counties when applying pesticides to control the locust.

6.2.1 Occupational Health and Safety

The pesticide application personnel (such as storekeepers, pilots, loaders, mixers, drivers) will be exposed to pesticides during transport, handling, measuring, pouring, spraying and flagging (ground staff managing the site on ground for aerial spraying) and disposal. Personnel may be further at risk when handling the concentrate pesticide, this is especially during tank filling for aerial spraying, or filling and re-filling of knapsack spray kits for spray runs. The exposure time of these personnel is directly related to the frequency of the activity. Exposure can also be due to deposits of pesticides from aerial spraying which is dependent on atmospheric factors like wind velocity and direction, temperature, relative humidity and the likelihood of rain. Pesticides enter the body through various pathways:

- Ingestion/swallowing through the mouth, accidental or deliberate
- Dermal, through the skin when handling, measuring and pouring
- Inhalation of small particles or dust when handling, spraying and flagging

Mitigation Measures

- Prepare and implement an Integrated Pest Management Plan (A framework level IPMP has been developed and will be referenced when developing sub project/spray area specific IPMPs).
- Develop and implement sub project IPMPs for each spray operations
- Develop and implement Emergency Preparedness and Response Plan for each spray sub project (An EPRP has been developed as part of the framework IPMP and will be referenced when developing sub project/spray area specific EPRPs).

- Develop and implement Occupational Health and Safety Plan for each spray sub project.
- Use of appropriate Personal Protective Equipment (PPE) that will prevent penetration of the pesticide. Personnel (ground spraying) or pilots must use a respirator/fresh-air mask. These PPEs will be replaced frequently whenever wear and tear is identified or reported. Below are the PPE to be provided and as guided by WHO and FAO guidelines for PPE in pesticide application.
    - Broad-brimmed hat/helmet
    - Face shield or goggles (face shield preferable)
    - Respirators-disposable and replaced on a daily basis
    - 2 sets of cotton overalls per spray operator
    - Nitrile rubber, neoprene, PVC or butyl rubber gloves, without inside lining, long enough to cover forearm and replaced if torn or if wear and tear is noticed
    - Rubber boots
- Washing exposed parts of the body after work and before eating, smoking etc.
- No eating, smoking and drinking while spraying
- Reduce personnel exposure time to the pesticides (6-8hrs) and rotation of applicators to avoid/limit over exposure and potential human health impacts
- Training and inductions for the operators, medical teams, transporters, storekeepers and field control teams on pesticide use and handling
- Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Material Safety Data Sheets (MSDS) for all the operators, medical teams, transporters, storekeepers and field control team
- Testing and monitoring the acetylcholinesterase blood level of personnel involved in the locust control before, during and after the application exercise to monitor exposure to chemical pesticides

Transporters will further be trained on:

- Purpose of the pesticides
- Toxicity of the pesticides
- Security issues, including implications of the pesticides getting into the public
- Steps to take in case of an accident or emergency (according to FAO standards)
- Combustibility and combustion by-products of insecticide
- Handling vehicle contamination

Additionally, for aerial spraying

- To avoid contact, flagmen must be positioned at least 100m from the field edge and move upwind of the aircraft immediately it levels in preparation for the spray run
- Use of natural markers or balloons to mark field edges for the aircraft where practicable
- Reconnaissance flight by the pilot prior to the operation commencing.

6.2.2 Surface Water Contamination

Application of pesticides to control the locusts through (aerial and ground) spraying are likely to contaminate surface water bodies directly through the spray droplets falling into the water or indirectly through runoff from soil and therefore impacting on the aquatic life

as well as livelihoods of communities dependent on the aquatic resources by contaminating water bodies routinely used for domestic and other uses. The primary concern is the possible release of the pesticides into the water bodies from accidental spills during the transportation of the pesticides, aerial and ground application of the pesticides, clean-up of PPE and used pesticide equipment (mixers) or the disposal of pesticide packaging material. Surface water bodies play a critical role including sources of food (aquatic life), is a habitat for aquatic life, sources of domestic and industrial water, sources of drinking water for wildlife etc. and their contamination with pesticides have direct and indirect adverse impacts.

Mitigation Measures

- Avoidance of areas or regions with surface water bodies that are critical to habitats and livelihoods through mapping of spray areas prior to spraying using screening form/checklist.
- Judiciously select biopesticide or synthetic pesticide based on the screening of the bio-physical environment targeted for spraying.
- Use the biopesticide when spraying near or on sensitive ecological areas.
- Optimum calibration of spraying equipment to reduce excess application of pesticide
- Develop and implement Emergency Preparedness and Response Plan for each County (An EPRP has been developed as part of the framework IPMP and will be referenced when developing sub project/spray area specific EPRPs).
- Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Material Safety Data Sheets (MSDS) for all the operators, medical teams, transporters, storekeepers and field control team
- Collection of all used up PPE, containers and packaging materials and disposing in accordance with Waste Management Plan
- Pesticide applicators will never wash themselves, their overalls, or their PPE in any water bodies, or where wash water will drain to water bodies
- Environmental sound siting (location) of pesticide storage infrastructure (away from flood prone areas) etc.
- Pesticides to be stored on pellets and not on the ground to minimise leaks into environment as a result of flooding
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.

6.2.3 Soil and Ground Water Contamination

Pesticides and their transformation products are known to leach vertically through the soil and contaminate both the soil and groundwater. The pesticides can also have an effect on the soil fertility by causing populations of beneficial soil microorganisms to decline. Contamination of underground water resources is also possible during the disposal of containers through leaching, burying, and accidental spills. Pesticides can adversely affect soil micro-organisms which are responsible for microbial degradation in the soil, and for

soil structure. The two principal mechanisms are bio concentration[5] and bio magnification[6]. Contamination of soil is detrimental to food security as it impacts directly on agriculture and related agricultural produce.

Mitigation

- Conduct screening/mapping to determine the soil characteristics (based on agro-ecological zones) and presence or absence of ground water sources to inform selection of pesticides.
- Avoidance of areas or regions with surface water bodies that are critical to habitats and livelihoods through mapping of spray areas prior to spraying using screening form/checklist.
- Judiciously select biopesticide or synthetic pesticide based on the screening of the bio-physical environment targeted for spraying.
- Use biopesticide if soil and ground water likely to be contaminated
- Optimum calibration of spraying equipment to reduce excess application of pesticide
- Calibration of sprayer nozzles to ensure only required amounts of pesticide are released
- Develop and implement Emergency Preparedness and Response Plan for each County (An EPRP has been developed as part of the framework IPMP and will be referenced when developing sub project/spray area specific EPRPs) to manage accidental spills during transportation or application
- Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Material Safety Data Sheets (MSDS) for all the operators, medical teams, transporters, storekeepers and field control team
- Develop Waste Management Plan for management of pesticide wastes including obsolete pesticides (A waste Management Plan has been developed as part of the framework level IPMP and will be used to prepare spray areas specific waste management plans).
- Adopt the following FAO guidelines for prevention of contamination of soil and water.
    - FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
    - FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)
    - FAO Guidelines on Good Practice for Ground Application of Pesticides (2001)
    - FAO Guidelines on Management Options for Empty Pesticide Containers
    - FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.

[5] **Bio-concentration:** This is the movement of a chemical from the surrounding medium into an organism.
[6] **Biomagnification:** This term describes the increasing concentration of a chemical as food energy is transformed within the food chain. As smaller organisms are eaten by larger organisms, the concentration of pesticides and other chemicals are increasingly magnified in tissue and other organs.

6.2.4 Air Pollution Impacts

During the field spraying control activities, there are activities which may elevate gaseous and dust emissions and have an impact on air quality. The use of utility vehicles on un-paved roads will cause dust emissions and exposure to particulate matter (PM10, PM2.5) stirred up from the roads; and vehicular emissions consisting of Volatile Organic Compounds, sulphur dioxide (SO_2) and nitrogen dioxide (NO_2). The vehicles are used for the transport of materials and equipment, as well as carriage of personnel to and from field. Pesticide sprays can also drift or volatilize from the treated area and contaminate air in addition ubiquitous stench of pesticides.

Mitigation Measures

- Carry out awareness-raising and provide relevant, timely information to local communities on pesticide treatment schedules and potential negative air quality impacts
- Record all air quality complaints, identify cause (s), take appropriate measures
- Impose speed limits to reduce dust generation
- Carry out environmental monitoring of air quality for pesticides residues and their derivatives before, during and after the treatment activities

6.2.5 Noise Emissions

Noise impacts may arise as a result of the field control activities. Potential sources of noise include motor vehicles and incessant noise of the spraying airplanes (where used). The noise impacts from the airplanes may be irritating and impact on community health and safety as well as to livestock and wildlife.

Mitigation Measures

- Develop and implement as part of the sub project IPMP, Occupational Health and Safety Plan for each sub project
- Carry out awareness-raising and provide relevant, timely information to local communities on field control activities schedules and noise impacts for aerial spraying
- Working hours for the field control activities will be daytime only
- Conduct regular analysis and monitoring of levels of cholinesterase for the operators and field control teams involved in pesticide applications.

6.2.6 Impacts on Ecological Sensitive Habitats

The application of pesticides through ground and aerial spraying can drift or volatilize from the treated area and contaminate ecosystems; creating a potential risk of polluting ecologically sensitive habitats such as wetlands, national parks reserves, forests, pasture grasslands, crop fields and water bodies. Ecological effects of pesticides extend beyond individual organisms and can extend to ecosystems. Many of these effects are chronic (not lethal), and are often not noticed by casual observers, yet have consequences for the entire food chain.

Mitigation Measures

- Undertake screening/mapping before any spray activities to identify and map out sensitive ecological and agro-ecological areas
- Judicious choice of pesticides (i.e. biopesticides could be used in/near potentially sensitive areas instead of synthetic pesticides)
- Optimum calibration of spraying equipment to reduce excess application of pesticide
- Calibration of sprayer nozzles to ensure only required amounts of pesticide are released
- Adopt the following FAO guidelines for prevention of contamination of ecologically sensitive habitats.
    - FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
    - FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)
    - FAO Guidelines on Good Practice for Ground Application of Pesticides (2001)
    - FAO Guidelines on Management Options for Empty Pesticide Containers
    - FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)
- Carry out environmental monitoring of selected habitats and organisms including receptors like soil and water for pesticides residues before, during and after the treatment activities. (with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.)

6.2.7 Solid Waste Impacts

Empty pesticide containers, used PPE, material used to absorb spills etc. are still considered toxic under the Basel Convention and therefore require disposal to conform to toxic waste disposal regimes. The project has developed Waste Management Plan as part of this IPMP for solid waste disposal (include among others empty containers, torn gloves, broken barrels). The procedure for disposal of solid waste is to be derived from guidelines put together by WHO (FAO Guidelines on Management Options for Empty Pesticide Containers).

The pesticide waste includes used safety equipment, used protective clothing, material used to absorb spills and cockpit filter elements (for aerial spraying), pesticide containers (drums), obsolete pesticides etc. The sources of waste for pesticides include:

- Caking due to poor methods of storage
- Unidentifiable products due to lack of labels
- Expired products
- Contaminated items (soils, clothing etc.)
- Empty pesticide containers

Unless these wastes are managed correctly, they are hazardous and present a risk to communities as well as the bio-physical environment if contact and exposure is made. There is a danger that empty containers could be re-used for instance in the storing food and water, which could result in pesticide poisonings (FAO/WHO, 2008). Containers abandoned in the environment can lead to pesticide pollution in soil and groundwater. Empty pesticide containers and small quantities of unused or unwanted pesticides constitute hazardous waste and mechanisms need to be put in place to facilitate sound

management of this waste. These mechanisms should be compliant with FAO guidelines (FAO, 1999). The mechanisms ensure that:

- Containers are decontaminated directly following the use of their contents by a triple rinse
- Inappropriate use of the empty containers is prevented
- Containers are then punctured to avoid re-use and stored awaiting disposal by an approved waste handler

To avoid the accidental exposure of pesticides to both people and environment, the following mitigation measures are recommended:

Mitigation Measures

- Development and implementation of Waste Management Plan- A Waste Management Plan has been developed as an annex to the framework level IPMP and will be used as reference when developing sub project spay area specific Waste Management Plans before spray activities commence.
- Adopt FAO Guidelines on Management Options for Empty Pesticide Containers).
- Provide training on waste management including container disposal methods to all spray teams
- Implement the **Triple Rinse** approach to decontaminating the containers. Before storage and subsequent disposal, the containers must be rinsed thoroughly, and wash water emptied back to the spraying or mixing tanks. Empty pesticide containers should be triple rinsed, punctured and disposed of in an environmentally sound manner.
- Empty containers must NOT be re-used
- Ensuring and establishing a **Robust Procurement System and Plan** and **Stock Control System. Management** of order levels (good stock control) of pesticide will keep surplus to a minimum through judicious purchase, collection, transport, storage and use of pesticides.
- Ensuring adequate pesticide shelf-life prior to purchase to avoid obsoleteness. The remaining shelf-life of procured pesticides should be at sufficient to permit all stock to be used before expiry and within the scope of the project
- Establishing a **tracking system** for solids wastes (containers) etc. where all containers must be returned to the store and accounted for
- Establishing stores for holding empty containers prior to collection and disposal.
- As part of the FAO guidelines, MoALFC procure container crushers to crush empty tanks on site.

