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Final Report

Smallholder Commercialization and Agribusiness Development Project (SCADEP)

Environmental and Social Management Framework (ESMF)

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
CAADP	Comprehensive African Agricultural Development Programme
CBD	Convention on Biological Diversity
CBOs	Community Based Organisations
CDAP	Community Development Action Plan
CEC	Cation Exchange Capacities
CEC-A	Community Education Centre – A
CHEC-SIL	Commonwealth Human Ecology in Sierra Leone
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSSL	Conservation Society of Sierra Leone
DAO	District Agricultural Officer
DCU	District Coordinating Unit
DHMT	District Health Management Team
EIA	Environmental Impact Assessment
EFA	Environmental Foundation for Africa
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
EVD	Ebola Virus Disease
FBOs	Farmers Based Organisations
GDP	Gross Domestic Products
GoSL	Government of Sierra Leone
IPM	Integrated Pest Management
IVS	Inland Valley Swamps
JSS	Junior Secondary School
LC	Local Council
LWDD	Land and Water Development Division
M&E	Monitoring and Evaluation
MAFFS	Ministry of Agriculture, Forestry and Food Security
MDG	Millennium Development Goal
MEST	Ministry of Education, Science and Technology

MFMR	Ministry of Fisheries and Marine Resources
MLCPE	Ministry of Lands, Country Planning and the Environment
MLGRD	Ministry of Local Government and Rural Development
MTI	Ministry of Trade and Industry
NEP	National Environmental Policy
NEPAD	New Partnership for African's Development
NOC	National Oversight Committee
NSADP	National Sustainable Agriculture Development Programme
OP	Operational Policy
ORIENT	Organisation for Research and Extension of Intermediate Technology
PCU	Project Coordination Unit
PIU	Project Implementation Unit
PMP	Pest Management Plan
POPs	Persistent Organic Pollutants
PRSP	Poverty Reduction Strategy Paper
RAP	Resettlement Action Plan
RPSDP	Rural and Private Sector Development Project
SCP	Smallholder Commercialization Programme
SCADP	Smallholder Commercialization and Agribusiness Development Project
SL-DHS	Sierra Leone Demographic Health Survey
SLECAD	Sierra Leone Chamber for Agribusiness Development
SLIEPA	Sierra Leone Investment and Export Promotion Agency
SMEs	Small and Medium Enterprise
SSL	Statistics Sierra Leone
SSS	Senior Secondary School
TOR	Terms of Reference
UNCCD	United Nation Convention to Combat Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNFCC	United Nation Framework Convention on Climate Change
WAAPPSL	West Africa Agricultural Productivity Programme in Sierra Leone
WHO	World Health Organisation

0 EXECUTIVE SUMMARY

The agricultural sector in Sierra Leone has been seriously affected by the Ebola Virus Disease (EVD) pandemic which is at its tail end. This pandemic also affected neighboring Guinea and Liberia. Food production and the agribusiness sub-sectors have been negatively impacted. In order to redress and/or minimize the impact and ensure the sectors' recovery from the effects of the Ebola epidemic, the World Bank and the Government of Sierra Leone (GoL) are developing a new project, viz the **Smallholder Commercialization and Agribusiness Development Project** (**SCADP**). The outputs of these subsectors are dependent to a large extent on the activities of farmers with small holdings and small to medium scale agribusinesses. The project with its huge socioeconomic potential is aligned to the economic growth pillar of the Government's Agenda for Prosperity upon which the World Bank's Program of support will be anchored.

The SCADP has four (4) main components:

- **Component 1: Support to agribusiness-farmer linkages and SMEs along selected agricultural value chains (US$ 19.00 million):** This component is designed to strengthen linkages between agribusiness firms and farmers and promote producer associations and SMEs linkages along commercially viable agricultural value-chains, including but not limited to rice, cocoa, palm oil and poultry. The project will aim at improving access to finance through a combination of matching grants scheme and/or on-lending facilities and technical assistance. This component has two sub-components: Sub-component 1A. Value-Chain Financing to Selected Agribusinesses linked to out-grower schemes (US$12 million); Sub-component 1B Support to farmers' aggregation and agricultural small and medium scale enterprises (US$ 7 million).
- **Component 2: Market Access Component (US$ 21 million):** The objective of this component is to link high agricultural production areas to markets. This component will support the rehabilitation and spot improvements of about 400 km of feeder roads and the routine maintenance of the rehabilitated roads and structures. Specific focus will be on those rural roads that link markets to production areas with high volumes of perishable crops and produce. In addition, the project will scale-up the capacity of the district assemblies to undertake maintenance for the rehabilitated feeder roads using labour-based methods. Special focus will be given to capacity building of specialized contractors, their work force, and involved government bodies through training and provision of advisory services. To minimize risks associated with migrating workers, the majority of the labour-based works will be scheduled when demand for farm labour is low, usually from December to March. The project will also address the feeder roads maintenance budget deficit through supporting the development of a sustainable revenue base for the Road Maintenance Fund Administration (RMFA) for feeder roads maintenance financing. The project will also pilot-test the use of hybrid Performance-based Maintenance Contracts on 100 km feeder roads. Aggregation Structures and ICT technologies for market coordination will also be supported under this component in order to address market coordination failures which constrain smallholder farmers' productivity and competitiveness. UK's Department for International Development (DFID) will provide US$ 10 million co-financing to support market access improvement.
- **Component 3: Institutional Strengthening to Promote Agricultural Development (US$ 6 million)**: This component will strengthen State and Non-State institutions through Capacity Building to support critical services required for agribusiness development. This component will include the following:
- Technical support and training for selected Institutions and Personnel through development of programmes aimed to maximize/improve the production of the agricultural products;
- Provide support for Institutional studies through the promotion of agricultural research;
- Build Institutional and/or farmers' capacity for value-chain development services and provide support for conducive policy environment for agribusiness development
- **Component 4: Project Coordination, Management and Monitoring and Evaluation (US$ 4 million)**: This component will provide a comprehensive Environmental Management Plan to

support short, middle and long- term implementation and technical assistance to the project. A proactive National Steering Committee under the Ministry of agriculture Forestry and Food Security (MAFFS) and a strong Project Coordinating Unit will be proposed.

The SCADP aims at supporting sub-projects that could lead to an increase in farmers' productivity, commodity sales and incomes and ultimately the aggregate value added for key agricultural value chains. The project will support: (i) production of commodities such as rice, oil palm, cocoa and poultry (eggs and meat); (ii) processing of agricultural and poultry products; (iii) trading and marketing of these commodities; (iv) rehabilitation and maintenance of feeder roads to facilitate smallholder access to markets; and capacity building of farmers and agribusinesses operating along the four selected value-chains.

0.1 Environmental and Social Management Framework (ESMF)

This ESMF has been developed as a policy guideline that will be used as a decision-making tool to ensure that all the subprojects selected and implemented under the SCADP are environmentally and socially responsive and sound. The ESMF demands that each subproject will require environmental and social assessment that covers (i) legal and regulatory mechanisms, (ii) institutional arrangements, (iii) environmental management, and (iv) social assessment. The ESMF will be reviewed and approved for disclosure before project appraisal. It is also planned that the ESMF will be regularly updated to respond to changing local conditions.

The Environmental Category assigned for the SCADP is B (Partial), since it is expected that environmental and social impacts will be moderate and in most cases manageable. The likely environmental and social impacts as well as the mitigation measures have been developed through this detailed ESMF, which has been undertaken as part of project preparation. Where required after further assessments, other safeguard instruments with mitigation measures will be put in place to address any potential or real negative social and environmental impacts.

The project has triggered the following environmental and social safeguard policies: OP4.01 (Environmental Assessment); OP4.04 (Natural Habitats); OP4.09 (Pest Management); OP4.11 (Physical Cultural Resources); OP4.12 (Involuntary Resettlement) and OP 4.36 (Forests). As an agricultural project, most activities to be undertaken by the out-growers and agribusinesses will bring about some environmental issues related to crop production. As such, both OP4.01 and OP4.09 have been triggered to put in place appropriate risk management plans. Even though the project will not support any activities that will result in resettlement of people, OP4.12 has been triggered to ensure that an appropriate Resettlement Policy Framework (RPF) is put in place to guard against any unexpected effects on people or their livelihoods as a result of the project. OP4.36 has also been triggered even though all production activities, including replanting will occur on existing farms and plantations. However, it is likely to anticipate that may extend to secondary forests, given that shifting cultivation is still prevalent in Sierra Leone. Similarly, the project has triggered OP4.11 (Physical Cultural Resources) out of precaution in order to have a management framework in place in case of chance-finds during project implementation.

0.1.1 Potential Environmental Risks

This ESMF, conducted as part of project preparation, has identified the following environmental issues for which environmental management plans have been developed to avoid the likely environmental risks:

- Chemical pollution impacting natural resources and human health due to excessive and improper use of chemical pesticides and fertilizers, and pesticide residues;
- Adverse impacts on land and forests including land degradation and deficiency in soil nutrients, soil erosion/slope instability, and loss of topsoil due to faulty farm practices and improper use of chemical fertilizer, as well as improper cultivation on slopes/marginal lands, and construction of infrastructure such as feeder roads;
- Localized air and odor pollution arising from activities such as burning of firewood for cultivation, ammonia/methane/nitrous oxides emission from poultry production and emission from processing activities, and dust from feeder roads construction activities;

- Water pollution due to mismanagement of wastes from processing units, laboratories, agricultural waste/crop residues, livestock/poultry waste, wastewater from cleaning, washing, waste from slaughter houses, untreated dairy effluents, wastewater from milk processing, and laboratory wastes.
- Impacts on forest and forest resources. These may include forest depletion or degradation due to increased use of firewood for agro-processing, site clearance for infrastructure construction; and project-induced encroachment into secondary forest areas.
- Adverse impacts on biodiversity, native species, and non-timber forest products (NTFPs) including medicinal and aromatic plant species growing in natural habitats, due to unregulated or increased encroachment on the primary and secondary forests as a result of the proposed re-planting of old plantations with improved planting materials;
- Health and occupational safety related issues resulting, for example, from the use of chemicals to protect finished products from pests, exposure to harmful chemical at works or due to unsafe disposal of chemicals or during pesticide application, unsafe disposal of crop residues from processing (e.g. oil palm kernel, rice husks etc.), other waste containing pathogens, exposure to polluting emissions, risk of accidents (fire, explosion), and so forth.