6.2.8 Effluent Waste Impacts

The pesticide effluent waste includes surplus diluted spray solution, rinsate among others. Unless these wastes are managed correctly, they are hazardous to both mankind and the environment. Contaminated effluent wastes could have adverse impacts on the communities and bio-physical environment as a result of exposure. The following mitigation measures are recommended:

Mitigation Measures

- Development of and implementation of Waste Management Plan- A Waste Management Plan has been developed as an annex to the framework level IPMP and will be used as reference when developing spay area specific Waste Management Plans.
- Adopt FAO guidelines for disposal of pesticide wastes
- Provide training on waste management including disposal methods of effluent wastes (rinsate) to all spray teams
- Rinsate and wash water should be emptied back to the spraying or mixing tanks
- Establish soak pits (charcoal)
- Develop Waste Management Plan

6.2.9 Community Health and Safety

No segment of the population is completely protected against exposure to pesticides and the potentially serious health effects, especially to high risk groups (WHO, 1990). Members of the public, not directly involved with the spray operation, may also be affected by an aerial pesticide application so the project proponent (in this case MoALFC) may have a mandatory obligation to issue "prior warnings" to any person or organization that might be affected or concerned. People exposed to pesticides may suffer short-term acute health effects such as nausea, headaches, sore eyes, skin rashes and dizziness (FAO, 2008)

Local communities may also be exposed to risks related to communicable diseases spread (STIs/HIV) from spray operators, social ills and tension within the communities and gender-based violence/sexual exploitation, abuse and harassment.

Mitigation Measures

- Develop and implement a Security Management Plan to address management of security personnel to protect project workers and protection of supplies/equipment. A Security Management Plan has been developed for the project under component 2 but will also be applied in activities under component 1.
- Develop and implement Stakeholder Engagement Plan (SEP) to guide engagement activities with the communities. A SEP has been developed for the project.
- Develop and implement Grievance Redress Management Procedures. A GRM has been developed for the project.
- Develop and implement Gender Based Action Plan. A GBV Action Plan has been developed for the project.
- Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites.
- Have regular public interaction forums where communities in areas which have been treated with the pesticides are informed about:
    - How to safely navigate pesticide effects on plants, livestock, and water systems
    - Precautions that are to be taken before, during and after control operations (e.g., re-entry and withholding periods)

    - Dangers of reusing empty drums
- Ensure that local communities in areas that have been treated with pesticides are informed on how to safely navigate its effects on plants, livestock, and water systems and what precautions are to be taken before, during and after control operations (e.g., re-entry and withholding periods, dangers of reusing empty drums)
- Citizen engagement, community empowerment, mobilization and participation will be critical to developing community-led responses that will address immediate concerns and build resilience going forward and is reflected in the SEP.
- Ensure that the project executers and host community are able to address the grievances on access and equity within the agreed GRM.
- Public awareness (communications) campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations.
- Due to COVID-19 pandemic, World Bank has developed guidance note for consultations i.e. Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings March 20, 2020. Consultations and engagement during project implementation will adopt the guidelines in the technical note.
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.

6.2.10 Accidental Release of Pesticides

Accidental releases may occur during transportation, storage, handling and application of pesticides hence categorized as unplanned events. If such spillage occurs, this may result in a fire (pesticides are flammable), injury to humans and livestock (exposure), contamination of (receptors like water, flora, soils) and risks to fauna (exposure). Prompt informed and rapid action must follow the accident to contain and minimize any adverse effects.

Mitigation Measures

- Develop and implement Emergency Preparedness and Response Plan for each spray operation (sub project) (An EPRP has been developed as part of the framework IPMP and will be referenced when developing sub project/spray area specific EPRPs) to manage accidental spills during transportation or application.
- Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Material Safety Data Sheets (MSDS) for all the operators, medical teams, transporters, storekeepers and field control team
- Develop and implement Waste Management Plan for management of pesticide wastes including obsolete pesticides (A waste Management Plan has been developed as part of the framework level IPMP and will be used to prepare spray areas specific waste management plans).
- Provision of fully stocked first aid kits in stores and vehicles
- Engagement with local health facilities to support community and project staff in cases of exposure

- Only vehicles correctly equipped to carry pesticides must be used for transportation
- Pesticide transporters and users must be **trained** and be familiar with recommendations detailed on the product Material Safety Data Sheet and procedures to be followed
- Records must be kept of all incidents and remedial action taken
- Absorbent material to contain chemical spills must be available at the filling site.
- Chemical stores must be kept secure at all times. Proper storage of pesticides in accordance with FAO guidelines (Guidelines on retail distribution of pesticides with particular reference to storage and handling at the point of supply to users in developing countries) should be ensured for all supplies
- Appropriate fire extinguishers must be provided for all locations where substantial quantities of pesticide are transported, stored or mixed
- Use of PPE by spray teams and storekeepers
- Conduct regular analysis and monitoring of levels of cholinesterase for the operators and field control teams involved in pesticide applications.

6.2.11 Livelihood and Food Security Impacts

The use and application of pesticides through ground and aerial spraying can drift or volatilize from the treated area and contaminate pasture/grazing areas hence poisoning livestock and crops which are sources of livelihoods in the project proposed sites. Pesticide can also poison aquatic resources if they find their way into such ecosystems. The contamination pathways are through surface run offs, deposit on off target organisms, bioaccumulation also builds the contamination in the animals through their feeding pathways and water intake. This has potential to cause devastating consequences for food access and availability.

Mitigation Measures

- Undertake screening/mapping before any spray activities to identify and map out agro-ecological areas in each spray area
- Judicious choice of pesticides (i.e. biopesticides could be used in/near potentially sensitive areas instead of synthetic pesticides)
- Optimum calibration of spraying equipment to reduce excess application of pesticide
- Establishment of charcoal pits for effluent wastes disposal
- Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites.
- Provide awareness and sensitisation on disposal of dead locusts to avoid poultry poisoning (sweep all dead locust in a pit and cover)
- Have regular public interaction forums where communities in areas which have been treated with the pesticides are informed about:
  - How to safely navigate pesticide effects on plants, livestock, and water systems
  - Precautions that are to be taken before, during and after control operations (e.g., re-entry and withholding periods)
  - Dangers of reusing empty drums
- Ensure that local communities in areas that have been treated with pesticides are informed on how to safely navigate its effects on plants, livestock, and water

systems and what precautions are to be taken before, during and after control operations (e.g., re-entry and withholding periods, dangers of reusing empty drums)
- Citizen engagement, community empowerment, mobilization and participation will be critical to developing community-led responses that will address immediate concerns and build resilience going forward and is reflected in the SEP.
- Ensure that the project executers and host community are able to address the grievances on access and equity within the agreed GRM.
- Public awareness (communications) campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations.
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.

6.2.12 Impacts to Birds, Fishes, and Other Organisms

Pesticide application can have an impact on organisms other than the target pest. Pesticides are by their nature bio-poisons and whereas they are beneficial against pests (targets) their use may inadvertently harm other organisms (non-targets) leading to significant biodiversity losses. Non-target species of concern also include bees, birds and fish. Loss of biodiversity makes ecosystems more vulnerable to changes in the environment, with lower genetic diversity and fewer species to support fundamental ecosystem functions such as pollination. The hazard to non-target organisms is dependent upon a pesticide's acute and chronic toxicity and is also a function of the rate at which the pesticide breaks down (half-life) under various scenarios (aqueous or in-soil, UV exposure, etc.) in the environment. In addition, many pesticides break down to toxic daughter products that have their own half-life.

Kenya has selected to use the chemical pesticide Fenitrothion 96 percent formulated as ULV, is a WHO class II pesticide. Even though it is banned in the European Union because it is highly toxic to birds, honeybees and aquatic invertebrates like snails and moderately toxic to fish, algae and earthworms, this organophosphate pesticide is effective on the desert locust. The other biopesticide used is *Metarhizium anisopliaestrain* F52, a fungus that infects insects, primarily beetle larvae. It has been approved as a microbial pesticide active ingredient for non-food use in greenhouses and nurseries, and at limited outdoor sites not near bodies of water. No harm is expected to humans or the environment when pesticide products containing *Metarhizium anisopliaestrain* F52 are used according to label instruction.

Mitigation Measures

- Undertake screening before any spray activities to identify and map out sensitive habitats and avoid spraying in such areas.
- Judicious choice of pesticides which includes selection and use of bio-pesticides in/near potentially sensitive areas
- Optimum calibration of spraying equipment to reduce excess application of pesticide

- Adhere to FAO guidelines and the SOPs for spraying based on location sensitivity and characteristics.
    - FAO Guidelines on Developing a Reporting System for Health and Environmental Incidents Resulting from Exposure to Pesticides, 2009
    - FAO Prevention of Accumulation and Disposal of Obsolete Stocks; 2009, 2011
    - FAO Guidelines on Good Practice for Aerial Application of Pesticides (2001)
    - FAO Guidelines on Good Practice for Ground Application of Pesticides (2001)
    - FAO Guidelines on Management Options for Empty Pesticide Containers
    - FAO Desert Locust Guidelines on Safety and Environmental Precautions (2003)
- Proper disposal of used containers or other wastes in accordance with FAO Container Disposal Guidelines
- Establishment of charcoal filled pits for effluent wastes disposal
- Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites.
- Provide awareness and sensitisation on disposal of dead locusts to avoid poisoning of livestock and birds through feeding on the dead insects (sweep all dead locust in a pit and cover)
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.

6.2.13 Storage and Store Siting

Poor siting and design of pesticide storage facilities could lead to exposure and contamination of the bio-physical environment as well as human health risks due to contact Pesticides should be received and recorded, before storing in a secure and well-ventilated dedicated store away from stores of flammable liquids and any ignition source. Proper pesticide storage and inventory (stock control) practices makes it easier to track pesticide use and avoid overstocking which leads to disposal challenges and obsolete stocks.

It also lowers the risk of chemical fires, explosions, or spills that contaminate surface water, ground water and soil. The storage requirements should be as detailed in the safety data sheet and the labels. Since pest outbreaks are erratic and difficult to predict, there is a danger that more pesticides than needed may be ordered leading to stockpiles. Stocks of obsolete pesticides pose a serious health and environmental problem. To avoid theft and unauthorized access to the pesticides, the areas should be well secured and guarded, and accessed by one main entrance and an emergency exit.

The store facilities should be located away from water sources to avoid contamination by accidental spills. Storage building construction should comply with local codes. The areas where the stores are sited should not be prone to floods and should be lifted from the ground level to avoid storm run-off passing through the store. The store should be adequately ventilated either mechanically or naturally to ensure there are no dead-air spaces in the store.

Mitigation Measures

- All primary pesticide storage facilities will be double-padlocked and guarded

- All the storage facilities will be located away from nearby watercourses, domestic wells, markets, schools, hospitals etc.
- Soap and clean water will be available at all times in all the facilities
- A trained storekeeper will be hired to manage each facility
- Recommended pesticide stacking position and height in the warehouse as provided in the FAO **Storage and Stock Control Manual** will be followed
- All the warehouses will have at least two exit access routes in case of fire outbreak
- A fire extinguisher will be available in the storage facilities and all workers will be trained on how to use the available firefighting facilities.
- Warning notices will be placed outside of the store in both English and the local language(s) with a hazard symbol (skull and crossbones sign), and also a caution symbol against unauthorized entry
- All pesticides will be used and any remnants will be stored under lock and key until the next round of application.
- Application of First In/First Out (FIFO) approach in pesticide distribution will be practiced avoiding accumulation of expired pesticides
- Storage facilities are accessed by authorized personnel only
- Pesticide stacking position and height in the warehouse is followed
- The central warehouses have more than 3 exit access routes in case of fire outbreak

6.3 Adverse Social Risks and Impacts

6.3.1 Gender Based Violence

The ASAL area are already impacted by aspects of Gender Based Violence (GBV) including perceived low status of women, pre-existing high prevalence and acceptability of GBV (e.g. early/forced marriage, intimate partner violence) and high levels of poverty, are likely to heighten the community's vulnerability to Sexual Exploitation and Abuse (SEA). An influx of in-migrants has potential to increase the level of SEA.

Furthermore, higher wages for workers in a community can lead to an increase in transactional sex and marriage of adolescent girls. The risk of incidents of sex between laborers and minors, even when it is not transactional, can also increase. Male jealousy, a key driver of GBV, can be triggered by labor influx on a project when workers are believed to be interacting with women in the community. Hence, abusive behavior can occur not only between project-related staff and those living in and around the project site, but also within the homes of those affected by the project. The deployment of National Youth Service (NYS) paramilitary cadets- to conduct ground spraying in these areas, women and girls may face growing levels of SEA, also as a negative coping strategy.

Mitigation Measures

- Preparation and implementation of a Gender Based Violence Action Plan
- Training of all project workers and members of affected local communities on gender issues, including GBV, and ensuring community's access to GRMs
- Preparation and implementation of a Stakeholder Engagement Plan, which will specifically address gender issues and the incidence of GBV in affected communities.
- Preparation and implementation of a Grievance Redress Mechanism

- Development and implement Code of Conduct to be signed by all workers
- Regular trainings for all project workers on Code of Conduct

6.3.2 Impacts on Indigenous peoples

Indigenous peoples/Sub-Saharan African historically underserved traditional local communities (ESS7), especially pastoralists, will be especially hard hit as their livelihoods are inextricably linked to land and pasture, which is being damaged by swarms. Pastoralists' options would be limited to: (a) migrating to find pasture, which could lead to conflict with other pastoralist groups; or (b) searching for alternative livelihood if they are permanently decapitalized due to the loss of fodder for their animal. Pastoralists who have experienced spraying activities already outlined that their concerns centered around being informed in a timely manner about the spraying activities and the disposal of the dead locusts. Stakeholder consultations therefore need to be culturally appropriate to suit local needs, cultural practices and relevant languages. This could be further aggravated by the risk of transmission of COVID-19 in Kenya across populations that might not otherwise have encountered each other.

Mitigation Measures

- Consultation and communication will ensure cultural appropriateness and apply the Free Prior and Informed Consultation (FPIC) concepts. Methods of rapid consultation and communication with the communities will be developed in local languages or posters or through traditional system of communication undertaken prior to spraying in a culturally appropriate manner using local languages to address their concerns. The approach to consultation will be presented in the SEP.
- A culturally appropriate and accessible Grievance Redress Mechanism will be established and implemented taking into account the availability of judicial recourse and customary dispute settlement mechanisms among the local communities

6.3.3 Social Tensions

Most of the project activities will be implemented in rural and remote areas, of which many have been prone to social tensions and communal and political conflict, inhabited by different social groups, as well as IDPs and refugees. Project activities will need to be cognizant to these dynamics and be implemented in a way to ensure no further escalation of such tensions. Equally, security concerns for workers need to be taken into consideration including likelihood of attacks by local communities due to disgruntlement over employment, poisoning of livestock, historical ethnic differences, sexual harassment and or abuse etc. Some of the affected counties are also prone to terrorist attacks and the workers may be victims of such attacks and kidnapping for purposes of seeking ransom. Furthermore, there is a risk that local community dynamics may result in attempts to capture the benefits of the project for a particular group. These challenges shall be included in the social assessment to be prepared during implementation.

The use of National Police Service (NPS) to provide security for the spray operators and to pesticides and other spray related assets, could lead to security concerns especially the use of force and particularly armed force in view of the fact that the NPS officers are armed.

National Youth Service officers will not be used to provide any form of security in this project. NYS officers will be unarmed when undertaking the spraying controls activities.

Mitigation Measures

The following measures will be taken into consideration to minimize these potential negative risks and impacts on communities, ecologically and agronomically sensitive areas and for pesticide control teams.

- Develop and implement Security Management Plan to ensure that risks posed by the use of government security personnel among others are identified and mitigated
- Provide sensitization and training for the NYS and National Police Service officers on GBV/SEA/SH risks and requirements
- Develop and implement a Stakeholder Engagement Plan
- Develop and implement a Grievance Redress Mechanism
- MoALFC will adopt and comply with FAO technical guidelines on safety and environmental precautions for the use of pesticides, use of WBG EHS Guidelines and applicable national laws and regulations
- Develop and implement workplace processes for workers to report work situations they believe are not safe and to remove themselves from a work situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health.
- Provide project workers with facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest. Ensure that in cases accommodation is provided to workers policies are put in place and implemented on the management and quality of accommodation to protect and promote the health, safety, and well-being of the project workers, and to provide access to or provision of services that accommodate their physical, social and cultural needs.
- Develop and implement Code of Conduct
- Develop Waste Management Plan for management of pesticide wastes including obsolete pesticides (A waste Management Plan has been developed as part of the framework level IPMP and will be used to prepare spray areas specific waste management plans)
- Provide awareness and sensitisation on disposal of dead locusts to avoid poultry poisoning (sweep all dead locust in a pit and cover)
- Have regular public interaction forums where communities in areas which have been treated with the pesticides are informed about:
    - How to safely navigate pesticide effects on plants, livestock, and water systems
    - Precautions that are to be taken before, during and after control operations (e.g., re-entry and withholding periods)
    - Dangers of reusing empty drums
- Ensure that local communities in areas that have been treated with pesticides are informed on how to safely navigate its effects on plants, livestock, and water systems and what precautions are to be taken before, during and after control operations (e.g., re-entry and withholding periods, dangers of reusing empty drums)

- Citizen engagement, community empowerment, mobilization and participation will be critical to developing community-led responses that will address immediate concerns and build resilience going forward and is reflected in the SEP.
- Ensure that the project executers and host community are able to address the grievances on access and equity within the agreed GRM.
- Public awareness (communications) campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations.
- Carry out regular in-depth environmental monitoring of selected organisms, soil and water for pesticides residues during and after the treatment activities, with the support and involvement of multi-disciplinary lead agencies on wildlife, water, environment, health and safety etc.
- Develop and implement Emergency Preparedness and Response Plan for each sub project (An EPRP has been developed as part of the framework IPMP and will be referenced when developing sub project/spray area specific EPRPs) to manage accidental spills during transportation or application.
- Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Material Safety Data Sheets (MSDS) for all the operators, medical teams, transporters, storekeepers and field control team.

6.3.4 Pilferage of Pesticides

Pesticides should be kept securely and contained during transport and storage to reduce theft, vandalism, or the possible misuse of products. Theft can be costly. Vandalism can cause human or environmental contamination. When pesticides fall in the wrong hands due to pilfering or deviation of use by control teams, the potential for exposure, misuse, contamination of biophysical environment and health impacts to the community increases due to potential contamination of water sources food commodities or spraying over-populated areas. Pesticide products should always be kept in a secured storage area that is accessible only to those who are trained to use these products, such as storekeepers and licensed applicators.

Mitigation Measures

- Establish a robust supply chain system for pesticides from entry into Kenya to arrival in spray sites
- Maintenance of records of all the stock coming in and out of the storage facilities so that all the stock can be traced accordingly to prevent pilferage of pesticides
- If pesticides are vandalized or stolen, call the police at once, so they can put it on record and investigate
- Report the incident to the PCPB
- All the storekeepers and managers will be trained on sound store keeping practices and procedures
- The trainings will be organized through the auspices of the PCPB and Agrochemicals Association of Kenya
- At the end of the spray round, unused pesticide will be kept under lock and seal until such a time that they can be used for further spraying and if expired they will

be disposed in accordance to international disposal requirements for obsolete pesticides

- Spray Operators must sign out all pesticide received daily and return empty sachets at the end of the day
- Drivers transporting insecticide will be trained according to the guidelines listed in Pesticide Procedures
- Distribution of insecticide will be conducted in the following manner:
    - At the national warehouse lot numbers of insecticide and quantities are registered on shelf inventory card
    - County requisitions will be approved at the county level where copies are maintained
    - Requisition where distribution takes place and signed for, based on sachet numbers
    - At the end of the day, empty and full containers are returned and number checked against what was signed for. The next day all previously signed but unused containers are re-issued and again signed for by the relevant spray operator. At the end of the spray round, stock remaining = stock at start-number of stock distributed.

6.4 Environmental and Social Management Plan

6.4.1 Pre-Spray Phase

PRE-SPRAY PHASE POTENTIAL IMPACTS		
IMPACT/ISSUES	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
Accidental spills of pesticides during road transportation to warehouse and spray sites.	■ Ensure that the drivers identified to haul the pesticide to the spray sites are well trained on adherence to road safety procedures and to the FAO standards and guidelines for the storage and transport of pesticides. ■ Ensure that only road worthy vehicles are selected for the transportation with qualified drivers.	■ MoALFC/NPCU ■ CPCU ■ Contracted transporters
Possible environmental contamination caused by warehouse exposure due to poor siting of warehouses, pilferage and vermin attack of the stored pesticides before spraying.	■ Ensure the selected warehouse is sited away from a flood plain area, water course, wells, schools, markets.	■ MoALFC/NPCU ■ CPCU
	■ Secure the selected warehouse and apply all the guidelines for Storage and Stock Control manual by FAO.	■ MoALFC/NPCU ■ CPCU
Accidental fires and injuries in the warehouses	■ All warehouses must be equipped with a fire extinguisher, thermometer, exit doors and warning signs, and proper stacking position and height as stipulated in the FAO Storage and Stock Control Manual.	■ MoALFC/NPCU ■ CPCU
	■ All the workers handling pesticides or other products and equipment in the storage facilities must all have PPE including goggles, gloves, boots, overall, dust masks etc.	■ MoALFC/NPCU ■ CPCU
	■ All spray operators and store managers must be trained on how to operate the fire extinguishers and what to do in case of fire outbreaks. ■ Develop Emergency Preparedness and Response Plan	■ MoALFC/NPCU ■ CPCU ■ FAO

6.4.2 Spray Phase

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
Occupational Health and Safety Impacts	Spray operators, drivers, storekeepers and flagmen exposure due to negligence, lack of PPEs, or un-intentional exposure caused by accidents or limited pesticide knowledge.	■ Ensure PPEs provided to all the workers, supervisors, team leaders and store managers, and that all such persons receive adequate training on a regular basis on the proper use of PPE. ■ Train the team leaders, sprayers, supervisors and storekeepers on emergency procedures to take if exposure occurs accidentally ■ Ensure that team leaders and Supervisors effectively monitor the spray operations diligently and take action to correct any non-compliance issues noted right away. ■ Procurement of sprayers manufactured according to WHO specifications; ■ Prohibition of eating, drinking and smoking during work; ■ Rotation of applicators to avoid/limit over exposure ■ Ensure that only road worthy vehicles are selected for the transportation with qualified drivers. ■ Training on Emergency Preparedness and Response Plan (EPRP) and awareness of the details of the pesticide Safety Data Sheets ■ Training on purpose and properties of the pesticides ■ Training on security issues, including implications of the pesticides getting into the public. ■ Training on steps to take in case of an accident or emergency (according to FAO standards) ■ Training on handling vehicle contamination ■ Given the use of the organophosphate pesticides, ensure pre-medical examinations and regular check-up to monitor exposure to potential poisoning.	■ MoALFC/NPCU ■ CPCU ■ County Health Department ■ Spray teams ■ FAO

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
Surface Water Contamination	Contamination of surface water bodies directly or indirectly through runoff from soil. Impact on the aquatic life as well as community livelihoods. Possible release of the pesticides into the water bodies from accidental spills during the transportation, application of the pesticides.	▪ Avoidance of areas or regions with surface water bodies that are critical to habitats and livelihoods through mapping of spray areas prior to spraying (screening). ▪ Use of biopesticide based on screening results ▪ Optimum calibration of spraying equipment to reduce excess application of pesticide. ▪ Implementing EPRP to manage accidental spills during transportation or application. ▪ Pesticide applicators will never wash themselves, their overalls, or their PPE in any water bodies, or where wash water will drain to water bodies. ▪ Carrying out environmental monitoring of water bodies	▪ MoALFC/NPCU ▪ CPCU ▪ NEMA ▪ KALRO ▪ KFS ▪ PCPB ▪ KWS ▪ Spray teams ▪ FAO
Soil and Ground Water Contamination	Pesticides can cause beneficial soil microorganisms to decline thereby affecting soil quality. Contamination of soil during the disposal of containers. Contamination of soil is detrimental to food security as it impacts directly on agriculture.	▪ Avoidance of agro-ecological areas and regions with surface water bodies that are critical to habitats and livelihoods through mapping of spray areas prior to spraying (screening). ▪ Use of biopesticide based on screening results ▪ Optimum calibration of spraying equipment to reduce excess application of pesticide ▪ Calibration of sprayer nozzles to ensure only required amounts of pesticide are released ▪ Implement EPRP to manage accidental spills during transportation or application ▪ Proper management and disposal of obsolete pesticides ▪ Proper disposal of pesticide containers	▪ MoALFC/NPCU ▪ CPCU ▪ NEMA ▪ KALRO ▪ KFS ▪ PCPB ▪ KWS ▪ Spray teams
Air Pollution Impacts	Use of utility vehicles on un-paved roads will cause dust emissions and increase	▪ Carry out awareness-raising and provide relevant, timely information to local communities on pesticide treatment schedules and potential negative air quality impacts;	▪ MoALFC/NPCU ▪ CPCU ▪ NEMA ▪ KALRO

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	exposure to particulate matter (PM10, PM2.5) Pesticide sprays can also drift or volatilize from the treated area and contaminate air in addition ubiquitous stench of pesticides.	■ Record all air quality complaints, identify cause (s), take appropriate measures; ■ Impose speed limits to reduce dust generation; ■ Carry out environmental monitoring of air quality for pesticides residues and their derivatives before, during and after the treatment activities.	■ KFS ■ PCPB ■ KWS ■ FAO
Noise Emission	Potential sources of noise include motor vehicles and incessant noise of the spraying airplanes (where used). The noise impacts from the airplanes may be irritating and impact on community health and safety as well as to livestock and wildlife.	■ Carry out awareness-raising and provide relevant, timely information to local communities on field control activities schedules and noise impacts for aerial spraying; ■ Working hours for the field control activities will be daytime only.	■ MoALFC/NPCU ■ CPCU
Impacts on ecological sensitive habitats	Application of pesticides can create a potential risk of polluting ecologically sensitive habitats such as wetlands, national parks reserves, forests, pasture grasslands, and water bodies.	■ Avoidance of sensitive habitats and livelihoods through mapping of spray areas prior to spraying (screening). ■ Judicious choice of pesticides (i.e. Bio pesticides could be used in/near potentially sensitive areas instead of fenitrothion pesticides). ■ Optimum calibration of spraying equipment to reduce excess application of pesticide ■ Carrying out environmental monitoring	■ MoALFC/NPCU ■ CPCU ■ NEMA ■ KALRO ■ KFS ■ PCPB ■ KWS ■ Spray teams ■ FAO
Solid Waste Impacts	Empty pesticide containers and used PPEs are considered toxic under the Basel	■ Develop Waste Management Plans ■ Provide training on waste management including container disposal methods to all spray teams	■ MoALFC/NPCU ■ CPCU ■ Spray workers