0.1.2 Social Assessment

This ESMF has carefully assessed all the potential adverse social impacts that are likely to occur during the implementation of subprojects. These have broadly been identified as follows:

- Land acquisition by the agribusinesses that will participate in the project and the risk this might pose to the project;
- Short-term loss of income and livelihood due to the proposed replanting of the old plantations with high yielding planting materials;
- Possible exclusion of marginalized farmers, women and youth;
- Possible use of child labor in agribusinesses and out-grower schemes' activities;
- Potential risk of spreading communicable diseases such as STDs and HIV/AIDS due to increased labor force

0.2 Environmental and Social Screening of Sub-Projects

0.2.1 Environmental screening criteria

The ineligibility criteria include known environmental sensitivities such as activities in protected areas, known high-risk zones including landslides, flooding, and significant erosion zones; slopes greater than 45 degrees; heritage sites and primary forests. The level of environmental assessment required is determined by considering potential impacts on forests and biodiversity (including Non Timber Forest Products - NTFPs), as well as size of the road rehabilitation projects, size of agro-based and other industries, risk of chemical pollution, and the need for planned pest and nutrient management. Projects that will be deemed risky on the basis of the environmental screening criteria will be considered ineligible for support under the project.

0.2.2 Social screening criteria

A set of criteria will be developed for the project by taking into account the possible adverse social impacts and their magnitude. The criteria that will be used for social screening of the subprojects that will be considered ineligible include: (i) high degree of negative impacts on the livelihood systems; (ii) loss of common property resources affecting livelihood systems; (iii) subprojects leading landlessness, shelter loss, unemployment, marginalization, and food security; (iv) activities that require relocation of households, acquisition of lands, and other properties; (v) subprojects that promote or involve child labor; and (vi) subprojects that are likely to have adverse impacts on women, youth and vulnerable groups. Once the subprojects are screened against these criteria they will be classified into three different categories as per the nature and magnitude of impacts:

- Category I: Negative list of subprojects (these are ineligible for funding under the project);

- Category II: Subprojects requiring specific Environmental and Social Impact Assessment (ESIA) based on threshold criteria as per GOSL's Environmental and Social Management Policy;
- Category III: Subprojects that do not require formal ESIA, but need well planned and regular monitoring during implementation.

0.2.3 Resettlement Policy Framework (RPF)

Even though it is not envisaged that the project will support any activities that will entail resettlement of people, the project has developed an RPF as per the World Bank policy guidelines (OP4.12) in order to have a framework in place to deal with an unforeseen circumstances which may arise as a result of project implementation. The framework has clearly defined different groups of potentially affected people with varied eligibility criteria. These constitute Project Affected People (PAP), Project Affected Families (PAFs), Significantly Project Affected Families (SPAFs), marginal farmers, displaced families, squatters, encroachers, and vulnerable groups. Based on the eligibility criteria and type of losses, the affected families/people will be provided compensation as well as resettlement and rehabilitation assistances. An entitlement policy matrix to this effect has been developed as a safeguard measure to mitigate the losses by types of categories of affected people—that is, owners, tenants, encroachers, squatters, communities, and so forth. Specific Resettlement Action Plans (RAPs) will be defined where necessary.

0.2.4 Grievance Redress Mechanism

The project implementation is likely to be affected by, and subject to complaints and grievances. As per the experiences from the Rural and Private Sector Development Project (RPSDP), some of these complaints and grievances may be justified while others are not; some may be captured by the regular M&E system while others may not; and some may be directly or indirectly related to project implementation while others may not be related to the project at all. In order to be able to address grievances and complaints in a more structured and pro-active manner, the project has developed an inclusive, well-designed, and effective Grievance Redress Mechanism (GRM) which is meant to help the project implementation team be more responsive to beneficiaries, thereby increasing trust and confidence among project stakeholders.

The GRM has the following building blocks and characteristics: (i) multiple grievance uptake locations and multiple channels for receiving grievances; (ii) service standards for grievance resolution; (iii) clear processing guidelines; and an effective and timely grievance response system to inform complainants of the action taken. The GRM is based on the following six core principles: (i) Fairness; (ii) Objectivity and Independence; (iii) Simplicity and Accessibility; (iv) Responsiveness and Efficiency; (v) Speed and Proportionality and (vi) Participatory and Social Inclusion. The GRM has been developed as a separate instrument under the ESMF and its implementation will be informed by the lessons from the implementation of similar tools implemented under RPSDP and WAAPP.

0.3 Monitoring of the Environmental and Social Risk Management

The monitoring of project compliance with the environmental and social safeguards will be undertaken by the Sierra Leone Environmental Protection Agency (EPA) following the environmental and social safeguard management tools developed through the Environmental and Social Management Framework (ESMF) study. Under the project, resources will be provided to enable the Environmental Protection Agency-Sierra Leone (EPA-SL) to undertake periodic monitoring of project implementation to ensure compliance with the identified and/or other safeguards. In addition, the project has developed the management tools to mitigate against potential social risks. For example, even though the project will not involve any involuntary resettlement of people, the project has triggered the OP 4.12 and as a result, the relevant Resettlement Policy Framework (RPF) has been developed.

The Grievance Redress Mechanism (GRM) has also been developed in order to establish a framework for dealing with grievances which may potentially arise as a result of the project or its implementation. The World Bank's implementation support arrangements will include a team of environmental and social safeguards who will provide advice to the EPA-SL and project implementation institutions on a regular basis. Periodic environmental and social audits will be undertaken by the World Bank team to ensure that the project is fully compliant at all times during its implementation.

1 INTRODUCTION

1.1 Background

The agricultural sector in Sierra Leone has been seriously affected by the Ebola pandemic which is at its tail end. This pandemic also affected neighboring Guinea and Liberia. Food production and the agribusiness sub-sectors have been negatively impacted. In order to redress and/or minimize the impact and ensure the sectors' recovery from the effects of the Ebola epidemic, the World Bank and the Government of Sierra Leone are developing a new project, viz the Smallholder Commercialization and Agribusiness Development Project (SCADP). The outputs of these subsectors are dependent to a large extent on the activities of farmers with small holdings and small to medium scale agribusinesses. The project with its huge socioeconomic potential is aligned to the economic growth pillar of the Government's Agenda for Prosperity upon which the Bank's Program of support will be anchored.

Building upon the support to the agricultural sector provided by the World Bank and other development partners since the end of the recently concluded civil war, this project will also help in the sector's medium to long-term growth by increasing farmers' productivity and value chain addition of selected food crops and livestock by increasing the volume of marketed commodities; supporting the growth of small and medium agribusiness firms, including inputs suppliers supported to engage in production and/or supply contracts with farmers and/or local Farmers Based Organisation (FBOs) and Cooperatives.
Specifically, the project will be expected to support the following:

- Market access improvement through the continued rehabilitation and maintenance of feeder roads and other rural access infrastructure linking high production areas to markets;
- Building agribusiness-farmer linkages to facilitate the production and marketing of selected agricultural commodities with significant potential to increase farmers' income;
- Building the capacity of Government institutions responsible for agribusiness development.

Agribusiness firms will be selected on the basis of their innovative plans and experience working with organized farmers' groups or cooperatives. The project will work with selected private agribusiness firms that incorporate productive linkage arrangements with smallholder farmers, as part of their overall long-term business plan. The project will aim at supporting a few commodity value-chains with significant potential for enhancing competitiveness and jobs creation. While many projects have focused primarily on addressing production constraints, this project will focus primarily on constraints affecting the overall value-chain performance, such as high aggregation costs, high processing and marketing costs, as well as quality issues. Furthermore, the project will support public-investment type activities aimed at building the capacity of smallholder farmers to meet the volumes and quality targets specified by agribusiness firms. This support will also include building the policy and institutional capacity of government institutions responsible for providing public sector services and policy environments conducive for agribusiness development.

The proposed project will aim to promote smallholder commercialization by fostering productive business linkages between smallholder farmers and selected agribusiness firms.

1.2 The Purpose and Objective of the ESMF

The main development objective of this study is put modalities in place and initiate the development of a detailed locale specific environmental and social impact assessment (ESIA) focusing on the key activities at the commodity levels involving farmers, agribusinesses and other value-chain actors. The project will focus on the development of an environmental and social management plan to improve on the agricultural production and access to markets among beneficiary farmers and small to medium scale agribusinesses in the targeted project areas of Sierra Leone. The project will also facilitate the identification and removal of constraints and bottlenecks impeding value chain addition to ensure smooth and efficient flow of products from producers to ultimate consumers. It will open and strengthen opportunities for value chain addition.

The major project instruments will be an Environmental and Social Management plan (ESMP) and a Resettlement action Plan (RAP).

1.3 ESMF Cycle

The project cycle will be 5 years starting from 2016 and ending 2020.

1.4 Scope of Work

The detailed scope of the project is to prepare an ESMF, which identifies the potential impacts and propose mitigation measures for the proposed smallholder commercialization and agribusiness development project in selected areas in Sierra Leone.

The preparation of this ESMF for the SCADP includes the following:

- Detailed Desk Review of all existing documentation including consultancy reports such as previous ESMF, EIA, RAP, PMP, EMPs and ESMP for the concluding Rural and Private Sector Development Project (RPSDP). Key in reviewing these is to identify and suggest areas for improvement in view of the World Bank's safeguard policies to be triggered during the proposed Project implementation.
- Detailed study on the key production activities and agricultural inputs necessary so as to inform the preparation of appropriate plans for environment risk management (i.e. sustainable soil fertility, integrated pest management etc.).
- Description of the baseline environment of the country covering relevant information on the environmental characteristics. These include the physical environment, biodiversity and socio - cultural activities.
- Procedures by which farmer-based organizations and agribusinesses can acquire lands to cultivate or occupy, pay adequate compensations to communities and/or land owners and redress for conflict situations.
- Identify and describe the pertinent regulations and standards - both local and international, governing environmental quality, health and safety, protection of ecologically important and culturally sensitive areas, sustainable land use and furtherance of socio-economic activities. To describe how the project activities would comply with the identified regulations.
- Analysis and description of all possible environmental, ecological and social impacts, both positive and negative, that are likely to bring about changes in the baseline environmental and social conditions as a result of the proposed interventions. These will include gender, climate change and disaster related impacts.
- Identify and differentiate between short, medium, long-term and cumulative impacts during the project implementation and developing a prototype ESMP that will be compliant to the dictates of the relevant authorities.
- Identify occupational health and safety concerns to be brought about by the activities to be undertaken during the different phases of the project and proffer recommendations on corrective and remedial measures to be implemented under the Environmental and Social Management Plan.
- Identify other potential negative impacts and developing a comprehensive Environmental Management Plan to mitigate via monitoring and institutional measures to ensure that they are minimized or reduced to acceptable levels and/or maximize socio-economic benefits.
- Develop a monitoring plan for both ESMP and RAP that will ensure that the World Bank safeguard policies are followed within a given time frame, implementation mechanism, staffing requirements, training and cost outlays.

2 DESCRIPTION OF PROJECT

The proposed project has four (4) main components with indicative IDA costs of **USD40 million**:

2.1.1 Component 1: Component 1: Support to agribusiness-farmer linkages and SMEs along selected agricultural value chains (US$ 19.00 million):

This component is designed to strengthen linkages between agribusiness firms and farmers and promote producer associations and SMEs linkages along commercially viable agricultural value-chains, including but not limited to rice, cocoa, palm oil and poultry. The project will aim at improving access to finance through a combination of matching grants scheme and/or on-lending facilities and technical assistance. This component has two sub-components: Sub-component 1A. Value-Chain Financing to Selected Agribusinesses linked to out-grower schemes (US$12 million); Sub-component 1B Support to farmers' aggregation and agricultural small and medium scale enterprises (US$ 7 million).

2.1.2 Component 2: Market Access Improvement (US$ 21 million)

The objective of this component is to link high agricultural production areas to markets. This component will support the rehabilitation and spot improvements of about 400 km of feeder roads and the routine maintenance of the rehabilitated roads and structures. Specific focus will be on those rural roads that link markets to production areas with high volumes of perishable crops and produce. In addition, the project will scale-up the capacity of the district assemblies to undertake maintenance for the rehabilitated feeder roads using labour-based methods. Special focus will be given to capacity building of specialized contractors, their work force, and involved government bodies through training and provision of advisory services. To minimize risks associated with migrating workers, the majority of the labour-based works will be scheduled when demand for farm labour is low, usually from December to March. The project will also address the feeder roads maintenance budget deficit through supporting the development of a sustainable revenue base for the Road Maintenance Fund Administration (RMFA) for feeder roads maintenance financing. The project will also pilot-test the use of hybrid Performance-based Maintenance Contracts on 100 km feeder roads. Aggregation Structures and ICT technologies for market coordination will also be supported under this component in order to address market coordination failures which constrain smallholder farmers' productivity and competitiveness. UK's Department for International Development (DFID) will provide US$ 10 million co-financing to support market access improvement. This component has two sub-components: Sub-component 2A. Feeder Roads Rehabilitation and Maintenance (US$ 10 million); Sub-component 2B. Support for Aggregation Structures and ICT technologies to facilitate market coordination (US$1 million).

2.1.3 Component 3: Institutional Strengthening to Promote Agricultural Development (US$ 6 million)

This component will strengthen State and Non-State institutions through Capacity Building to support critical services required for agribusiness development. This component will include the following:

- Technical support and training for selected Institutions and Personnel through development of programmes aimed to maximize/improve the production of the agricultural products.
- Provide support for Institutional studies through the promotion of agricultural research.
- Build Institutional capacity for value-chain development services and provide support for conducive policy environment for agribusiness development.

2.1.4 Component 4: Project Coordination, Management and Monitoring and Evaluation (US$ 4 million)

This component will provide a comprehensive Environmental Management Plan to support short, middle and long- term implementation and technical assistance to the project. A proactive National Steering Committee under the Ministry of agriculture Forestry and Food Security (MAFFS) and a strong Project Coordinating Unit will be proposed.

2.2 Rationale for the Development of the Project

The proposed project will be designed to mitigate the adverse effect of EVD in a post Ebola recovery programme; with specific focus in the areas of rice, cacao, oil palm and poultry production and marketing within the agricultural sector. The Agricultural sector like other economic sectors was severely hit by the Ebola pandemic which restrained farmers from carrying out their productive activities. Farms were abandoned or neglected due to restriction of movement under the public health emergency, some farmers and farm labour lost their lives to the disease while the in area of infrastructure, feeder roads connecting farms and market outlets were left unattended and in ruins, as well as some rural infrastructure for processing, marketing and distribution being grounded nearly to a halt and capacities severely diminished as a result of mortal fear, human debility and reduced activities/near closure of the agricultural enterprises/ agribusinesses. While the Ebola epidemic is not the only justification for this project, the epidemic put a strain on a sector which is riddled with low productivity and competitiveness. As such, the incidence of the epidemic makes this project intervention much more urgent as it will partly contribute towards the country's Ebola recovery.

Thus to restore, enhance and continue with gains achieved under the former World Bank funded project; namely the 'Rural and Private Sectors Development Project' (RPSDP), the predecessor to this proposed project; a number of international and local laws and policies germane to its success will be invoked and addressed for smooth implementation. These would include institutional arrangements for implementation, monitoring of safeguards, issues of compliance and grievance address mechanisms.

The finances sought will focus on four key areas to promote productivity, efficiency and increased farmers' and business promoters earnings through enhanced feeder roads maintenance and access to markets, support to agribusiness through farmers linkages and SMEs for value chain addition, building institutional and personal capacities and strengthened project coordination, management and monitoring and evaluation.

To strengthen the project implementation, discussions with key stakeholders like MAFFS, the Programme Coordination Unit (PCU), the Human Rights Commission, Local Councils and relevant selected NGOs will be undertaken to ensure that existing laws and policies likely to have impact are fully understood, negotiated and complied with. An Environmental and Social Impact Assessment study, where required in selected project areas/communities, will be undertaken to obtain the necessary EPA categorization and license for project implementation. This will also enhance environmental protection and sustainability and identify and propose remedies for potential conflicts to ensure social harmony within and between communities. These informed the development of the ESMF.

3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 National Legislation and Regulatory Framework

3.1.1 National Constitution of Sierra Leone 1991

The Constitution of Sierra Leone is the overarching legal instrument that provides for the protection of the rights of individuals, private property, and also sets principles under which citizens may be deprived of their property in the public interest as described in Section 21 of the Sierra Leone Constitution. It also makes provision for the prompt payment of adequate compensation and access to the court or other impartial and independent authority for the determination of the land owner's interest or right, and the amount of any compensation to which he/she is entitled and for the purpose of obtaining prompt payment of that compensation.

Relevance to the Project: this project is a central development activity that makes use of the human and biophysical environment. As such, an EMP procedure will be implemented to address these issues.

3.1.2 The National Environmental Policy

The National Environmental Policy (1994) seeks to achieve sustainable development in Sierra Leone through the implementation of sound environmental management systems which will encourage productivity and harmony between man and his environment. It also promotes efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of nationals, and serves to enrich the understanding of ecological systems and natural resources which are important to the country.

3.1.3 The Draft Forestry and Wildlife Sector Policy for Sierra Leone, 2003

This draft policy document is still under review and awaiting parliamentary approval. The goal of the document is to support the development and exploitation of forests and wildlife of Sierra Leone in a sustainable manner for the material, cultural and aesthetic benefit of the people of Sierra Leone. The main objectives of the forestry policy are to:

- Promote best practices in forest management so as to develop an environmentally friendly, self-sustaining forestry sector that is sensitive and responsive to the economic, social and cultural needs of those who live adjacent to or are dependent on the forest;
- Foster enabling environments for supervised production of sustainable volumes and quality of forest products that will create national wealth and contribute to food security; and
- Encourage the private sector to create employment opportunities for local populations thereby reducing rural poverty

3.1.4 National Lands Policy 2005

As provided in the Constitution, the 2005 National Land Policy makes provision for the compulsory acquisition of land in the public interest. The principles of the land policy include among others:

- Land as a common national or communal property resource held in trust for the people and which must be used in the long term interest of the people of Sierra Leone.
- Compensation for lands acquired through compulsory government acquisition will be fair and adequate and determined, among other things, through negotiations that take into consideration government investment in the area.
- Local Authorities (City and District Councils) may negotiate for land for project development purposes, but all such grants should be properly documented and processed.
- No interest in or right over any land belonging to an individual or family can be disposed off without consultation with the owner or occupier of the land.
- No interest in or right over any land belonging to an individual or family can be compulsorily acquired without payment, in reasonable time, of fair and adequate compensation.

3.1.5 The Environment Protection Agency Act, 2008 (amended 2010)

This Act established the Environmental Protection Agency of Sierra Leone (EPA-SL), to provide for the effective protection of the environment and for other related matters. It mandates the EPA among others to:

- Advise the minister on the formulation of policies on all aspects of the environment;
- Issue environmental permits and pollution abatement notices for controlling the volume, types, constituents and effects of waste discharges, emissions, deposits or other sources of pollutants of substances which are hazardous and dangerous to the quality of the environment;
- Prescribe standards and guidelines relating to ambient air, water and soil quality, air pollution, water, land and other forms of environmental pollution including discharge of waste and the control of toxic substances;
- Ensure compliance with any environmental impact assessment procedures laid down in the planning and execution of development projects; and
- Impose and collect environmental protection levies in accordance with this Act or regulations made under this Act.

The Environmental Protection Agency (amendment) Act 2010 gave executive powers to the board.

3.1.6 Forestry Act 1988

The Forestry Act of 1988 contains special protection provisions under which the minister is empowered to declare any area to be a protected area for the purpose of conservation of soil, water, flora and fauna. The legislation stipulates that 'no person may cut, burn, uproot or destroy trees that are in protected areas or trees that have been declared as being protected." It also states that the Chief Conservator/Director of forest may issue a license or concession to fell and extract a protected tree.

3.1.7 Local Government Act 2004

The Act establishes the Local Council (LC) as the highest political authority in the locality and confers legislative and executive powers to be exercised in accordance with this Act. This Act in its First Schedule under Section 2 establishes the localities, namely: districts, towns and cities. Part II of this schedule also establishes the number of Paramount Chiefs in each LC. The Third Schedule establishes the functions devolved to the LCs. The Fourth and Fifth Schedules establish departments under each LC, and a Valuation List and Rate Books respectively.

Relevance to the Project: Public consultation and community involvement constitute a core element of MAFFS operations. The implementation of the SCADP will be done in collaboration with the local council.

3.1.8 The Wildlife Act, 1972

The Wildlife Conservation Act of 1972 was enacted to help regulate the utilization and protection of wildlife resources. However, the bill is characterized by inadequate capacity for implementation and enforcement and insufficient and unsustainable sources of funding. The bill is also out dated and merits review and update to reflect current trends in wildlife protection.

The Wildlife Conservation Act of 1972 saw minor amendment in 1990 (known as the Wildlife Conservation Amendment Act), which included redefinition of terms, and other modifications and qualifications. For example, the prohibition of hunting of elephants which was limited to protected areas in the 1972 Act was extended to include all forests.

The Wildlife Regulations of 1997 however makes provision for the acquisition of licenses or permits for hunting in such designated areas and for other purpose as may be prescribed. Such license and permits can be revoked by the Chief Conservator of Forest if the holder fails to comply with related provisions made in the regulations.