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	Convention and therefore require disposal to conform to toxic waste disposal regimes.	■ Implement the Triple Rinse approach to decontaminate the containers. Before puncturing and disposal in compliance with FAO guidance ■ Empty containers must NOT be re-used ■ Ensuring adequate pesticide shelf-life prior to purchase to avoid obsoleteness. The remaining shelf-life of procured pesticides should be at sufficient to permit all stock to be used before expiry and within the scope of the project. ■ Establishing a tracking system for solids wastes (containers) etc. where all containers must be returned to the store and accounted for. ■ Establishing stores for holding empty containers prior to collection and disposal. ■ Ministry to have container crusher on specific field location to enable the crushing of the containers on site	■ FAO
Effluent Waste Impacts	The pesticide effluent waste includes surplus diluted spray solution, rinsate among others. These are hazardous to both mankind and the environment. Contaminated effluent wastes could have adverse impacts on the communities and bio-physical environment.	■ Rinsate and wash water should be emptied back to the spraying or mixing tanks ■ Establish soak pits (with charcoal to filter, adsorb and retain the pesticides)	■ MoALFC/NPCU ■ CPCU ■ Spray teams
Community Health and Safety	Communities exposed to pesticides may suffer short-term acute health effects such as nausea, headaches, sore	■ Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites.	■ MoALFC/NPCU ■ CPCU ■ FAO

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	eyes, skin rashes and dizziness.	■ Have regular public interaction forums, paying particular attention to the needs of persons with disabilities, indigenous persons and other members of vulnerable groups, where communities in areas which have been treated with the pesticides. are informed in a language and communications medium they understand, and which is accessible to them about: ▪ How to safely navigate pesticide effects on plants, livestock, and water systems ▪ Precautions that are to be taken before, during and after control operations (e.g., re-entry and withholding periods) ▪ Dangers of reusing empty drums ■ Ensure that the project executers and host community are able to address the grievances on access and equity within the agreed GRM. ■ Public awareness (communications) campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations. ■ Ensuring treatment medicines for pesticide exposure are available ■ Ensure first Aid kits are available in the storage facilities and the transport vehicles	
Accidental Release of Pesticides	If such spillage occurs, this may result in a fire (pesticides are flammable), injury to humans and livestock (exposure), contamination of (receptors like water, flora,	■ Only vehicles correctly equipped to carry pesticides must be used for transportation. ■ Pesticide transporters and users must be trained and be familiar with recommendations detailed on the product Material Safety Data Sheet and procedures to be followed.	■ MoALFC/NPCU ■ CPCU ■ Spray teams ■ FAO

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	soils) and risks to fauna (exposure).	■ Preparation of an EPRP which has details of all appropriate authorities that must be notified (Environment, Water, Police, Fire Department etc.) ■ Records must be kept of all incidents and remedial action taken. ■ Training on EPRP and awareness of the details of the pesticide MSDS for all the operators, medical teams, transporters, storekeepers and field control team ■ Absorbent material to contain chemical spills must be available. ■ Chemical stores must be kept secure at all times. Proper storage of pesticides in accordance with FAO guidelines should be ensured for all supplies. ■ Appropriate fire extinguishers must be provided for all locations where substantial quantities of pesticide are transported, stored or mixed. ■ Use of PPE by spray teams and storekeepers	
Livelihood and Food Security Impacts	Pesticide can poison aquatic resources if they find their way into ecosystems. The contamination pathways are through surface run offs, deposit on off target organisms, bioaccumulation also builds the contamination in the animals through their feeding pathways and water intake.	■ Avoidance of agro-ecological areas and regions with that are critical to habitats and livelihoods through mapping of spray areas prior to spraying (screening). ■ Judicious choice of pesticides which includes choice of using biopesticides in/near potentially sensitive areas (water bodies, pastureland, protected areas) etc. ■ Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites. ■ Optimum calibration of spraying equipment to reduce excess application of pesticide ■ Establishment of soak pits for rinsate disposal	■ MoALFC/NPCU ■ CPCU

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
		▪ Have regular public interaction forums, paying particular attention to the needs of persons with disabilities, indigenous persons and other members of vulnerable groups, where communities in areas which have been treated with the pesticides. are informed in a language and communications medium they understand, and which is accessible to them about: o How to safely navigate pesticide effects on plants, livestock, and water systems o Precautions that are to be taken before, during and after control operations (e.g., re-entry and withholding periods) o Dangers of reusing empty drums ▪ Ensure that the project executers and host community are able to address the grievances on access and equity within the agreed GRM. ▪ Public awareness (communications) campaigns will keep the public informed about possible environmental and health effects of pesticides, before, during and after locust control operations.	
Impacts to Birds, Fishes, and Other Organisms	Pesticide application can have an impact on organisms other than the target pest. Loss of biodiversity makes ecosystems more vulnerable to changes in the environment.	▪ Avoidance of agro-ecological areas and regions with critical to habitats and livelihoods through mapping of spray areas prior to spraying (screening). ▪ Judicious choice of pesticides which includes selection and use of bio-pesticides in/near potentially sensitive areas. ▪ Optimum calibration of spraying equipment to reduce excess application of pesticide ▪ Adhere to FAO the SOPs for spraying based on location sensitivity and characteristics	▪ MoALFC/NPCU ▪ CPCU ▪ KALRO

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
		■ Proper disposal of used containers or other wastes in accordance with FAO Container Disposal Guidelines ■ Establishment of soak pits for effluent wastes disposal ■ Warnings must be given in ample time to beekeepers, owners of adjacent crops, livestock owners and those responsible for nearby environmentally sensitive sites.	
Storage and Store Siting	Poor siting and design of pesticide storage facilities could lead to exposure and contamination of the bio-physical environment as well as human health risks due to contact. Pesticides should be received and recorded, before storing in a secure and well-ventilated dedicated store away from stores of flammable liquids and any ignition source. The store facilities should be located away from water sources to avoid contamination by accidental spills. Storage building construction should comply with local codes. The areas where the stores are sited should not be prone to	■ All primary pesticide storage facilities will be double-padlocked and guarded ■ All the storage facilities will be located away from nearby watercourses, domestic wells, markets, schools, hospitals etc. ■ Soap and clean water will be available at all times in all the facilities ■ A trained storekeeper will be hired to manage each facility on store inventory ■ Recommended pesticide stacking position and height in the warehouse as provided in the FAO Storage and Stock Control Manual will be followed ■ All the warehouses will have at least two exit access routes in case of fire outbreak ■ A fire extinguisher will be available in the storage facilities and all workers will be trained on how to use the available firefighting facilities. ■ Warning notices will be placed outside of the store in both English and the local language(s) with a hazard symbol (skull and crossbones sign), and also a caution symbol against unauthorized entry ■ All pesticides will be used and any remnants will be stored under lock and key until the next round of application.	■ MoALFC/NPCU ■ CPCU

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	floods and should be lifted from the ground level to avoid storm run-off passing through the store. The store should be adequately ventilated either mechanically or naturally to ensure there are no dead-air spaces in the store.	■ Application of First In/First Out (FIFO) approach in pesticide distribution will be practiced avoiding accumulation of expired pesticides ■ Storage facilities are accessed by authorized personnel only ■ Pesticide stacking position and height in the warehouse is followed ■ The central warehouses have more than 3 exit access routes in case of fire outbreak	
Gender Based Violence	The ASAL area are already impacted by aspects of GBV. An influx of in-migrants has potential to increase this. Risk of incidents of sex between laborers and minors, even when it is not transactional, can also increase. Deployment of paramilitary cadets to conduct ground spraying may lead women and girls to face SEA as a negative coping strategy.	■ Preparation and implement of a Gender Based Violence Action Plan ■ Training on gender issues and ensuring community's access to GRMs ■ Preparation and implementation of a Stakeholder Engagement Plan ■ Preparation and implementation of a Grievance Redress Mechanism ■ Develop and implement Code of Conduct ■ NYS cadets involved in the control activities will be sensitized and trained on the GBV and SEA/SH ■ NPS officers providing security will be sensitized and trained on GBV and SEA/SH	■ MoALFC/NPCU ■ CPCU ■ NYS Management
Impacts on Indigenous peoples	Indigenous peoples/Sub-Saharan African historically underserved traditional local communities, especially pastoralists, will be especially hard hit as their livelihoods	■ Methods of rapid communication to the communities will be developed in local languages or posters or through traditional system of communication undertaken prior to spraying in a culturally appropriate manner using local languages to address their concerns.	■ MoALFC/NPCU ■ CPCU

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
	are inextricably linked to land and pasture, which is being damaged by swarms.	▪ A Grievance Redress Mechanism will be implemented through which communities can raise any concerns related to project implementation.	
Social Tensions	Most of the project activities will be implemented in rural and remote areas, of which many have been prone to social tensions and communal and political conflict, inhabited by different social groups, as well as IDPs and refugees.	▪ Preparation and implement of a Gender Based Violence Action Plan ▪ Training on gender issues and ensuring community's access to GRMs ▪ Preparation and implementation of a Stakeholder Engagement Plan ▪ Preparation and implementation of a Grievance Redress Mechanism ▪ Develop and implement Code of Conduct ▪ Develop and implement GBV Action Plan	▪ MoALFC/NPCU ▪ CPCU ▪ NYS Management
Labour Influx	Spray operators (sprayers, storekeepers, drivers) etc will be required and could lead to influx of people looking for employment that could lead to influx and associated social including spread of STIs, social tensions, crime and other social ills.	▪ Preparation and implementation of LMP ▪ Develop and implement Code of Conduct ▪ Develop and implement GBV Action Plan	▪ MoALFC/NPCU ▪ CPCU
Pilferage of Pesticides	Pesticides falling in the wrong hands due to pilfering have potential for exposure.	▪ Establish a Robust Supply Chain System for pesticides from entry into Kenya to arrival in spray sites ▪ Maintenance of record of all the stock coming in and out of the storage facilities so that all the stock can be traced accordingly. This is a mechanism aimed at preventing pilferage of pesticides. ▪ Pesticide products should always be kept in a secured storage area that is accessible only to those who are	▪ MoALFC/NPCU ▪ CPCU ▪ PCPB ▪ National Police Service ▪ Store Managers ▪ Spray Teams ▪ Drivers

SPRAY PHASE POTENTIAL IMPACTS AND MITIGATION			
IMPACT TYPE	**IMPACT/ISSUES**	**MITIGATION MEASURES**	**RESPONSIBLE PARTY**
		trained to use these products, such as storekeepers and licensed applicators. ■ Pesticides should be kept securely and contained during transport and storage to reduce theft, vandalism, or the possible misuse of products. ■ If pesticides are vandalized or stolen, call the police at once, so they can put it on record. ■ Report the incident to the PCPB regulatory body. ■ All the storekeepers and managers will be trained on sound store keeping practices and procedures. ■ The trainings will be organized through the auspices of the PCPB and Agrochemicals Association of Kenya. ■ At the end of the spray round, unused pesticide will be kept under lock and seal until such a time that they can be re-used for further spraying and if expired they will be disposed in accordance to international disposal requirements for obsolete pesticides. ■ Spray Operators (spray operators must sign out all pesticide received daily and return empty sachets at the end of the day, see Distribution) ■ Drivers transporting insecticide will be trained according to the guidelines listed in Pesticide Procedures. ■ Use of inventory card containing, lot number, quantities, end of spray round reconciliation of stock	

6.4.3 Post Spray Phase

POST SPRAYING PHASE POTENTIAL IMPACTS AND MITIGATION		
IMPACT/ISSUES	**MITIGATION MEASURES**	**SPONSIBLE PARTY**
Pilferage and Community Exposure, Environmental Contamination from any remaining pesticides not used	■ Keep storage facilities up to standards described in FAO Pesticide storage and stock control manual; Storage of all pesticides, empty packaging, barrels and tubs in storage facilities ■ Ministry through multi-disciplinary teams is expected to undertake environmental monitoring of sensitive ecological sites, residue sampling and evaluating the environmental and health impacts post the control activities campaign	■ MoALFC/NPCU ■ CPCU
Community Exposure from vehicles and secondary warehouses	■ End-of-program cleaning/decontamination of interior and exterior of vehicles ■ End-of-program cleaning/decontamination of the interior of all secondary warehouses. ■ Collection of all the solid wastes at the secondary storage facilities and transferring to central warehouse. ■ Ministry through multi-disciplinary teams is expected to undertake environmental monitoring of sensitive ecological sites, residue sampling and evaluating the environmental and health impacts post the control activities campaign	■ MoALFC/NPCU ■ CPCU ■ Spray Teams ■ FAO
Environmental Contamination and Resident Exposure from spray disposal activities	■ Sprayer progressive rinse, spray operator bathing, washing of overalls, PPE and cloths used to cover furniture, ■ Ensure that a soak pit (with charcoal) is constructed for disposing residual water after clean-up ■ Storage of empty sachets until disposal option selected by the country. ■ Procurement and distribution of barrels for progressive rinse, and wash-tubs for personal hygiene; ■ Ministry through multi-disciplinary teams is expected to undertake environmental monitoring of sensitive ecological sites, residue sampling and evaluating the environmental and health impacts post the control activities campaign	■ MoALFC/NPCU ■ CPCU ■ Spray Teams ■ FAO
Residential exposure from contact with secondary warehouses	■ Decontaminate by cleaning all the secondary warehouses to ensure that exposure incidents are minimized. ■ Collect all the solid waste to the central warehouses for further disposal ■ Ministry through multi-disciplinary teams is expected to undertake environmental monitoring of sensitive ecological sites, residue sampling and evaluating the environmental and health impacts post the control activities campaign	■ MoALFC/NPCU ■ CPCU ■ Spray Teams ■ FAO