3.2 International Legislation

3.2.1 The World Bank Safeguard Policies

The World Bank environmental and social safeguard policies seek to address potential environmental risks and benefits associated with Bank lending operations. These safeguards policies are designed to avoid, mitigate or minimise adverse environmental and social impacts of projects supported by the Bank. The screening of each proposed project is carried out to determine the appropriate extent and type of Environmental Assessment to be undertaken and whether or not the project may trigger other safeguard policies. The Borrower is responsible for any assessment required by the Safeguard Policies, with general advice provided by the WB staff. The World Bank operational policies are presented in **Appendix A.** The safeguard policies triggered by the project include OP 4.01, OP 4.09 and OP 4.12. The precautionary policies triggered are OP 4.04, OP 4.36 and OP 4.11. The summary of the safeguard policies triggered by the SCADP are presented in the table below:

Table 3-1: World Bank Policies triggered by the Project

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	**Yes**	The project triggers OP/BP 4.01 from the expected impacts from the rehabilitation and routine maintenance of the 300km feeder Roads in the high agricultural productive areas for which an ESMF has been prepared with guidelines to prevent as a first option or mitigate any adverse impact.
Natural Habitats OP/BP 4.04	**Yes**	The project triggers OP/BP 4.04 as a result of the activities of farming, road rehabilitation and maintenance affecting land and water resources.
Forests OP/BP 4.36	**Yes**	OP4.36 has also been triggered even though all production activities, including replanting will occur on existing farms and plantations. However, it is likely to anticipate that production activities may extend to secondary forests, given that shifting cultivation is still prevalent in Sierra Leone.
Pest Management OP 4.09	**Yes**	The project has triggered OP 4.09 from the likely use of pesticides as a result of the agricultural production.
Physical Cultural Resources OP/BP 4.11	**Yes**	The project has also triggered OP4.11 (Physical Cultural Resources) out of precaution in order to have a management framework in place in case of chance-finds during project implementation.
Indigenous Peoples OP/BP 4.10	**No**	This policy is not triggered since no indigenous peoples as defined in OP 4.10 are present in the project area.
Involuntary Resettlement OP/BP 4.12	**Yes**	Even though the project will not support any activities that will result in resettlement of people, OP4.12 has been triggered to ensure that an appropriate Resettlement Policy Framework is put in place to guard against any unexpected effects on people or their livelihoods as a result of the project.
Safety of Dams OP/BP 4.37	**No**	This policy is not triggered since it is not envisaged that streams or rivers will be dammed for irrigation.
Projects on International Waterways OP/BP 7.50	**No**	This policy is not triggered since the project is not likely to impact any international waterway.
Projects in Disputed Areas OP/BP 7.60	**No**	This policy is not triggered since lands within the 13 rural districts are not in dispute as defined in OP 7.60

3.3 Institutional framework for the ESMF Implementation

3.3.1 Ministry of Agriculture, Forestry and Food Security

The Ministry of Agriculture, Forestry and Food Security (MAFFS) is mandated with the implementation of government's agricultural, forestry and food security policies. The mandate of the Ministry spreads across crops, livestock and forest development and improvement policies, and related services. The Ministry exercises its mandates over the environment through such Departments as Agriculture, Forestry, Land and Water Development, Planning, Evaluation, Monitoring and Statistics and the Livestock Unit. The current policy of the ministry includes higher productivity, self-sufficiency in staples and other products, diversified production, increased incomes, maximization of foreign exchange through export promotion and import substitution, increased rural employment, improved nutrition and soil fertility etc.

3.3.2 Environmental Protection Agency – Sierra Leone

This Act (2008; Amended 2010) establishes the Environment Protection Agency, defines its functions and powers, provides for its organization and administration and provides rules for various matters regarding the environment in Sierra Leone. The Agency is established as a corporate body managed by Board of Directors and an Executive Director.
Part IV of the Act exclusively deals with the activities requiring a full Environmental and social impact assessment and describes the permitting processes leading to the acquisition of an environmental licence.

The EPA-SL Board of Directors comprises the Executive Chairperson and Representatives drawn from the following ministries and the private sector:

- Ministry of Lands Country Planning and the Environment
- Ministry of Local Government
- Ministry of Mines and Mineral Resources
- Ministry of Marine resources
- Ministry of Agriculture, Forestry and Food Security
- Ministry of Tourism and Cultural Affairs
- Ministry of Trade and Industry
- Ministry of Transport and Aviation
- Ministry of Health and Sanitation
- Petroleum Unit
- Three persons from the private sector (commerce, finance and law).

The EPA-SL has a wide range of environmental management functions including coordination of the activities of government agencies and other agencies on matters relating to environmental protection and management. The EPA is also responsible for ESIA compliance and licensing (see section 3.1.3 for further details)

At present, the Executive Board serving as the governing body of the Agency, provides general policy guidance and advice as well as supervises the work of the Agency. The Executive Chairperson, who is responsible to the Office of the President, executes the Board policies and oversees the day-to-day- professional and administrative activities of the Agency. The Executive Chairperson is assisted by the Executive Director and three Deputy Directors. The three Deputy Directors are:

- Deputy Director, Policy, Planning and Research
- Deputy Director, Field Operations and Extension, working in partnership with District and Local Councils
- Deputy Director, Finance and Administration

3.3.3 Ministry of Lands, Country Planning and the Environment

The Ministry's central role is to ensure the sustainable management and utilization of the nation's lands, proper planning and environmental management of the nation's natural resources for the country's socioeconomic growth and development. The ministry's policies and programs are designed to contribute towards the realization of the national goals of wealth creation, revenue mobilization and employment generation within the framework of the poverty reduction.

The Ministry's programs and projects are implemented by three in house Departments; viz: Surveys and Lands, Country Planning and Environment.

3.3.4 Ministry of Local Government and Rural Development

The Ministry of Local Government and Rural Development (MLGRD) through the Paramount chiefs holds control over lands in the provinces. Land is owned collectively by the community with the paramount chief as the sole custodian. The Director of Forests is the head of the Forestry Division and is responsible for the management and protection of forest reserves, game reserves and national parks. The communal forests, though they remain in the hands of the chiefdoms are also managed by the Chief Conservator of Forests (CCF). However, the Division lacks the capacity to perform its duties and as a result the forests are exploited without attention to sustainable management.

3.3.5 Other Relevant National Institutional Framework

- Sierra Leone Investment and Export Promotion Agency (2007)
- Sierra Leone Chamber for Agribusiness Development (SLECAD)
- Land and water development division (LWDD)
- Sierra Leone Roads Authority
- Human Rights Commission

3.3.6 Non-Governmental Organisations

Several Non-Governmental Organisations in Sierra Leone are involved in governance and utilization of natural resources in the country. Principal of them is the Conservation Society of Sierra Leone (CSSL), which advocates and promotes the conservation and sustainable use of Sierra Leone's natural resources through research, education, advocacy and support to site management groups. CSSL also undertake campaigns for the protection of wildlife, parks and sanctuaries. The Environmental Foundation for Africa (EFA) is also actively involved in promoting environmental and social agenda and has acquired experience in operation in conflict zones, humanitarian and refugee operations, post-conflict reconstruction and rehabilitation. The Commonwealth Human Ecology Council (CHEC-SIL) is another NGO that promotes conservation of the ecology through education and dissemination of environmental information via mass media. It also supports the Government of Sierra Leone (GOSL) in promoting, through education, policy implementation and project execution. The Organization for Research and Extension of Intermediate Technology (OREINT) focuses on self-sustaining rural development through the promotion of agriculture and appropriate technology to enhance and improve the socio-economic status of people in rural areas. These and several other organisations augment the efforts of the government and will serve as key stakeholders on the implementation of the SCADP.

3.4 Relevant international agreements to which Sierra Leone is party

Sierra Leone has endorsed and signed several International Conventions and Protocols. These Conventions and Protocols are at different stages of implementation but in general Implementation is slow as many have not been ratified or harmonised with the laws, policies and programmes of Sierra Leone. As a result Sierra Leone trails far behind in the implementation of the provisions of these conventions.

Table 3-2: International Agreements and Conventions ratified by Sierra Leone.

Agreement	Adoption Date	Ratification Date	Focal Point	Focus Area

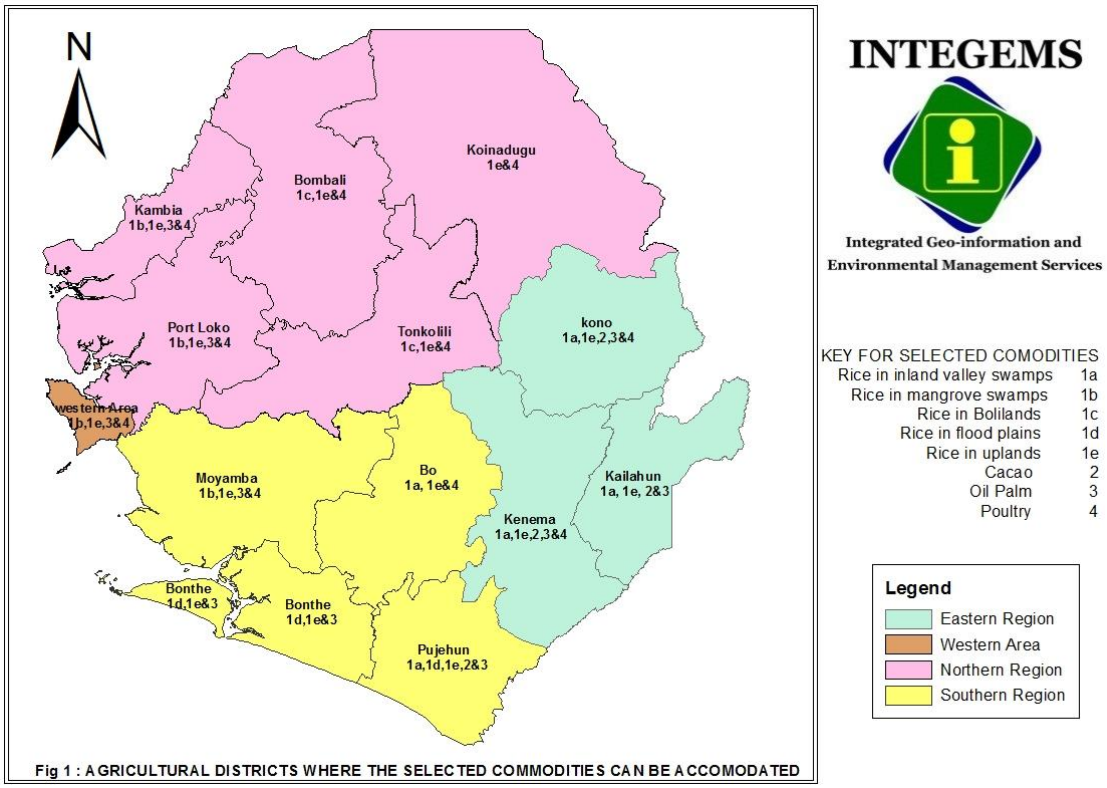
Agreement	Adoption Date	Ratification Date	Focal Point	Focus Area
UN Convention on Law of the Sea (UNCLOS)			Fisheries dept.	Fisheries and continental shelf
UN Convention on Biological Diversity (UNCBD)	June 1994	12th Dec., 1994	Forestry Department	Biodiversity Conservation.
Cartagena Protocol on Bio safely. to the Convention on Biological Diversity (Cartagena Protocol)	Jan, 2000	2003	Forestry and Wildlife Management	Protection from effects of modern technology
Convention on Wetlands of International Importance (RAMSAR Convention)		June 2005	Forestry and wildlife management	Wetlands
Convention on International trade in Endangered Species of Wild Fauna and Flora (CITES)			Forestry and Wildlife Management	Endangered species
Convention on the Conservation of migratory Species of wild Animals (CMS Convention)			Forestry and Wildlife Management	Migratory species
UN Convention to Combat Desertification (UNCCD)	June 1994	25th September 1995	Lands, country and the environment	Desertification
UN Framework Convention on Climate Change (UNFCC)	May 1992	April 1996	Meteorological department	Climate change
Kyoto Protocol to the UN Convention on Climate Change (Kyoto Protocol)	Dec. 1997	Advanced stage	Meteorological department	Climate change
Bamako Convention on the ban of the Import into Africa and the Control of Trans-boundary Movement and Management of Hazardous Wastes within Africa. (BAMAKO Convention)	Jan 1991	April 1993	EPA	Trans-boundary Movement and Management of Hazardous Wastes within Africa
Convention for Cooperation of the Protection of the Marine and Coastal Environment of West and Central Africa region. (ABIDJAN Convention)		7th June 2005	EPA	Marine and Coastal Management
Basel Convention on the Control of Trans-boundary Movements of Hazardous wastes. (BASEL Convention)	Mar. 1989	April 1993	EPA	Trans-boundary Movements of Hazardous wastes