6.5 Monitoring Indicators

6.5.1 Pre-Spray Phase

PRE- SPRAY PHASE MONITORING INDICATORS			
IMPACT/ISSUES	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Accidental Spills of pesticides during road transportation to warehouse and spray sites **(Human Health and Environmental impacts)**	▪ Number of road accidents and spills reported ▪ Records showing drivers training ▪ Evidence of road worthy vehicles certificate from the transport authority ▪ Copies of driver's license as proof of qualification	▪ Once before the selection of vehicles and drivers preferably before the training.	▪ MoALFC/NPCU ▪ CPCU ▪ Spray Teams
Possible environmental contamination caused by warehouse exposure due to poor siting of warehouses, pilferage and vermin attack of the stored pesticides before spraying	Storage facility located outside of floodplain, away from nearby schools, hospitals, water courses	▪ Once before the spray operations begin ▪ Quarterly monitoring of warehouse condition to identify any structure defects for repair	▪ MoALFC/NPCU ▪ CPCU
	Storage facilities fulfils the FAO Storage and Stock Control Manual	▪ Once before the spray operations begin ▪ Quarterly monitoring on warehouse condition to identify any structure defects for repair	▪ MoALFC/NPCU ▪ CPCU
Accidental Fires and injuries in the Warehouses	Presence of firefighting equipment, thermometers, warning signs and at least 3 exits access in the warehouse Cases of fire successfully arrested	▪ Once before the spray operations begin ▪ Annual monitoring of extinguisher to ensure it is in good condition	▪ MoALFC/NPCU ▪ CPCU ▪ Fire Inspection Firm/Expert
	Availability of PPE to all the workers.	▪ Daily monitoring and supervision of all operators accessing the warehouse	▪ CPCU

PRE- SPRAY PHASE MONITORING INDICATORS			
IMPACT/ISSUES	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	Training in fire prevention and fighting Existence of an Emergency Response Plan	▪ Once before the spray operations begin	▪ MoALFC/NPCU ▪ CPCU ▪ Fire Department

6.5.2 Spray Phase

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Occupational Health and Safety Impacts	Spray operators, drivers, storekeepers and flagmen exposure due to negligence, lack of PPEs, or un-intentional exposure caused by accidents	▪ Record indicating training has been conducted on, Emergency procedures, PPE use ▪ Ability to respond as required when exposure incidents are encountered. ▪ Availability and level of utilization of PPE for all spray teams including storekeepers, drivers ▪ Pre and post medical examinations of the control teams ▪ All non-compliance documented for corrective action	▪ Training to be undertaken once during the overall spraying period ▪ Daily monitoring of operators by team leaders to ensure full use of PPE	▪ MoALFC/NPCU ▪ CPCU ▪ County Health Department ▪ Spray Team Leaders
Occupational Health and Safety Impacts	Additional Transporter Training	▪ Records to indicate training has been conducted	▪ Training undertaken before commencement of duty	▪ MoALFC/NPCU ▪ CPCU ▪ County Health Department

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
		▪ Occupational Health and Safety Policy – including on use of PPE, Training ▪ Labour Management Procedures ▪ Training Records ▪ Testing and monitoring the acetylcholinesterase (pesticide biosensor) blood level of personnel involved in the locust control. ▪ pre and post medical examinations of the control teams ▪ SOPs available to workers for safe field control activities	▪ Testing of personnel before, during and after field control activities	
Surface Water Contamination	Contamination of surface water bodies directly or indirectly through runoff from soil. Impact on the aquatic life as well as community livelihoods Possible release of the pesticides into the water bodies from accidental spills during the transportation, application of the pesticides.	▪ Analysis of water for pesticide residues (Maximum Residue Levels (MRL)	▪ Done once before and once after field monitoring activities	▪ MoALFC/NPCU ▪ CPCU ▪ KWS ▪ NEMA ▪ KALRO ▪ FAO

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Soil and Ground Water Contamination	Pesticides can cause beneficial soil microorganisms to decline thereby affecting soil quality. Contamination of soil during the disposal of containers Contamination of soil is detrimental to food security as it impacts directly on agriculture.	▪ Sampling and analysis of soil samples for pesticide residue (Maximum Residue Levels (MRL)	▪ Done once before and once after field monitoring activities	▪ MoALFC/NPCU ▪ CPCU ▪ KWS ▪ NEMA ▪ KALRO ▪ KFS ▪ FAO
Air Pollution Impacts	Use of utility vehicles on un-paved roads will cause dust emissions and increase exposure to particulate matter (PM10, PM2.5) Pesticide sprays can also drift or volatilize from the treated area and contaminate air in addition ubiquitous stench of pesticides.	▪ Air sampling and analysis to check for pesticide residue levels	▪ Done once before and once after field monitoring activities	▪ MoALFC/NPCU ▪ CPCU ▪ NEMA
Noise Emission	Potential sources of noise include motor vehicles and incessant noise of the spraying airplanes (where used). The noise impacts from	▪ Information made available on noise events	▪ Before each campaign where elevated noise is anticipated	▪ MoALFC/NPCU ▪ CPCU ▪ NEMA

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	the airplanes may be irritating and impact on community health and safety as well as to livestock and wildlife.			
Impacts on Ecological Sensitive Habitats	Application of pesticides can create a potential risk of polluting ecologically sensitive habitats such as wetlands, national parks reserves, forests, pasture grasslands, and water bodies.	■ Maps showing sensitive areas and choice of pesticide used ■ Monitoring of biota for pesticide residues (Maximum Residue Levels (MRL))	■ Mapping done before, field control activities ■ Analysis of biota done after spraying	■ MoALFC/NPCU ■ CPCU ■ KWS ■ KFS ■ NEMA ■ KALRO ■ FAO
Solid Waste Impacts	Empty pesticide containers are considered toxic under the Basel Convention and therefore require disposal to conform to toxic waste disposal regimes.	■ Training records on waste handling ■ Empty containers decontaminated (triple rinse) and punctured ■ Waste collected by a licensed waste handler ■ Monitoring of soil, water and biota for pesticide residues (Maximum Residue Levels (MRL)	■ Check on training records before activities ■ Reconciliation of inventory for remaining stock of pesticides and empty containers after field monitoring activities	■ MoALFC/NPCU ■ CPCU
Effluent Waste Impacts	The pesticide effluent waste includes surplus diluted spray solution, rinsate among others.	■ Soak-pits with charcoal available to take store rinse water and at end-of-day clean up points for effluent waste collection.	■ Once before commencement and periodically to check if charcoal is used up.	■ MoALFC/NPCU ■ CPCU

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	These are hazardous to both mankind and the environment. Contaminated effluent wastes could have adverse impacts on the communities and bio-physical environment.			
Community Health and Safety	People exposed to pesticides may suffer short-term acute health effects such as nausea, headaches, sore eyes, skin rashes and dizziness. Use of the National Police Service to guard pesticides who are armed will present risk with respect to use of armed force. NYS officers will not be used to provide any form of security in the project, the NYS officers will be unarmed.	■ Routine weekly checks of waste management arrangements should be undertaken. ■ Routine monthly monitoring or as need may arise of environmental and social aspects, community health and safety and occupational health and safety by an independent team of lead agencies ■ Analysis of soil, water and biota for pesticide residues (Maximum Residue Levels (MRL) ■ Availability of exposure treatment medicine in the hospitals	■ Analysis for MRLs Before, during and after locust control operations. ■ Periodically monitor availability and expiry dates of the medicines	■ MoALFC/NPCU ■ CPCU ■ KWS ■ NEMA ■ KALRO ■ KFS ■ FAO ■ National Police Service

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	If such spillage occurs, this may result in a fire (pesticides are flammable), injury to humans and livestock (exposure), contamination of (receptors like water, flora, soils) and risks to fauna (exposure).	■ Percentage of treatment medicines available at health facilities ■ Availability of first aid kits in storage facilities and hired vehicles ■ Public awareness (communications) campaigns ■ Records of the GRM ■ Availability of Security Management Plan ■ Number of security related grievances logged and resolved ■ EPRP in place and relevant staff are familiar with the Plan. ■ Contact list of first responders available at storage site, transportation vehicles and with the field personnel ■ Records of stock tracing ■ Training records of transporters and sprayers ■ Incident records maintained ■ MSDS of pesticide available in the store and in the transport vehicles ■ Pesticide stores secure	Ensure store is manned at all times	

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Accidental Release of Pesticides	If such spillage occurs, this may result in a fire (pesticides are flammable), injury to humans and livestock (exposure), contamination of (receptors like water, flora, soils) and risks to fauna (exposure).	▪ EPRP in place and relevant staff are familiar with the Plan. ▪ Contact list of first responders available at storage site, transportation vehicles and with the field personnel ▪ Records of stock tracing ▪ Training records of transporters and sprayers ▪ Incident records maintained ▪ MSDS of pesticide available in the store and in the transport vehicles ▪ Pesticide stores secure	▪ Check list of first responders contacts before commencement of activities ▪ Reconcile quantities (stock) of pesticide leaving and returning to warehouse for every spraying activity ▪ Ensure store is manned at all times	▪ MoALFC/NPCU ▪ CPCU ▪ KWS ▪ NEMA ▪ KALRO ▪ KFS
Livelihood and Food Security Impacts	Pesticide can poison aquatic resources if they find their way into ecosystems. The contamination pathways are through surface run offs, deposit on off target organisms, bioaccumulation also builds the contamination in the animals through their feeding pathways and water intake.	▪ Agro-ecological zones mapped out and biopesticides selected for those areas ▪ Socio-economic status of community before and after field control activities	▪ Before and after commencement field control activities	▪ MoALFC/NPCU ▪ CPCU ▪ KWS ▪ NEMA ▪ KALRO ▪ KFS ▪ FAO

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Impacts to Birds, Fishes, and Other Organisms	Pesticide application can have an impact on organisms other than the target pest. Loss of biodiversity makes ecosystems more vulnerable to changes in the environment.	▪ Sensitive habitats mapped out before spraying ▪ Monitoring of biota for pesticide residues (Maximum Residue Levels (MRL)	▪ Before and after commencement of field control activities	▪ MoALFC/NPCU ▪ CPCU ▪ KWS ▪ NEMA ▪ KALRO ▪ KFS ▪ FAO
Storage and Store Siting	Poor siting and design of pesticide storage facilities could lead to exposure and contamination of the bio-physical environment as well as human health risks due to contact. Pesticides should be received and recorded, before storing in a secure and well-ventilated dedicated store away from stores of flammable liquids and any ignition source. The store facilities should be located away from water sources to avoid contamination by accidental spills.	▪ Storage facility located outside of floodplain, away from nearby schools, hospitals, water courses ▪ Storage facilities fulfills the FAO Storage and Stock Control Manual ▪ Presence of firefighting equipment, thermometers, warning signs and at least two exits access in the warehouse ▪ Adequate natural (or mechanical) ventilation available on site ▪ Training records on fire prevention and fighting	▪ Once before the spray operations begin ▪ Periodic monitoring on warehouse condition to identify any structure defects ▪ Periodic monitoring of extinguisher to ensure it is in good condition	▪ MoALFC/NPCU ▪ CPCU

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	Storage building construction should comply with local codes. The areas where the stores are sited should not be prone to floods and should be lifted from the ground level to avoid storm run-off passing through the store. The store should be adequately ventilated either mechanically or naturally to ensure there are no dead-air spaces in the store.			
Gender Based Violence	The ASAL area are already impacted by aspects of GBV. An influx of in-migrants has potential to increase this. Risk of incidents of sex between laborers and minors, even when it is not transactional, can also increase. Deployment of paramilitary cadets to conduct ground spraying may lead women and	▪ GBV Action Plan in place ▪ HR Policy ▪ GRM in Place ▪ Staff attendance records of Sensitization meetings held on GBV/SEA/SH, DV ▪ Code of Conduct in place ▪ GRM complaints logged and resolved ▪ GBV referrals	▪ Check for the documents before commencement of field control activities ▪ Throughout implementation	▪ MoALFC/NPCU ▪ CPCU

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	girls to face SEA as a negative coping strategy.			
Impacts on Indigenous peoples	Indigenous peoples/Sub-Saharan African historically underserved traditional local communities, especially pastoralists, will be especially hard hit as their livelihoods are inextricably linked to land and pasture, which is being damaged by swarms.	■ Stakeholder Engagement Plan – Proper and appropriate communication be undertaken before control measures are undertaken. ■ Continuous consultations	■ Once before field control activities ■ Semi annually	■ MoALFC/NPCU ■ CPCU
Social Tensions	Most of the project activities will be implemented in rural and remote areas, of which many have been prone to social tensions and communal and political conflict, inhabited by different social groups, as well as IDPs and refugees.	■ GBV Action Plan in place ■ HR Policy ■ GRM in Place ■ Staff attendance records of Sensitization meetings held on GBV, DV ■ Code of Conduct in place ■ Security Management Plan in place	■ Checking of records once before field control activities	■ MoALFC/NPCU ■ CPCU ■ National Police Service
Labour Influx	Spray operators (sprayers, storekeepers, drivers) etc will be required and could lead to influx of people	■ LMP in place ■ Code of Conduct in place ■ GBV Action Plan in place ■ Number of sensitisation and awareness meetings held on	■ Checking of records once before field control activities ■ Checking the minutes of meetings and records of consultations with	■ MoALFC/NPCU ■ CPCU