Agreement	Adoption Date	Ratification Date	Focal Point	Focus Area
Convention on the Prior informed Consent procedure for Certain Hazardous Chemicals and Pesticides in International trade. (Rotterdam (PIC) Convention.)			EPA	Hazardous Chemicals and Pesticides
Convention on Persistent Organic Pollutants. (Stockholm (POPs) Convention)		9th Sept. 2003	EPA	Persistent Organic Pollutants.
Convention on the Protection of the Stratospheric Ozone Layer. (Vienna Convention)	Sept 1987	April 1993	EPA	Protection of Ozone Layer
Montreal protocol on Substances that Deplete the Ozone Layer (MONTREAL Convention)	Sept 1987	April 1993	EPA	Protection of Ozone Layer
Convention on the Protection of Cultural and Natural Heritage (World Heritage Convention)			National Council of Arts and Culture	Protection of Heritage sites

4 BACKGROUND OF THE PROJECT AREA

The Project Area, for the purpose of this SCADP, will cover the thirteen agricultural districts of Sierra Leone which were also covered in the existing project (RPSDP). The exact location of these sub-component investments will not be identified before bank appraisal of the project, as such the EA process calls for the Project Proponent to prepare an Environmental and Social Management Framework that will establish a mechanism to determine and assess future potential environmental and social impacts during implementation of the SCADP activities, and then to set out mitigation, monitoring and institutional measures to be taken during operations of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. This section therefore discusses the country's physical, biological, social and cultural environments as it currently obtains. A map of Sierra Leone showing the agricultural districts and the selected commodities they can accommodate is shown in Figure 4-1.

Figure 4-1: Commodities per Agricultural Districts of Sierra Leone



4.1 Land Resources

Sierra Leone lies between latitude 6^0 00' and 10^0 0' N and longitude 10^0 16' W and 13^0 18′ W on the West Coast of Africa with a north-south distance of 331 km and an east-west distance of 326 km. The total land area of the country is approximately 72,000 km^2. Nested within the Upper Guinean Rainforest, Ecoregion, it is recognized as one of the hotspots for biodiversity conservation. About 60.000 km^2 has been classified as upland and 11.000 km^2 as low lands. Out of the total land area, 53,620km^2, (5.36m ha) has been estimated as suitable for crop production. Non-arable land which includes hills, rocky land, roads, rivers and creeks account for the rest of the land resources of the country. Land in Sierra Leone is divided into arable agricultural land (60%), pastural (18%), mangrove and inland swamps (8%), and forest under protection and management (4.5%) and others (9.75%). About 6.57m ha (90%) of the land is owned privately by families, 360,000ha by communities and families and only 285, 000ha (4%) are held by Government in the form of forest reserves. The lands belonging to families are small and fragmented, restricting effective planning and management.

4.2 Agro-Ecological Zones

Sierra Leone has five distinct agro-ecological zones identified as:

- **Uplands**: These are moderately well-drained sandy loamy soils of varying depth. The uplands cover about 6.1 m ha or 84% of the land area of the country. Uplands are found everywhere and can support rice, cacao, oil palm and poultry farming amongst others. They are usually poor in native soil fertility, are rain-fed and prone to both water and wind erosions when left exposed. Slash and burn with bush fallow lasting 3 to 5 years is the common farming practice.
- **Inland Valley Swamps (IVS):** These are fairly flat, poorly drained depressions between adjacent uplands mostly of sandy loamy to clayey soils. The land area covered by this agro - ecological zone is approx. 675,000 ha (9% of the land mass). Inland valley swamps with standing water during the rainy season are found mostly in Bo, Kenema, Kailahun, Kono, Pujehun and parts of Moyamba Districts. They are usually prone to iron and aluminium toxicities and minor health hazards arising from leech bites and water borne diseases. This ecology supports rice farming in the wet season and tuber crops and vegetables in the dry season. If properly managed it can support two crops of rice in a year.
- **Mangrove Swamps**: These are lands adjacent to the coast and/ or along estuarine rivers subject to daily tidal inundations with brackish water. The land area covered by this agro-ecological is approx. 215, 000 ha (3%of the land mass). This ecology is found along the Great and Little Scarcies Rivers of Kambia and Port Loko Districts, the coastal areas of Western Urban and Rural Districts and Bonthe District. The environment is prone to salinity and crab damage problems during the cropping season. There are associated swamps around the fringes which may suffer from iron and aluminium toxicities. The soils are clayey and have modest native soil fertility. This environment supports rice farming during the wet season.
- **Boli lands**: These are saucer like wide expanse of low-lying inland depressions subject to run off flooding during the wet season. The land area covered by this ecology is approx.120, 000 ha (2% of the land mass). This agro-ecosystem is found mostly in the Northern Province in the Bombali and Tonkolili Districts. They are prone to heavy weeds infestation and aluminium and iron toxicities. Rice is supported during the wet season and vegetables and tuber crops are supported during the dry season. The soils are sandy loam and clayey.
- **Riverine Grassland/Flood plains**: These are located mainly in Torma Bom in the Bonthe District and Gbondapi in the Pujehun District along the major rivers. They are heavily flooded during the wet season. The land area covered by the flood plains is approx.120, 000 ha (2% of the land mass). The flood plains support cultivation of tall rice varieties, but crops are prone to serious lodging because of the plant heights attained.

4.3 Physiography

The country is divided into three distinct physiographic regions running from the north –east to the south west viz: the coastal plains, interior plains and the interior plateau. The coastal plains are low lying areas comprising mostly of swamps and extending 30 km inland from the coast.

The interior plains region is 80 to 100 km wide and the topography is undulating with a hard pan soil structure of an old peneplain continental land mass. Altitudes within this plain range from 40m in the west to 200m high in the east. It is in this region that the saucer-like land depressions and low terraces which are flooded during the rains by runoff and overflow from rivers and streams known as bolilands are found. Flooding is as a result of poor drainage and the clayey nature of the soil. The interior plateaux are highlands with altitudes ranging 300 to 700m above sea level.
The land areas covered by the three physiographic regions are given in Table 4-1.

Table 4-1: Physiographic land areas covered by the different plains.

Region	Area (Sq.km)	Land cover (%)
Coastal Plains	10,444	15
Interior Plains	31,418	43
Interior Plateau	30,464	42

Source: ESMF for RPSDP additional financing, April 2011.

4.4 Climate

Sierra Leone has a tropical climate with daily humidity on average ranging between 40 to 90% depending on the season. There are two distinct seasons, namely the wet season starting from April/ May and ending October/November and the dry season starting November/December and ending April. Diurnal temperatures vary from 25 degree at night to 34 degree Celsius during the day. Temperatures could fall as low as 16 to 25 degree Celsius during the harmattan period (December to February). The average monthly temperatures are around 30 degree Celsius. During the heavy rains (June to August), rivers overflow their banks but these flash floods are greatly reduced during the dry season (November to March).

- The mean annual rainfall recorded in the different regions are as follows:
- The coastal areas including the capital Freetown - 3,000 to 5000mm.
- The north-central, southern and eastern regions - 2500 to 3000mm.
- The north region- <2000 to 2500mm.

It should be noted that distinctly higher rainfall values different from other parts in the Northern region (above 3000 mm) are usually recorded around Makeni, Mabonto and Bumbuna areas presumably due to the relief influence of the Sula Mountain scarp in the east. Similarly, the Western area records up to 5000mm annually, Sunshine hours vary with the season. It is on average 7 hours during the dry season falling to about 3 hours during the wet season.

4.4.1 Evaporation and Water Balance

The annual evapo-transpiration range from 1300 to 1600 mm. This translates to a daily rate of 4.5 mm in the dry season and as low as 3.5mm in the wet season. The higher dry season evapo-transpiration rate is as a result of ambient high air temperatures, low moisture contents (relative humidities) and high sunshine hours. Conversely the lower rates in the wet season are the result of the lower ambient air temperatures, high relative humidities and low daily sunshine hours. 'Water Surplus' of 1200 to

2600 mm usually occur during the wet season as against a deficit of 240 to 610 mm above the assumed soil water storage of 100 mm.

4.4.2 Drainage and Hydrology

There are nine major river basins providing most of the drainage system in Sierra Leone. These are the Great Scarcies, Little Scarcies, Rokel/Seli in the northern region; Pampana/Jong, Sewa and Waanje in the Southern Region; Moa and Mano in the Eastern region and the Coastal Creeks/Peninsula streams in the Western Area. Five of these, viz: Rokel, Pampana/Jong, Sewa, Waanje and the Coastal creeks and Peninsula streams originate from in – country; whilst the Great and Little Scarcies and the Moa rivers have their origins from the Fouta Djallon plateau in Guinea. The Mano River originates in Liberia. All of these rivers flow in an almost linear pattern; viz: north-east to south-east. The proximate lengths of these rivers and the sizes of their catchment areas are presented in Table 4-2.

Table 4-2: Proximate lengths and catchment areas for rivers in Sierra Leone

River Basin	Region	Length (km)	Catchment Area (km^2)	(%) Area
Great Scarcies	Northern	160	3,115	4.3
Little Scarcies	Northern	280	13,000	17.9
Rokel/Seli	North/Western	380	10,620	14.8
Pampana/Jong	Southern	300	7,511	10.4
Sewa	Southern	430	14,140	19.7
Waanje	Southern	200	4,510	6.2
Moa	Eastern	320	9,220	12.7
Mano	Eastern	180	2,530	3.4
Coastal Streams/ Creeks	Western	120	6,960	9.6

Source: ESMF for RPSDP additional financing, April 2011.