SPRAY PHASE MONITORING INDICATORS				
IMPACT TYPE	**IMPACT/ISSUES**	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
	looking for employment that could lead to influx and associated social including spread of STIs, social tensions, crime and other social ills.	labour/recruitment needs for the operations	communities seeking employment.	
Pilferage of Pesticides	Pesticides should be kept securely and contained during transport and storage to reduce theft, vandalism, or the possible misuse of products. Pesticides falling in the wrong hands due to pilfering have potential for exposure, Pesticide products should always be kept in a secured storage area that is accessible only to those who are trained to use these products, such as storekeepers and licensed applicators.	■ Store Inventory Records ■ Signed Stock cards showing pesticide movements ■ Training records ■ Record and location of obsolete pesticides ■ Guards and other security controls	■ Daily accounting of pesticide and tally of used sachet ■ Periodic monitoring of the inventory/stock taking	■ MoALFC/NPCU ■ CPCU ■ National Police Service

6.5.3 Post Spray Phase

POST SPRAY PHASE MONITORING INDICATORS			
IMPACT/ISSUES	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Pilferage and Community Exposure, Environmental Contamination from any remaining pesticides not used	■ Presence of a dedicated and trained storekeeper ■ Stock records up-to-date ■ Facility double-padlocked and guarded ■ Facility physically secure Stock reconciliation ■ Cases of theft or pilferage reported	■ Daily stock reconciliation ■ Periodic monitoring of the warehouse to ensure that it does not have structural problems.	■ MoALFC/NPCU ■ CPCU
Community exposure from vehicles and secondary warehouses	■ Evidence of interiors and exteriors of vehicles cleaned ■ Evidence of cleaning of all the secondary warehouses ■ Cases of passenger exposure	■ Daily ■ Warehouses will be cleaned at the end of spray operations however daily cleaning of the warehouses will be done for hygiene reasons	■ MoALFC/NPCU ■ CPCU
Environmental contamination and resident exposure from spray disposal activities	■ Reported cases of residential exposure ■ Evidence of progressive rinsing during all post spray clean ups ■ Evidence of soak pits in all the return sites for clean-up designed and constructed in the acceptable format ■ Evidence of empty containers awaiting recapture by manufacture	■ Daily	■ MoALFC/NPCU ■ CPCU

POST SPRAY PHASE MONITORING INDICATORS			
IMPACT/ISSUES	**MONITORING INDICATORS**	**MONITORING FREQUENCY**	**RESPONSIBLE PARTY**
Environmental contamination and resident exposure from spray disposal activities	■ Reported cases of residential exposure ■ Evidence of progressive rinsing during all post spray clean ups ■ Evidence of soak pits in all the return sites for clean-up designed and constructed in the acceptable format ■ Evidence of empty containers triple rinsed and punctured	■ Daily	■ MoALFC/NPCU ■ CPCU
Residential Exposure from contact with secondary warehouses	■ Level of decontamination of warehouses after spray operations end	■ Decontamination to occur at the end of the spray operations. ■ Daily cleaning and collection of waste to be undertaken.	■ MoALFC/NPCU ■ CPCU

Table 6-1. Estimated Mitigation Measures Budget

Item	Kshs
Purchase of pesticides	550,140,000
Purchase of motor vehicles	132,324,800
Training of Spray teams	135,312,980
Purchase of PPE's	35,520,000
Purchase of ICT equipment	9,594,000
Purchase refined fuels and lubricants for transport	20,000,000
Hire of transport, equipment	314,207,200
Purchase of general office supplies (papers, pencils, forms, small office equipment	846,800

Contracted professional services	66,836,615.90
Daily Subsistence Allowance (NYS and Various county commissioners)	112, 217,604.10
Consultations	2,000,000.00
Contingencies	5,000,000.00
Total	**1,384,000,000**

6.6 Environmental and Social Management Process

This ESMF contains potential mitigation measures and monitoring indicators (***see tables above***) through which the adverse impacts for specific spray may be managed. The application of pesticides through aerial spraying is categorized as a **high**-risk category in accordance with the EMCA 1999 and (amendment) Act 2015, and therefore requires the preparation of ESIA for review and approval by NEMA for each operational site/area. However, due to the emergency nature of the project, a waiver will be sought by the MoALFC from NEMA to instead use this ESMF and the IPMP prepared for this Project and preparation of sub project specific IPMPs (see chapter 7) rather than conducting ESIA studies for each spray operation and subject the same to the approval process as per the EIA/EA regulations which is lengthy and would negate the emergency nature of and context of the project.

6.7 Monitoring Plans

6.7.1 Monitoring of Environmental and Social Indicators

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

Monitoring Levels-Overall Project Level

The Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC) through the established NPCU for this project will be responsible for monitoring and reporting on compliance with the ESMF. The NPCU will report results of this monitoring to the Bank.

Food and Agricultural Organisation

Food and Agricultural Organization is a key implementing partner in the ELRP and shall regularly review the Project's implementation, monitoring, and reporting provisions made under the Project.

Bank's Monitoring Support

The Bank will provide the second line of monitoring compliance and commitments made in the IPMPs through supervision albeit in a less frequent manner and detail as compared to the first line of monitoring that will be undertaken by the NPCU. The Bank will further undertake monitoring during its scheduled implementation support missions.

Table 6-2.Monitoring Indicator

Monitoring Level	Monitoring Issue	Verifiable Indicators	Responsibility
ESMF Level	■ Adequate dissemination of ESMF and IPMP to stakeholders. ■ Capacity building and training programs	■ Record of consultations and meetings; ■ Workshop reports.	■ MoALFC
County/Spray Operational Level	■ Preparation of Integrated Pest Management Plans /reports ■ Monitoring and evaluation	■ Consultants hired to prepare IPMPs ■ Integrated Pest Management Plans, ■ Monitoring Reports, ■ Annual Environmental Audit Reports	■ MoALFC

6.8 Monitoring Roles and Responsibilities

6.8.1 NPCU Environmental and Social Specialists

The MoALFC/NPCU has recruited 1 environmental specialist and 1 social specialist who will provide oversight, review of screening reports, review of IPMPs, monitoring and evaluation of all the control activities. The specialists will ensure that monitoring of the spray operations are undertaken and findings reported periodically so that needed technical assistance to ensure compliance is provided.

6.8.2 CPCU Environmental and Social Specialists

At the County level, project coordinating units will be established and will also include 1 environmental specialist and 1 social specialist who will provide oversight, screening of proposed sub projects, preparation of IPMPs monitoring and evaluation of all the control activities.

6.8.3 National Environment Management Authority

The EMCA 1999 and (amendment) Act 2015, places the responsibility of environmental protection on NEMA as the coordinating agency. NEMA is charged with the overall role of providing oversight in regard to monitoring for all project activities that have potential impacts on the environment in Kenya. NEMA will undertake periodic monitoring of the projects by making regular site inspection visits to determine compliance with the projects ESIAs approved and will further rely on the submitted reports submitted for each project annually as required by EMCA as a way of monitoring. NEMA is mandated to provide approvals and ESIA licence based on the ESIA reports submitted, without NEMA's approval implementation of project do not move forward. The ELRP is categorized as a **high**-risk category and therefore requires the preparation of ESIA for review and approval by NEMA for each operational sites/areas. However, due to the emergency nature of the project, a waiver will be sought by the MoALFC from NEMA to instead use the IPMPs rather than conducting ESIA studies for each spray operation and subject the same to the approval process as per the EIA/EA regulations which is lengthy and would negate the emergency nature of and context of the project. All monitoring reports as well as annual environmental audit report will be submitted to NEMA as specified by the environmental assessment and audit regulations.

6.9 Reporting

6.9.1 Regular Reporting

MoALFC will be required to prepare and submit to the Bank regular monitoring progress reports on the environmental, social, health and safety (ESHS) performance of the Project, including but not limited to, the implementation of the ESCP, status of preparation and implementation of E&S documents required under the ESCP, stakeholder engagement activities, and the functioning of the grievance mechanism. Reporting will be quarterly and annually throughout the project implementation period

6.9.2 Incidents and Accidents

MoALFC will promptly notify the Bank (within 48 hours) of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers including child abuse, gender-based violence, pesticide spills or misuse, diversion of pesticides or any dispute between local communities and

the National Youth Service assigned to carry out locust control operations under the Project. MoALFC will provide sufficient detail regarding the incident or accident, indicating immediate measures taken or that are planned to be taken to address it, and any information provided by any contractor and supervising entity, as appropriate. Subsequently, as per the Bank's request, MoALFC will prepare a report on the incident or accident and propose any measures to prevent its recurrence. The incident report will be prepared by undertaking Root Cause Analysis (RCA), after the Bank's request for such an analysis, along with measures to prevent recurrence to be provided within fifteen days.

7 PROJECT REVIEW, COORDINATION & IMPLEMENTATION ARRANGEMENTS

This chapter describes the implementation and coordination arrangements with respect to management of the environmental and social risks and impacts of ELRP, the reporting requirements and review of documents.

7.1 Environmental and Social Instruments

The Environmental Management and Coordination Act (EMCA) 1999 and EMCA (amendment) 2015, classifies projects into High, Medium and Low risk. It further lists projects that would fall under each of the risk classifications. The ELRP is categorized as **High-Risk** project falling under Agriculture (8A) (aerial spraying), which requires preparation of ESIA study report.

However, due to the emergency nature of the project, a waiver will be sought by the MoALFC from NEMA to instead use the IPMPs rather than conducting ESIA studies for each spray operation and subject the same to the approval process as per the EIA/EA regulations which is lengthy and would negate the emergency nature of and context of the project. A multi-disciplinary team will be constituted by the MoALFC to undertake monitoring of the desert locust control activities including environmental and social monitoring of adverse impacts as provided for in the IPMP prepared as a separate report but annex to this ESMF.

7.1.1 Development of Framework IPMP and Sub Project IPMPs

A framework level IPMP has been developed for this project and as part of the ESMF and remains the principal instrument that will guide application and use of pesticides in this project. The framework level IPMP will be used to guide the preparation of sub project level IPMPs prior to undertaking spray activities in a selected area (s) within the 15 Counties.

7.1.2 Preparation and Review of Sub Project IPMPs

Once a spray area (sub project) is identified to be infested by locusts, through the surveillance activities aimed at monitoring the breeding sites and migration of the desert locusts and a decision is made to undertake spraying, sub project IPMPs will be prepared prior to commencement of the spray operations. The sub project IPMPs will be prepared by the environmental and social specialists in each of the established County Project Coordination Units with the assistance of the Sub County Technical Teams.

The project may also engage independent consultants preferably NEMA registered lead expert to prepare IPMPs on its behalf in the event that an increased demand in spray areas is experienced.

The IPMPs will be submitted to the environmental and social specialists located at the NPCU for review and approval before spray operations begin.

The contents of the IPMP reports will include the following; -

- Introduction and nature of the project;
- Stakeholder Engagement
- Baseline Data (location of the project including the bio-physical and socio-economic characteristic of area that may be affected by the project's activities;

- Policy, Legal and Regulatory Framework For Pest and Pesticide Management In Kenya
- Integrated Pest Management Plan
- Institutional Arrangements and Coordination Mechanism
- Annex (Waste Management Plan, Emergency Preparedness Plan)

7.1.3 Sub Project Screening

Sub project screening will be undertaken once a decision is made to undertake spraying in an area based on the surveillance activities. Screening will be conducted in order to map and understand the bio-physical characteristics of the targeted spray area (sub project). Screening is expected to identify any ecological sensitive habitats including wetlands, surface and ground water bodies, important bird areas, parks, reserves, as well as agro-ecological zones, grazing areas and agricultural activities that may be adversely affected by the application of synthetic pesticides specifically Fenitrothion which has been selected for use in this project.

Based on the outcome of the screening, a determination on the pesticide to use will be recommended and indicated in the screening form. In principle, use of the biopesticide (metarhizium) already selected will be recommended in all cases where sub project areas infested by the desert locust have been identified to have ecological sensitive habitats.

Screening will be undertaken using a screening form (see annex C) before commencement of spray operations and will be undertaken by the environmental and social specialists based at the CPCU with the assistance of the Sub County Technical Teams. The screening reports will be submitted to the environmental and social specialists located at the NPCU for review and approval before spray operations begin.

Before spraying activities are carried out, screening shall be conducted based on the exclusion criteria in the ESCP, using the screening form (annex C). The following is a negative list of activities excluded for financing under the project:

- Activities that may cause long term, permanent and/or irreversible (e.g. loss of major natural habitat) impacts;
- Activities that have a high probability of causing serious adverse effects to human health and/or the environment, other than associated with spraying to control desert locust;
- Activities that may have significant adverse social impacts and/ or may give rise to significant social conflict;
- Activities that may affect lands or rights of Traditional Local Communities or other vulnerable and marginalized groups; and
- Activities that may involve involuntary resettlement or land acquisition or impacts on cultural heritage

7.1.4 Annual Environmental and Social Audit

An independently commissioned environmental and social audit may be carried out on an annual basis (subject to NEMA's guidance based on the absence of ESIA). NPCU, will lead the implementation of any corrective measures that are required. However, such corrective action plans will be shared with the Bank for review purpose. An audit is necessary to ensure (i) that the follow-up sub project instruments (IPMPs) are being implemented appropriately, and (ii) that

mitigation measures are being identified and implemented. The environmental and social audit will be able to identify any amendments in the ESMF approach that are required to improve its effectiveness.