4.5 Vegetation

As discussed in subsection 4.1, the country covers a total land area of 72 325 km^2 of which 75% is arable. Approximately 56% of the land is below 150 m asl while upland and lowland ecologies make up 78% and 22% respectively of the arable land area. The uplands are composed of forest, savannah woodlands and grasslands while the lowlands comprise approximately 675 000 hectares (ha.) of inland valley swamps, 145 000 ha of 'bolilands' (or large, saucer-shaped basins), 130 000 ha of riverine grasslands; and 200 000 ha of mangrove swamps.

4.5.1 Primary Forests and Secondary Forests

The forest ecosystems can be divided into closed forests and transition or secondary forests. The closed forests can further be sub-divided into evergreen and semi-deciduous forests. The evergreen forest is characterized by trees about 30 m tall with a closed canopy growing in areas with abundant rainfall of at least 3 000 mm per year which is well distributed throughout the year. The semi-deciduous forest has similar characteristics to the rain forest, but with a greater proportion of deciduous forest trees. Herbaceous layers which may include a few specialized grasses occur over a variable portion of the forest floor. A number of timber trees are present in the rain forest, such as the African mahogany (*Khaya ivorensis* and *K. grandifoliola*), the scented sapele wood (*Entandrophragma cylindricum*) and iroko (*Chlorophora excels*). There are also economic cash crops such as oil palm (*Elaeis guineensis*), cocoa (*Theobroma cacao*) and rubber (*Hevea brasiliensis*).

The area of forest in the country has been reduced considerably, with less than 5% of the original forest remaining in isolated reserves. Most of the closed forest has been converted into secondary forest and forest regrowth or 'farmbush' as a result of clearing for use in 'slash-and-burn' or shifting cultivation farming and for firewood. The secondary forest has a closed canopy with trees 10-30 m tall, most of it consists of re-growth often from farming. Forest re-growth is by far the largest type of forest in Sierra Leone. Generally, farming is done in cleared sites for 2-3 years before it is abandoned for a fallow period of 4 to 5 years. Shortening of the fallow period leads to a decrease in tree species, loss in soil productivity, and increase in the number of herbaceous plants. This leads to a change from

the secondary forest or 'farmbush' state to predominantly grass/shrub or grass/herb mixture referred to as derived or transitional savannah. With more disturbances from man, the derived savannah gives way to a fire tolerant tree species with closed canopy in a tall grassy cover referred to as the Guinea Savannah. As the amount of rainfall reduces, and frequency of burning and intensity of grazing and cultivation increase, the Guinea Savannah vegetation changes to the Sudan Savannah.

4.5.2 Savannah Lands

This is mostly found in the Northern Province towards Guinea, especially in Koinadugu, Bombali and Kono Districts. There is also a strip of savannah along the coast of Bonthe and Pujehun Districts. It is comprised of the derived Guinea and the Sudan savannah zones. In the northern region where 60% of the cattle and small ruminant populations are concentrated, over 9 000 km^2 of land has been left bare due to overgrazing. Bush fires continue to affect about 200 000 hectares of savannah woodlands annually.

4.5.3 Mangrove Swamp Forests

The mangrove swamp forests contain mostly stunted shrubs and some trees up to 10-20 m tall. Mangrove woodlands occupy 47% of the Sierra Leone coastline, covering a total area of approximately 200,000 ha. Mangroves are halophytic, woody seed-bearing plants. They have unique adaptation features, which contribute to their survival in their relatively stressful environment. Mangroves are distributed in the four main estuaries that fringe the coastline of Sierra Leone. The predominant mangrove plant spp. found in Sierra Leone is Rhizophora sp. They are important habitats for diversity of migratory water fowl and water dependent amphibians and mammal species, and grazing lands for buffalo and waterbuck.

4.6 Soils

The soil resources of Sierra Leone can be categorised into five orders (and several series): Oxisols, Inceptisols, Entisols, Ultisols and Spodosols. Oxisols are the most widespread followed by Inceptisols and Entisols. Ultisols and Spodosols are also present but are rare. The soils can also be generally classified into three main groups: lithosols, ferrallitic and hydromorphic or swamp soils

Oxisols (or Ferralsols): are the common soils on the gently undulating uplands and in the inland swamps. They are strongly weathered and leached soils with low ability to supply nutrients to plants and capacity to retain nutrients (cation exchange capacities, CEC). Due to their low CEC, inorganic fertilizers, especially nitrogen is required in small amounts to avoid leaching because the soils occur in high rainfall regions. They contain free iron and aluminium oxides that fix phosphate fertilizers. Other constraints of oxisols include: deficiency in calcium, magnesium and potassium; presence of aluminium which can be toxic to many plant species, and deficiency of molybdenum required for the growth of legumes. They are usually deep, well-drained red or yellow soils with good structure, and deep profile, and uniform properties with depth.

Inceptisols: are also widespread and occur on steep slopes where erosion is active and in areas of recent alluvium. They are slightly more developed than the entisols and are less strongly weathered and leached than oxisols. The subsoil contains some weatherable materials. Inceptisols are richer in plant nutrients and have higher CEC than Oxisols. They include some poorly drained clay soils without well-developed horizons.

Entisols: are common on some sandy beach ridges and in poorly drained swamps or lagoons that are waterlogged throughout the year. They are sandy, young soils, limited in minerals in which the horizons are only slightly developed or undeveloped. They include recently deposited alluvial materials and some young soils on inert and resistant parent materials.

Ultisols or acrisols: have a high water holding capacity, but the higher density of the second horizon may limit biological activity and root penetration. Although these soils are less weathered than ferralsols, mineral reserves are low. Leaching is a problem in these soils and boron and manganese are also deficient. High aluminum content may lead to phosphate fixation. The structure of the surface soil is weak and internal drainage may be hampered by the compact texture of the horizon below the surface soil.

Hydromorphic or swamp soils: the most frequent of the swamp soils are the water-logged, gray hydromorphic soils. They are found in the floors of valleys, which are flooded in the rainy season. They are extremely deficient in plant nutrients, and are among the least productive soils in Sierra Leone. However, if drained and fertilized, they can be used for producing rice and other crops.

4.7 Socio-Economic Baseline

Sierra Leone is divided into Northern, Southern, Eastern Province and the Western Area. The regions are sub-divided into 14 districts which are further divided into 394 wards managed by district councillors, and 149 chiefdoms which are managed by paramount chiefs. The Western Area, which houses the national capital Freetown, is an exception; it does not operate a customary legal system present and thus has no chieftaincy or chiefdoms. The history of Freetown as a Crown Colony has led to privately held land tenure, while in other parts of Sierra Leone; the chiefs are still responsible for managing land issues.

Sierra Leone, before the EVD outbreak, had risen in the UNDP Human Development Index from an index of 0.329 in 2005 to 0.379 in 2013. The country, however still ranks among the world's least developed countries, with a life expectancy at birth at 48.8 years; under-five mortality at 157.9 per 1,000 live births one of (one of the highest in the world), and adult literacy of about 42 percent. About 70 percent of its population (5.5 million) falls below the national poverty line of US$ 2 a day. Sierra Leone has a very youthful population, with about half of all Sierra Leoneans being under the age of 18 and population growth estimated at 2.5 per cent. The country's maternal mortality rate is considered one of the highest in the world and the poverty rate is still over 60%. The country is challenged in reaching all the Millennium Development Goals except for parts of MDG 3 (gender parity) and MDG 6 (HIV/AIDS). To reverse these negative trends, economic growth rate should reach 10% from its 6.5% level, according to the second PRSP (UNDP Country assessment report, 2008-2010).

4.7.1 Population

The population of Sierra Leone was reported, from 2004 Population and Housing Census, as 5,997,500 persons and projected to have risen to 6.2 million by 2014. This population was said to be distributed as 38% in the urban are while the majority of the population still resided in rural areas (62%). A typical household, which is defined as a person or group of persons (related or unrelated) who live together and make common cooking arrangements (i.e. sharing a cooking pot), averages 5.9 people. Approximately 75% of households are headed by men and 25% by women.

4.7.2 Education and Literacy

In 2012 the 6-3-4-4 system of education was implemented by the Ministry of Education i.e. six years of primary education, three years of junior secondary education, four years of senior secondary school education and four years of tertiary/university training. This system was created to allow access to nine years of comprehensive basic education and to promote technical and skills training post basic education. Primary education is free but payment of various fees is required from junior school onwards. Although education is compulsory up to junior secondary school, the proportion of the population that has received formal education is relatively low. The 6-3-4-4 system is comprised of the following (Ministry of Education, Science and Technology, 2007):

- Age 3-5:pre-primary schooling (optional);
- Age 6-11:six years of primary schooling / community education centre A (CEC-A) (compulsory);
- Age 12-14:three years of junior secondary school (JSS) / community education centre C (CEC-B) (compulsory); and
- Age 15+:four years of senior secondary school (SSS), four years of tertiary education and above (optional).

Overall, literacy rates in Sierra Leone are 36% for women and for 54% men (SL-DHS, 2013). Literacy rates are higher for younger women and men compared with the older population. Nationally, the adult literacy rate for those aged 15 and above is 40.9% (UNDP, 2011).

4.7.3 Livelihoods and Economy

Sierra Leone is still highly dependent on foreign aid, which contributed 30-40%of GDP between 2000 and 2009, although additional revenue streams are now opening up (African Development Bank, 2011). GDP continues to rise and is currently at USD734 per capita (UNDP, 2011). In terms of government expenditure, 13.1% of GDP is spent on healthcare and 4.3%is spent on education.

Rural areas in the country and its economy are dominated by small scale agriculture. For nearly half of Sierra Leoneans of working age, family farming is a way of life and the main source of livelihood. Agriculture, most of it is smallholder, accounts for nearly 57.0 percent of the country's GDP. During the 1970s and 1980s, the country was 80-90% self-sufficient in rice production which is its staple food. Agricultural production plummeted just before and during the war years, but has been rising again steadily in the past decade or so. Sierra Leone however, remains a country plagued by food insecurity and malnutrition, largely due to poverty. The mining sector accounted for 12 percent of GDP in 2012 but increased to about 16 percent in the period before the EVD outbreak, mainly due to the discovery and mining of iron ore starting 2011 in the Northern region. Coffee, cocoa, and fish are the major agricultural exports of the country. The civil war significantly affected the mining sector and large-scale rutile and bauxite operations were abandoned in 1995 (African Development Bank, 2011).

New mining policies were adopted in 1995 and 1998 to attract investment in operations and the industry has since grown. GDP growth averaged nearly 8% per annum for the period 2003 to 2006 and is forecast by the International Monetary Fund (IMF) to continue at over 6 per cent per annum in the medium-term. The IMF predicted a 51.4% increase in total GDP in 2012 due primarily to iron ore resource development.

The employment to population ratio has remained constant at 40% to 45%, with the majority working for smallholdings or in the informal sector (mainly farming), indicating that the absorptive capacity of labour by the labour market in Sierra Leone is very limited due to low investment levels in labour-intensive economic activities and the fact that many of the people seeking jobs lack relevant education and/or skills.

4.7.4 Health

Healthcare in Sierra Leone is variously delivered by Government departments, religious organisations and non-government organisations. In addition, there is a growing private health sector, mainly in urban areas, that operate under the authority of private owners or boards of directors. The provision of healthcare is overseen by the Ministry of Health and Sanitation, which is represented by the District Health Management Teams (DHMT) at the district level.

The major focus of the health sector, aligned with the country's socio-economic development objectives as articulated in the PRSP I & II, is on reducing infant and maternal mortality, resulting in the priority provision of services, such as immunization, utilisation of treated bed nets for the prevention of malaria, promotion of early and exclusive breastfeeding, and promotion of hygiene practices as well as making available minimum maternal and neonatal health care systems. In light of the country's high maternal mortality rate, the government introduced free medical care for pregnant women and children under five years in early 2010. The prevention of HIV/AIDS and mitigating its effects also remains a priority of the government. A medium-term approach is a health insurance scheme that would help improve the quality of life of the population.

Health care is of particular concern in rural areas, which often face challenges such as supply of drugs and medicines, blood transfusion services, equipment supply and laboratory services.
Additionally, there is a lack of health care professionals in Sierra Leone which has been exacerbated by the EVD epidemic that claimed the lives of over 300 health workers. Nationally there are only 0.2 physicians and 1.7 nurses and midwives per 10,000 people. This is below the African regional average of 2.2 physicians and 9.0 nurses and midwifes per 10,000 people.

Malaria accounts for over 40% of outpatient morbidity in Sierra Leone. Children under five, pregnant women and refugees count amongst the most vulnerable to this disease. Malaria also contributes to malnutrition.

4.7.5 Energy

The energy sector is the lifeline in the development of any nation and therefore, access to reliable and affordable energy supply on a sustainable basis, particularly by industry, agriculture and the commercial sectors, is an important catalyst for achieving high economic growth thus reducing poverty. Developing the energy sector has been quite challenging, in spite of high potential for hydropower development on the many rivers traversing the country. The country currently produces (15 kWh/a to be scaled up to 35% of total need by 2015) far less energy than meets its needs to drive industry or service sector. The energy access (about 12%) is lowest in world compared to 49% in Ghana, 46% in Nigeria, 96% in North Africa, 73% in Asia, 99% in China and 76% global average. Only around 1% of the total rural population in Sierra Leone has access to electricity.

4.7.6 Road infrastructure

Of the 11,300km of roads in the country, 8,148km are classified in the national road system. The remaining roads consist of urban roads, community roads, local roads and farm tracks. With respect to the regional distribution of roads, the Northern Province accounts for 41% of the roads followed by the southern province with 33% and the Eastern Province with 23%. The Western Area accounts for only 3% (PRSP III, 2012).

4.7.7 Land Ownership and Rights

Land tenure in Sierra Leone is characterised by a dual ownership structure. In the Western Area including Freetown, private ownership of land also known as freehold tenure is recognised. Land in the rest of the country (i.e. the Provinces) is held in communal ownership under customary tenure and is controlled by traditional chiefs who administer it on behalf of their communities in accordance with customary principles and usage. Generally land is considered a divine heritage, which the spirits of the deceased ancestors expect that it will be preserved and handed over to future generations. The absolute authority in the community's land is vested in the entire community.

In the communal land system practiced in the provinces, land is allocated to individuals within the village by the Paramount and his council. These serve as the custodians and are responsible for resolving land disputes. Ownership is customary and is not formal (i.e. involving title deeds). In most cases, land that is individually 'owned' is located relatively close to the village while lands further away from the village centre tend not to be farmed and are used communally for grazing, hunting and the collection of firewood and non-timber forest products. Generally, only natives of the village are allowed to 'own' (freehold) land that they can pass onto their children. 'Strangers' or non-indigenes have to lease land to farm, either from individuals or the chief's council.

Four principles form the basis for customary law with regard to land allocation and land use;

- No member of a family can usurp the right of another member to the land;
- Every member of the family is entitled to a portion of the land to cultivate to feed himself and his family;
- No member can dispose of any portion of the land without the consent of the Paramount Chief; and
- Land cannot be sold. Within this framework there are variations in the rights of allocation and usage of land. The community represented by the Paramount Chief exercises the rights of allocation and usage over all its lands. In most chiefdoms, extended family groups have effectively acquired permanent right of use of land allocated to them by the community. This has led to a form of restrictive individual ownership. Land use rights stand as long as the land is tended.

There are three types of tenure affecting arable land, which apply to members of a landowning group:

- Traditional communal, practiced by the Kono, Koranko and Susu ethnic groups, where paramount chiefs are custodians of the land. Individuals request land and are granted user rights until cultivation ceases. At this point the land can be returned to a communal pool and reallocated when cultivation starts;

- Semi-communal, among the Kissi, Limba and Sere-Gbema ethnic groups, where individual villages establish boundaries and rights limited to land within the boundary. The village chief is the custodian of the land and allocation is carried out as in (i) above; and
- Family, practiced by Temne, Mende and Sherbro ethnic groups; in which land belongs to a group formed of descendants of the individual who first obtained the land. The current family head acts as a trustee or caretaker and he is responsible for land distribution. Individual members are either allocated land annually or land is allocated to sub-groups then to individuals. The land will then belong to the individual unless it is left undeveloped, then it returns back to the communal pool and reallocated.

There are many variations of the above systems, some, though communal, offer sufficient security for an individual to be willing to make long term investments on the land. Among the Mende and Limba ethnic groups, tree tenure is distinct from land tenure. The individual who planted the trees owns them even though someone else may own the land. The permission of the family head may be required to plant trees on land allocated to an individual. In all systems, the Paramount Chief is the ultimate custodian but would only intervene when land disputes involve outsiders.

The Provinces Land Act of 1927, Cap 122 governs the occupancy of land in the provinces by non-natives, who are defined as “any person who is not entitled by customary law to right in land in the provinces”. According to the Act, non-natives are unable to purchase land. Land may be leased with the consent of the Paramount Chief. Tenancy leases may only be approved for up to a maximum of 50 years, with the possibility of a 21 year renewal.

4.7.8 Agricultural Development Issues

The Comprehensive Africa Agriculture Development Programme (CAADP) is at the heart of efforts by African governments under the African Union’s New Partnership for Africa’s Development (AU/NEPAD) agenda to accelerate growth and eliminate poverty and hunger among African countries. The main goal of CAADP is to help African countries reach a higher path of economic growth through agricultural-led development, which eliminates hunger, reduces poverty and food and nutrition insecurity and enables the expansions of exports. As a programme of the African Union, it emanates from and is fully owned and led by African governments. In the case of Sierra Leone, the National Sustainable Agriculture Development Plan (NSADP), which also reflects the Agenda for Change and the agenda for Prosperity (PRSP I & II), has been adopted. Thus, the NSADP provides the broad framework for putting the objectives of the Government’s Agenda for Change into action in agriculture. The NSADP provides the roadmap for moving agriculture forward to achieve CAADP’s target of an annual growth rate of a minimum 6%, to address Sierra Leone’s growing needs due to population growth and to create additional income to the national economy.

A major stocktaking exercise was conducted to identify, among others, sector growth opportunities and potentials, as well as challenges. The process included six thematic group studies, policy reviews, chiefdom surveys, and in-depth stakeholder consultations with District Councils, with support from more than fifty national experts backed by international experts. The six thematic areas cover the following:

- Sustainable land and water management systems;
- Rural infrastructure and trade related capacities for improved market access;
- Improved food production to reduce hunger, including emergencies and disasters that require agricultural support;
- Agricultural technology development, dissemination and adoption;
- Sustainable use of forestry, fisheries and livestock resources; and
- Cross-cutting issues involving policy formulation and review, agricultural statistics, M&E, women in agriculture, youth in agriculture and farmer health.

The Smallholder Commercialization Programme (SCP) was born as the output of this process. The SCP was developed to operationalise the NSADP/CAADP’s strategic priorities with the overall development objective of increasing agriculture sector growth from a level 4.2% to 6% per annum over a five-year period (to approach the 7.1% required to meet MDG-1). The programme seeks to contribute substantially to increased wealth, employment, raw materials to trigger industrialization, to

promote food security and eradicate poverty in line with the targets of the first Millennium Development Goal and the World Food Summit.

The Programme (NSADP) has four major sub-programmes:

- Commercialization of Key Commodities through Small-Holder Commercialization Scheme and Medium and large-scale Farmers Promotion Scheme.
- Agricultural Infrastructure with focus on the Rehabilitation, Development and Upgrading of Feeder Roads, the Development of Irrigable Swamps,
- Rehabilitation and Modernization of Post-harvest Technology such as Storage and Processing Facilities and
- Rehabilitation and construction of Research Centres and MAFFS/MFMR Facilities.
- Private Sector Promotion through the formulation of policies and legislation that will encourage sustainable domestic and international investments in the agricultural sector.
- Efficient and Effective Management that will ensure, among others, coordination, transparency and mutual accountability.

5 ENVIRONMENTAL ISSUES IN THE PROJECT AREAS

This section discusses the potential environmental and socio-economic impacts that may result from the Project sub-components of the SCADP. For the purpose of the ESMF and the resulting ESIAs, an impact is any change to a resource or receptor brought about by the presence of the Project or by the execution of the Project's related activities.

It is important to clearly identify and characterise the potential environmental issues and concerns, both positive and negative, to be elicited by the Project sub-components. Hence, the potential impacts on environmental and socio-economic resources and receptors will be described as below, where appropriate:

- **Direct/Primary** - Impacts that result from the direct interaction between the Project's activities and the receiving environment (such as between effluent discharge and receiving water).
- **Indirect/Secondary** - Impacts that follow from primary interactions between the Project's activities and the environment as a result of subsequent interactions within the environment (such as soil loss as a consequence of land clearing affecting downstream aquatic habitats)
- **Cumulative Impacts**- acting together to affect a particular environmental resource or receptor. Several types of cumulative impacts can be defined:
- **Temporal** - A series of impacts, in themselves not significant, occurring repetitively to build to the point that they become significant.
- **Accumulative** - The overall effect of different types of impact (such as air pollution and noise and traffic) on a single receptor (such as a community or a habitat) where each single impact may not be significant, but combined they are.
- **Additive** - Where impact from the Project occurs at the same time as impact from activities being undertaken by other parties.
- **Interactive** - Where two different types of impact (which may not in themselves be significant) react with each other to create a new impact (that might be significant).
- **Synergistic** - Where two impacts together (e.g., changes in water quality with respect to two different pollutants) to create an impact that is greater than the sum of their parts.
- **Induced** - Impact originating from other projects or activities that are encouraged to happen as a consequence of the original project (such as the mill development stimulates a requirement for improved site access leading to an increased local population and traffic).
- **Non-Normal/Accidental** - Impacts that result from un-planned events (incidents- within the Project (such as breakdowns, failures, or human error) or in the external environment affecting the Project (such as floods, landslides), taking into consideration the probability (or likelihood) of the event becoming important.