8 CAPACITY BUILDING, TRAINING AND TECHNICAL ASSISTANCE

This chapter describes the existing human resources capacity within the MoALFC that will provide focal support in the management and mitigation of the environmental and social risks and impacts as well strengthening that will be provided to the NPCU, CPCU and MITT to enable effective execution of roles and responsibilities and increase understanding on the World Bank's ESSs as applicable to the ELRP.

8.1 Institutional Capacity for ESMF Implementation

The locust control activities at the national level will be implemented by the MoALFC. The MoALC has experience in implementing different projects supported by the World Bank financing which used the Environmental and Social Operational Policies including Kenya Climate Smart Agriculture Project, the National Agriculture and Rural Inclusive Growth Project and the Regional Pastoral Livelihood Resilience Project and others.

Within the MoALFC a Project Coordination Unit responsible for day-to-day implementation of activities under the leadership of the National Project Coordinator (NPC) has been established and staffed with an Environmental Specialist, Social Specialist Monitoring and Evaluation Specialist and GBV Expert among other non-environment and social experts. For smooth integration of project operations with other ongoing efforts on this matter, the project will operate within the structures established by the MoALFC specifically to deal with the locust crisis in the country. These include the Multi-Institutional Technical Team (MITT) and the Locust Command Centre (LCC) under the Plant Protection Services (PPS) Division.

The MITT on desert locusts is the main policy and technical advisory body that supports the Ministry to proactively address the locust crisis facing Kenya. Members of the MITT are drawn from the following institutions: Ministry of Agriculture-Plant Protection services, Kenya Agricultural Research Organization (KALRO), Kenya Plant Health Inspectorate Service (KEPHIS), Pest Control Products Board (PCPB), DLCO-EA, FAO, University of Nairobi (UoN), International Centre for Insect Physiology and Ecology (Icipe), Centre for Agricultural and Biosciences International (CABI), Joint Agriculture Secretariat (JAS) and Council of Governors (CoG). The MITT will have expanded to include other agencies such as NEMA, KWS, KFS, KALRO, DVS and Pests Control Products Board (PCPB) among others for monitoring effects of the chemicals being used in locust control on human health, water, soils, livestock and wildlife.

- **National Project Coordination Unit: -**A National Project Coordination Unit (NPCU) has been established comprising of officers responsible for day-to-day implementation of activities under the leadership of the National Project Coordinator (NPC). These include for component 1, the National Project Coordinator, Component 1 Leader, Environmental Specialist, Social Standards Specialists, GBV Expert, Grievance Redress Expert, Monitoring and Evaluation Specialist, Financial and Procurement Specialists.
- **County Project Coordination Unit: -** The Project will utilize the existing KCSAP and NARIG County Project Coordinating Units (CPCUs) that are established which are headed by the County Project Coordinator (CPC) who will also double as either the Crops or Livestock Specialist. The CPCU members will include, the CPC, Livestock/Crops

Specialists, Environment and Social Standards Specialist, Monitoring and Evaluation Specialist, Finance and Procurement Officers. The CPCU will engage services of technical experts on need basis.

In order to strengthen the capacity of the NPCU, CPCU and other implementing agencies, the following capacity building efforts are recommended. The World Bank and FAO will train the NPCU on topics highlighted in the table below. The NPCU will thereafter provide training to the CPCU and sub county technical teams on the topics outlined below supported by FAO. To ensure that the message and quality of training is assured, NPCU will besides using FAO, will engage consultants familiar with Bank's ESF, ESS and the other relevant instruments to support the county-based trainings.

Table 8-1. Capacity Building

Training Topic	Target	Trainers
World Bank ESF, ESS	NPCU, MITT	World Bank
Monitoring of impacts of pesticides on soil, water, health, biodiversity, livestock etc.	NPCU, CPCU, NEMA, KWS, KFS, DVS, KALRO, KEPHIS	FAO
County Project Coordinating Unit		
World Bank ESF, ESS	CPCU	NPCU
ESMF, IPMP, GBV Action Plan, SMP, GRM	CPCU	NPCU
Monitoring of impacts of pesticides on soil, water, biodiversity, livestock etc	CPCU	NPCU
Sub County Technical Teams		
World Bank ESF, ESS	Sub County Technical Teams	NPCU and CPCU
Monitoring of impacts of pesticides on soil, water, biodiversity, livestock etc	Sub County Technical Teams	NPCU and CPCU
ESMF, IPMP, GBV Action Plan, SMP, GRM	Sub County Technical Teams	NPCU and CPCU

9 PUBLIC CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS

This chapter describes the consultations conducted during the preparation of the ESMF, the disclosure arrangements and the grievance redress mechanism in place for use during the project implementation.

9.1 Public Consultation

MoALFC presented this ESMF as a draft to identified stakeholders as part of public consultation and more specifically to seek input from the stakeholders on potential impacts and mitigation measures of the ELRP. The consultations were consulted virtually due to the COVID-19 pandemic that restricted physical interactions (social distancing). MoALFC provided adequate notice to the stakeholders with respect to the date and time for the consultations, presented the draft ESMF and presentation materials in advance and facilitated the stakeholders by ensuring adequate internet connectivity. The issues raised by the stakeholders and responses including list of participants are included in Annex A and were used in the finalisation of this ESMF. Key issues are summarised below.

Table 9-1. Summary of Stakeholder Consultation Concerns

Concerns	Response
Concern over impacts of spray operations on apiculture and need for adequate mitigation measures.	The project will use biopesticides in areas where apiculture is practised.
Concern over impacts of spray operations on avifauna and need for adequate mitigation measures	The project will use biopesticides in areas where birdlife especially those that are considered important are known to exist. There will be mapping of such areas prior to commencing spray operations.
Concern over impacts of spray operations on non-target organisms (poultry) feeding on contaminated dead locust and need for adequate mitigation measures	Awareness creation targeting community members will be undertaken to inform on how to handle dead locusts including sweeping and disposing the locusts in pits/burning prior to releasing poultry to feed/locking poultry and other livestock during spraying and observing re-entry timelines.
Concern over impacts of spray operations on livestock feeding on contaminated pasture of locust and need for adequate mitigation measures	Awareness creation targeting community members will be undertaken to inform on how to handle dead locusts including sweeping and disposing the locusts in pits/burning prior to releasing poultry livestock during spraying and observing re-entry timelines.
Concern on the quality of staff to be hired to undertake environmental monitoring	MoALFC to conduct recruitment of competent staff including provision of training and capacity building to the staff upon recruitment.

Request to establish Sub County Technical Teams as part of the organisational structure and implementation set up	MoALFC to address this issue in follow on deliberations and report recommendations to the Counties.
Reservations on use of National Youth Service in the implementation and request to employ local youth instead	MoALFC to address this concern in follow on deliberations and report recommendations to the Counties.

9.2 ESMF Disclosure

The ESMF will be disclosed in accordance with the ESS 10 disclosure standards. The ESMF and IPMP will be at disclosed on the website of MoALFC and also forwarded to the Bank for disclosure at the Bank's external website. The ESMF will also be disclosed in the project areas and made accessible to the beneficiaries.

9.3 Grievance Mechanism

A key risk relates to potential inadequate, ineffective and inappropriate stakeholder and community engagements and disclosure of information leading to exclusion of truly vulnerable, marginalized and minority members of the community from project benefits, amplified by the context of limited resources against widespread need. Others include elite capture where project benefits are diverted to less needy individuals and locations and poor access to beneficiaries for meaningful community engagements and difficulty in monitoring for social harm.

The Ministry has prepared a Stakeholder Engagement Plan (SEP) which provides the framework for identification of stakeholders, gauging stakeholder interest and providing systematic means and processes of inclusive and meaningful engagements with the stakeholders and communities in a way that influences project design and implementation under all components.

A project wide Grievance Redress Mechanism (GRM) is being set up tailored to the different project interventions, geographical scope of each intervention and in accordance with the existing procedures. The GRM is designed to address concerns and complaints promptly and transparently with no cost or discrimination towards project affected communities. A GRM officer stationed at the NPCU will be the point of contact for handling grievances related to the project.

Reports will be periodically shared by each agency on complaints and grievance logs with the PIU for monitoring purposes. The NPCU will maintain a documented record of stakeholder engagement and GRM, including a description of the stakeholders consulted, a summary of the feedback/grievances received and a brief explanation of how the feedback was considered, or the reasons why the issue could not be resolved. For complaints related to GBV, reporting and response protocol including identification of SEA/H and GBV-sensitive channels to be integrated into the grievance mechanism, and requirements for enabling survivor-centered care. The GBV GRM in the Stakeholder Engagement Plan will be adopted.

Under Component 1, robust community engagements will be conducted before commencement of project activities as well as sensitization on the availability of a project GRM to support the systematic uptake, processing and resolution of project-related complaints and grievances. For future spraying activities, a rapid information dissemination campaign will be designed and disseminated in a medium with a wide reach, preferably local radios on the techniques of spraying,

the chemicals used and its impacts on human health, crops and livestock. Vulnerable populations such as the elderly and people with disabilities will be supported in sheltering from the impacts of the spraying. Moreover, during preparation of the ESMF a series of consultations with different stakeholders will be held. These include drought-affected people, farmers in selected irrigation schemes, local government officials, extension workers, local leaders, non-governmental organizations and central government officials. The GRM will receive and address the complaints related to the NYS activities.

9.3.1 National Environment Complaints Committee

The National Environmental Complaints Committee (NECC) was established under Section 31 of the Environmental Management and Co-ordination Act, 1999. It was formerly known as the Public Complaints Committee (PCC) but its name changed in the EMCA (Amendment) No. 5 of 2015). It is an important institution in the assessment of the condition of the environment in Kenya. It plays an important role in the facilitation of alternative dispute resolution mechanisms relating to environmental matters. The NECC makes recommendations to the Cabinet Secretary and thus contribute significantly to the formulation and development of environmental policy.

9.3.2 National Environment Tribunal

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA licence or by a local community upon the grant of an EIA licence to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

9.3.3 Environment and Land Court

The Constitution of Kenya (CoK) has further provided for specific courts to deal with land and environment (Environment and Land Court) that are charged with playing a vital role in reconciling environmental related disputes and these courts will serve as the ultimate stop in the event of disputes or complaints that cannot be resolved through other alternative means.

9.4 World Bank's Grievance Redress

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond.

For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit **www.inspectionpanel.org.** It is however recommended that a project level grievance mechanism that has been agreed upon by all stakeholders is put in place early, to avoid small matters snowballing into conflicts that may lead to delayed disbursement and implementation.

10 IMPLEMENTATION BUDGET

This chapter describes the estimated cost, budget for the implementation of the ESMF and outlines the activities and summary of costs.

10.1 Estimated Budget

The estimated total cost for ESMF implementation is indicated in the **table 9-1** below.

Table 10-1. Overall Estimated Costs Budget For implementation of ESMF

Activity	Description	Unit cost, US$
Training and awareness on the ESF, ESSs, ESMF, IPMP, SMP, GBV Action Plan, LMP	Workshops	150,000.00
Training and awareness on environmental monitoring targeting.	Workshops	150,000.00
Awareness creation and sensitisation of local communities on adverse effects of pesticides and mitigation measures	Electronic and print media Community meetings	250,000.00
Pre and post spray medical test	Medical tests targeting spray control teams and regular blood test to check exposure/toxicity levels through the acetylcholinesterase blood test.	1,000,000.00
Pesticide environmental monitoring	Analysis of samples of water, soils, crops and livestock to ascertain exposure levels.	500,000. 00
Preparation of sub project IPMPs	Development of sub project IPMPs including Waste Management Plans; Emergency Preparedness Plans etc	200,000.00
Recruitment of environmental and social specialists	Implement ESMF, IPMP, GBV, LMP, SMP etc	1,500,000.00
Grievance Redress Management	Meetings and consultations etc	150,000.00
Contingency	Unforeseen activities	200,000.00

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12 ANNEX

12.1 Annex A. List of Stakeholders Consulted/Issues and Responses

Commenter	Issue	Response
Josephine Emase, Department of Livestock, Turkana County	We received the documents very late and we had not reviewed it to give any concrete response. We shall review and submit our comments by close of business in Thursday July 9th, 2020. There is a need to have a separate GRM for the project so that the project specific grievances are reported accordingly and adaptive to the current situation of Covid 19.	As a result of obtaining the ESMF late, MoALFC has provided an additional 2 weeks for comment electronically.
Atana James, Turkana County.	We received the documents very late and we had not reviewed it to give any concrete response. We shall review and submit our comments by close of business in Thursday July 9th, 2020. Currently there is an ongoing effort to manage locust in Turkana County involving the County Government and other partners. However, it seems that they are being overwhelmed by the task. We shall review the status later and update accordingly in our written submission by close on Thursday 9th, 2020.	As a result of obtaining the ESMF late, MoALFC has provided an additional 2 weeks for comment electronically.
Ben Miranga Environment Safeguard Specialist, World Bank	The Bank takes very serious the process of undertaking stakeholders' consultation and that' that is the reason why amidst COVID 19, we had to organize a virtual meeting to ensure stakeholders are consulted. There is need to allow the relevant stakeholder adequate time for reviewing the report and submitting their input.	Noted and MoALFC has agreed to provide 2 weeks for stakeholder comments electronically.
Eric Kaindi, Kitui County	I have not reviewed the document as I received it late, I will review it and submit the comments by close of business in Thursday July 9th, 2020. In Kitui County, NYS sprayed the locust infested areas and it seemed that the assignment was done well, no more locust in the County.	The excellent services by NYS is noted.
Fredric Odero Consultant African Beekeeping Resource Centre	There is need to have adequate and appropriate baseline information of the affected Counties for example the birdlife as well as bee breeding sites. There is need to detail how community health and safety will be done during project implementation, The report had documented the need to provide advance warning to the beekeepers so that they can restrict bees from leaving the beehives. However, this may not be realistic as many beehives are the local type and its difficult for the farmer to restrict the bees from leaving the hives. Thus, there is a need	Noted and revised ESMF will contain additional information on concerned subject. Site specific IPMPs will provide in detail how community health and safety will be managed. The ESMF also addresses the community health and safety impacts.

	to provide the alternative mechanisms for handling the traditional beekeepers.	
Francis Toroitich, Baringo County.	I have not reviewed the document as I receive it late, I will review it and submit the comments by close of business in Friday July 10th, 2020. There is urgent need to help the bee farmers as well as the pastoralists since the locust swarms affected the seed bank for pasture and fodder establishment.	Noted and this is the reason why the ELRP has been conceived to mitigate the locust impacts on pasture.
Dr. Zachary Kinyua, Assistant Director & Head, Crop Health Research, KALRO.	The project should gather adequate and appropriate data that should be synthesized for future use. • There is need to hire adequate and competent team to be involved in this data collection, • The specific data to be collected may include but not limited to: o The side effect for the use of pesticides o How many people will be affected by the negative impacts of the pesticides, o What are some of the non-targeted insects that may be affected? o What are the effects to livestock after spraying of the pastures?	All the concerns on data collection have been noted and the PIU will include these in its monitoring and evaluation component.
Jane Waititu and Fredrick Odera.	Beekeeping is very important in the proposed locust program and some of the documents to support this are outline as below under the different titles as outlined in the draft documents. The legal frameworks governing the activities should include - *National Beekeeping Policy, 2013* - *Livestock* Bill, 2020 Multilateral Environmental Agreement and Guidelines should include also the following documents will help in understanding how to relate pollinators and the locust project as well as livelihood improvement • UN FAO (2016) Protocol to detect and Assess Pollination Deficits in Crops. • UN FAO (2016) Protocol to Detect and Monitor Pollinator Communities. • UN FAO (2007) Plan of Action of the African Pollinator Initiative.	Additional legal national statutes and international covenants proposed have been included in revised ESMF.

	• UN FAO (2017) Mainstreaming Ecosystem Services and Biodiversity into Agricultural Production and Management in East Africa. • UN FAO.WHO (2016) International Code of Conduct on Pesticide Management. Guideline on Highly Hazardous Pesticides. • UN FAO.WHO (2014) International Code of Conduct on Pesticide Management. • UN FAO (2014) Pollinator Safety in Agriculture. • UN FAO (2013) Aspects Determining the Risk of Pesticide to Wild Bees. Risk Profiles for Focal Crops.	
	The baseline should include as a sub-topic Pollinator protection and conservation. This is due to the fact that data on the status and trends of wild pollinators is sparse. Data likewise on risk assessments of the status of wild insect pollinators such as wild bees and butterflies according to the Red List assessments of the International Union for Conservation of Nature (IUCN) are geographically similarly restricted but indicate high levels of threat with proportions of threatened species often exceeding 40%.	Comments noted and will be incorporated in the revised ESMF
	Noting that the importance of pollinators and pollination for all ecosystems, including those beyond agricultural and food production systems, particularly to the livelihoods and culture of indigenous peoples and local communities, and recognizing the important contribution of activities to promote the conservation and sustainable use of pollinators and pollination functions and services in achieving the Aichi Biodiversity Target as well as the Sustainable Development Goals.	Comments noted and will be incorporated in the revised ESMF
	Activities to promote the conservation and sustainable use of pollinators and pollination functions and services are key elements in the transition towards the achievement of more sustainable food systems by fostering the adoption of more sustainable practices among agricultural sectors and across sectors.	Comments noted and will be incorporated in the revised ESMF
	Many of the main direct drivers of pollinators decline have remained the same as originally identified by Convention on Biological Diversity (CBD) in its first decision on pollinators: habitat fragmentation and land use change, agricultural and industrial chemicals, parasites and diseases, and invasive alien species. In addition to those, the importance of other direct drivers has emerged, such as climate change, intensive agricultural practices and monoculture, as well indirect drivers like herbicides. Other important	Comments noted and will be incorporated in the revised ESMF

	findings include the evidence of lethal and sub-lethal effects on bees caused by pesticides, and the understanding that the combination of different drivers can increase the overall pressure on pollinators.	
	In the broader context, pollinators can be considered an important link for agriculture, forestry, biodiversity, food security, food safety and nutrition. Pollinators can be a transformative agent by fostering sustainable practices among agricultural sectors. Pollinator-friendly measures have the potential to increase productivity and sustainability and guarantee the long-term viability and profitability of food production systems.	Comments noted and will be incorporated in the revised ESMF
	Global agriculture has become increasingly pollinator-dependent; much of this dependence is linked to wild pollinators. Beyond marketable products, pollinators provide non-monetary benefits for human well-being as sources of inspiration for arts and crafts, religion, traditions or recreational activities.	Comments noted and will be incorporated in the revised ESMF
	Community Health and Safety section, it is like it has been decided that lethal chemicals will be used as "No segment of the population is completely protected against exposure to pesticides and the potentially serious health effects, especially to high risk groups (WHO, 1990)". Under 6.2.6 mitigation measures, it has been mentioned that use of Bio-pesticides and Ultra-low Volume (ULV) formulations could be used, there is need to rephrase the statement under Community Health Safety.	Comments noted and will be incorporated in the revised ESMF
	Beekeeping should fall under (6.2.6 Impacts on Ecological Sensitive Habitats) but not under (6.2.9 Community Health and Safety). What can be included under 6.2.9 Community Health and Safety as far as beekeeping is concerned is Bee products that will be consumed by the community that will in turn affect their health.	Comments noted and will be incorporated in the revised ESMF
	Warning to beekeepers may not be appropriate since bees are wild in nature and there are those that are wild and very important in pollination in the ecosystem. There is a wide range of hive technologies used in beekeeping not conforming to the standards and are not restricting all the domesticated bees and therefore may not restrict bees during locust spraying periods.	Comments noted and will be incorporated in the revised ESMF
	Those who will be engaged in spraying must be cautious when approaching bee breeding sites. Awareness on proper application of chemicals should be promoted to avoid pesticide/chemical poisoning to all pollinators.	Comments noted and will be incorporated in the revised ESMF

	All stakeholders in the domesticated pollinators including bees should be encouraged to come together to promote standardization of nests/hives/any other technology.	Comments noted and will be incorporated in the revised ESMF
	Livelihood and Food Security Impact (6.2.11)–its noted that Beekeeping is one of the Livelihood and Food Security activity that will be affected by the locus program. Under Mitigation Measures, we should include Community empowerment on beekeeping activities. This will also promote restoration of plant resources since bees depend on nectar and pollen from plants. Water conservation will also be promoted for bees and other pollinators.	Comments noted and will be incorporated in the revised ESMF
Gustavus Muli	Being a Master trainer with NARIGH for farmer field schools in Kitui, he noted that when the locusts invaded Kitui County they were controlled by aerial spraying and locals drumming up noise to scare them. The nymphs that hatched later were controlled by the NYS control teams effectively.	The effective use of NYS to control the desert locusts is noted.
Turkana county external stakeholders' inputs to the drafts–James Atana, Josephine Emase and Joyce Ebenyo	In the **negative** effects the following should be included; • The Bee lives will be threated, some bee will die from pesticides poisoning, some will migrate because the habitat would have been contaminated. • Some will abscond the hives all this will impact on bee lives and will reduce its populations from an ecosystem. • Death of poultry e.g. turkeys, chicken after consuming the dead sprayed locust. A farmer in a place reported loss of 13 turkeys in the ongoing spraying of desert locust • Livestock will suffer from diarrhoea as a result of ingesting locust droppings when foraging	Additional adverse impacts noted and will be included in the ESMF.
	On pg12: Institutional Arrangement and Capacity Building Environment and social expert to liaise with the County agriculture officer – **add** County livestock production officer and sub county livestock production officer who will help in liaison.	Comment is noted and will be included in ESMF
	Pg.15: summary of roles and responsibilities for ELRP Include the following: **Add** the Sub County Technical Teams **(SCTTs)** to be involved	Comment is noted and will be included in ESMF
	On page 13 on the use of NYS for ground spraying FAO and Turkana County government, under the Ministry of Agriculture pastoral economy and fisheries engaged NYS in the earlier campaigns, during	The concern and apprehension on the use of NYS in Turkana County based on previous experience is noted and

	ground spraying in the Control of Desert locust in Turkana County, due to the social risks associated with deployment of NYS and their unregulated activities resulting in the alleged sexual abuse and exploitation, the Turkana County Government through the Ministry of Agriculture pastoral economy an fisheries and partner- Peace Winds Japans (PWJ) in the ongoing desert locust control have reached a conclusion and resorted to engage local youths to be involved in ground spraying during locust control instead of using NYS. These local youth, were selected from various wards and sub Counties from where they come from, where they have been trained and deployed to their wards and sub Counties where they will be working from. This is advantageous because this young women and men are known to the local leadership and residents. This aspect will reduce chances of sexual exploitation and abuse, COVID 19 and HIV/AIDs spread.	MoALFC will look into this and provide guidance.

12.2 Annex B. Integrated Pest Management Plan

-See separate attachment-

12.3 Annex C. Screening Form

Format 1.0: **SCREENING CHECKLIST (Filled and prepared by CPCU environmental and social specialists)**

EMERGENCY LOCUST RESPONSE PROGRAMME:	
Spray Location/Area	[type here]
Estimated cost (USD)	[type here]

Exclusions / Exclusion List	**Yes**	**No**	
Activities that may cause long term, permanent and/or irreversible (e.g. loss of major natural habitat) impacts.	☐	☐	
Activities that have a high probability of causing serious adverse effects to human health and/or the environment, other than associated with spraying to control desert locust.	☐	☐	
Activities that may have significant adverse social impacts and/ or may give rise to significant social conflict.	☐	☐	
Activities that may affect lands or rights of Traditional Local Communities or other vulnerable and marginalized groups.	☐	☐	
Activities that may involve involuntary resettlement or land acquisition or impacts on cultural heritage	☐	☐	
If the answers to any of the above is 'yes', the proposed activity is NOT ELIGIBLE for financing under the project.			
Will the Project:	**Yes**	**No**	**Indicate Approximate Distance (metres)**
If Answer is YES, Indicate Approximate Distance			
Are the spray areas located in or close to a protected forest? If yes, please indicate the name of the forest and protection status.	☐	☐	
Are the spray areas located in or close to a protected national park or reserve? If yes, please indicate the name of the national park or reserve.	☐	☐	
Are the spray areas located in or close to a water body including, river, lake, stream, lagga etc? If yes, please indicate the name of the water body and protection status.	☐	☐	
Are the spray areas located in or close to a wetland? If yes, please indicate the name of the wetland and protection status.	☐	☐	
Are the spray areas located close to an underground water source e.g. (boreholes, wells, water pan)?	☐	☐	
Are the spray areas located in or close to Important Bird Areas (IBA) site? If yes, please indicate the name of the IBA site.	☐	☐	
Are the spray areas located in or close to areas where significant organic farming is practised?	☐	☐	
Are the spray areas located in or close to areas with significant land used as livestock grazing areas?	☐	☐	

Are the spray areas located in or close to areas with significant apiculture activities?	☐ ☐	

Attach relevant maps or photographs of the spray area including satellite maps etc.

If the answer to any of questions "Yes", select the appropriate pesticide for the spray operations as guided by the ESMF.

CONCLUSION

Which course of action do you recommend?

☐ **Use Biopesticide (Metahirzium)** ☐ **Use Organophosphate (Fenitrothion)**

Format 2.0: SCREENING CHECKLIST REVIEW FORM (Prepared by NPCU Environment and Social Experts)

	Yes	No
Based on the location of the spray operations and review of the screening form, please explain whether the CPCU's description of the locations are satisfactory.	☐	☐
If 'No', please explain: **[type here]**		
Please explain whether their responses to the questions on recommended pesticide to be used is satisfactory	☐	☐
If 'No', please explain: **[type here]**		

REVIEWER'S CONCLUSION
Which course of action do you recommend?

CONCLUSION

Which course of action do you recommend with relation to pesticide use?

☐ **Use Biopesticide (Metahirzium)** ☐ **Use Organophosphate (Fenitrothion)**

[Type here]

Review form completed by: [type here]

Name: [type here]

Position: [type here]

12.4 Annex D. Labour Management Procedures

12.5 Annex E. Security Management Plan

12.6 Annex F. Gender Based Action Plan

12.7 Annex H. Terms of Reference For Environmental, Social and Human Health Monitoring of the Desert Locust Control Activities for Emergency Locust Response Program in Kenya.