The categorisation and characterisation of potential impacts into positive (beneficial) or negative (adverse) impacts is not necessarily simple as the potential impacts may have both positive and negative effects; For example because one group may benefit while another is disadvantaged or the impact may be positive socio-economically but not environmentally. The focus of the ESMF is to highlight the positive impacts of the Project, while suggesting measures for minimizing negative impacts during the construction, operational and closure phases of the Project.

5.1.1 Predicting and Characterizing the Magnitude and Importance of Impacts

Characteristics of environmental impacts vary and the main parameters to be used in characterizing, predicting, assessing and evaluating potential impacts are described in terms of:

- **Nature** (**Direction**) - The most obvious impacts are those directly related to the project and can be directly attributed in space and time to the causal action. Indirect or secondary impacts generally cause less obvious changes occurring later and far from the source of impact. In general, cumulative effects are caused by the amplification of an impact when combined with the impacts of other projects completed recently or underway. Considered individually, these

impacts may be insignificant, but together, they become important by virtue of their concentration in one place and frequency. The effects may be cumulative through the addition or interaction of different impacts such that the overall effect is greater than the sum of individual effects.

- **Geographic Extent/Spatial Scale** - The geographic extent is defined as how far an effect propagates and it takes into account the extent to which adverse effects, caused by the project, may occur in areas far removed from it, as well as how they may contribute to any cumulative environmental effects. Depending on the type of impact, it is possible to predict the extent or geographical area of impact for each site and evaluate variation in magnitude. Thus, an impact may be:
- **Local**: Impact that occurs in the vicinity of the project and affects a locally important environmental resource (in contrast, an impact on a nearby conservation area, even restricted spatially, would constitute an international impact)
- **Regional**: Impacts that affects regionally important environmental resources or is felt at a regional scale as determined by administrative boundaries, habitat types
- **National**: Impacts that affect nationally important environmental resources or affects an area that is nationally important or protected.
- **International**: Impacts that affects internationally important environmental resources such as areas protected by International Conventions.
- **Trans-boundary**: Impact that is experienced in one country as a result of activities in another (greenhouse gas, river pollution).
- **Duration/Temporal Scale** - Duration refers to the period over which an effect occurs:
- **Short-term**: impact predicted to last only for a limited period (such as during construction phase) but will cease on completion of the activity, or as a result of mitigation measures and natural recovery. An impact may last for a short term; in this case, less than a year. A temporary impact may span several days, weeks or months. However, it must be reversible. For species, impact occurs for less than one generation.
- **Medium-term**: Impact that will continue over a period (i.e., one to five years), continuous, intermittent, or repeated. For species, impacts occur for more than one generation.
- **Long-term**: Impact that will continue over an extended period (i.e., more than five years), continuous, intermittent, or repeated. For species, impacts occur for more than two generation.
- **Permanent**: When an impact lasts for a very long term and is irreversible, it is referred to as a permanent impact.

Closely related to the duration of the effect is its **frequency**. The frequency of effects and the potential of the environment to recover from these effects are considered important. They can be described as-

- **Once**: Occurs only once
- **Continuous**: Occurs on a regular basis and regular intervals
- **Sporadic**: Occurs rarely and at irregular intervals

Long-term environmental effects may be significant and consideration should be given to negative impacts that may develop over time.

- **Reversibility or irreversibility** - Reversibility refers to the environmental recovery once an impact has occurred. Irreversible environmental impacts are considered more significant than those that are reversible. Thus for *:*
- **Reversible impacts**: Environmental component recovers to pre-project level. The rate of recovery is important for this level of classification.
- **Irreversible impacts**: Impact that causes a permanent change in the affected receptor or resource (e.g., the felling of old growth forest as a result of occupation of site, landscape changes caused by project).

- **Likelihood** - Likelihood is defined as the probability of an impact occurring, taking into account two criteria: (1) Probability of occurrence – if there is a high, medium or low probability that a particular significant environmental impact will occur. (2) Certainty of significance – there will always be some uncertainty ('confidence limit') associated with an ESIA. An impact is thus described as:
- **Likely**: There is a high probability (>50%) that impact will occur, or high certainty that impact will be significant
- **Unlikely**: There is a low probability (<50%) that impact will occur, or high uncertainty in significance prediction.
- **Magnitude** - Magnitude measures the severity of environmental effects, including perception. In general, magnitude is expressed in terms of severity (major, moderate, minor or negligible). Magnitude, as opposed to the importance, also takes into account other aspects of the magnitude of impact, including its reversibility or irreversibility.

Magnitude	
Extent (Spatial Scale)	**Local** – impacts that affect the project area only.
	Regional – impacts that affect the region as determined by administrative boundaries.
	National – impacts that affect important environmental resources across the national boundary
	International/Trans-boundary – impacts that affect internationally important resources such as areas protected by international conventions or across national boundaries of two or more boundaries .
Duration (Temporal Scale)	**Temporary** – impacts are predicted to be of short duration and occasional
	Short-term – impacts that are predicted to last less than one year
	Medium-term – impacts that are predicted to last one to five years
	Long-term – impacts that will continue for the life of the Project (mostly greater than five years)
	Permanent – impacts that cause a permanent change in the affected receptors or resources (e.g. removal or destruction of ecological habitat) that endure substantially beyond the Project lifetime.
Reversibility or Irreversibility	**Reversible** - environmental component recovers to pre-project level. The rate of recovery is important.
	Irreversible - impact that causes a permanent change in the affected receptor or resource

The rating of the Magnitude matrix is outlined below:

MAGNITUDE	**Negligible**	The impact on the environment is not detectable or there is no perceptible change to the receptor or resource.
	Low	The impact affects the environment in such a way that natural functions and processes are not affected much and/or the communities are able to adapt easily.
	Medium	Where the affected environment is altered but natural functions and processes continue, albeit in a modified way and/or the communities are able to adapt with some difficulties
	High	Where natural functions or processes are altered to the extent that it will temporarily or permanently cease and/or the communities affected will not be able to adapt to changes.

- **Importance** - For the purpose of this ESIA, the importance of an impact is evaluated in terms of:
- **Value** - tangible and intangible worth
- **Vulnerability** - the likelihood (or risk) of an effect interacting with (or affecting) the receptor.
- **Sensitivity/Intolerance** - the sensitivity (level of intolerance) of the receptor to the effect being considered and standards or criteria (e.g., IFC, WHO, e.g.,) for determining what is tolerable.
- **Recoverability** - how long/quickly does it take for the receptor to recover to its pre-impact state following exposure to an effect (distinguishing between partial and full recovery)? The evaluation of the importance of the impacts depends on the characteristics of the expected impact and its importance in decision-making.

Table 5-1: Evaluation of Importance of the impacts

		Attributes of Importance			
		Value	**Vulnerability**	**Sensitivity**	**Reversibility**
IMPORTANCE	**Negligible**	Negligible/ Low	Negligible/ Low	Negligible/ Low	High
	Low	Low/ Moderate	Low/ Moderate	Low/ Moderate	High/ Moderate
	Medium	Moderate/ High	Moderate/ High	Moderate/ High	Moderate/Low
	High	Moderate/ High	Moderate/ High	Moderate/ High	Low/ Negligible

Table 5-2: Evaluation of Importance (in context of Magnitude and Likelihood) of the impacts

IMPORTANCE (in context of Magnitude and Likelihood)				
		LIKELIHOOD		
		Unlikely	Likely	Definite
		The Impact is unlikely to occur	The Impact is likely to occur under most conditions	The impact will occur
MAGNITUDE	Negligible	Negligible	Negligible	Minor
	Low	Negligible	Minor	Minor
	Medium	Minor	Moderate	Moderate
	High	Moderate	Major	Major

The importance of impact is evaluated according to three criteria:

- **Negligible Importance**
  The magnitude of impact is almost nil (negligible). It is far below the prescribed standards or laws and regulations in force. The effects are temporary and mostly remain at the level of natural variation.
- **Minor Importance**
  The magnitude of impact is low. It is below the prescribed standards or laws and regulations in force. The effects are temporary and remain at the level of natural variation.
- **Moderate Importance**
  The magnitude of impacts are moderate span a wide spectrum of impacts, from the point where the impact is considered as minor to the point where the magnitude of impact is close to exceeding an established (legal) standard or limit. Reversibility is only possible over a period of several years.
- **Major Importance**
  The impact is above the prescribed standard limits and is mostly irreversible.

5.1.2 Evaluating and Assessing the Significance of Impacts

Once an assessment is made of the magnitude and importance of Project impacts, the relative significance of a predicted impact is rated through a matrix process as shown below.

Table 5-3: Evaluation and assessment of significance of impacts

		IMPORTANCE			
		Negligible	Minor	Moderate	Major
MAGNITUDE	High	Low Significance	Moderate Significance	High Significance	High Significance
	Medium	Insignificant	Low Significance	Moderate Significance	High Significance
	Low	Insignificant	Insignificant	Low Significance	Moderate Significance

		IMPORTANCE			
		Negligible	**Minor**	**Moderate**	**Major**
	Negligible	Insignificant	Insignificant	Insignificant	Low Significance
	High/ Medium			Positive	

The **significance of an impact** is evaluated according to the scale description criteria outlined below:

Insignificant

- Small localised impact
- Low probability of occurrence
- Impact is reversible

These impacts fall within the acceptable limits of the impact of a project on the environment, and mitigation in desirable if they occur but not necessary. This does not preclude 'Best Practice' as a means of avoiding cumulative impacts.

Low Significance

- Moderate impact occurring over a short period of time
- Environment has time to recover
- Project benefits are limited to few people
- Abnormal operating conditions would cause breach of legislation
- Impact and probability of occurrence are both small
- Emissions are within statutory threshold

These impacts though important, are of less serious nature; in such a case, the Best Available Technology (or Practice) Not Entailing Excessive Cost (BATNEEC) should be employed. Such impacts alone are usually not significant enough to prevent a project from commencing or proceeding.

Moderate Significance

- Project activity has an irreversible impact , but impact is moderate
- Project activity results in a breach of legislation under abnormal operating conditions
- Conflict with established recreational, agricultural or other established uses of the project area
- Effect and probability of occurrence are moderate
- Project benefits entire community

These impacts are significant, meaning that if effective mitigation measures are not taken, a project may be hindered from commencing or continuing. Such an option would require effective management and monitoring, or abandoned altogether for other options.

High Significance

- High likelihood of catastrophic failure and/or loss of life
- Impacts on nationally/internationally recognised environmental protection areas/heritage areas
- Impact is irreversible affecting a high number of people
- Impact causes resettlement of more than 200 households

- Impact exceeds legal threshold
- Disrupts or adversely affects a property of cultural significance to a community or social group
- Project induces substantial growth or concentration of population
- Project converts prime agricultural land to non-agricultural land

Very significant action would be required to avoid or reduce these impacts. In certain instances, such impacts would prevent the action or option concerned from being taken or approved; and alternatives would have to be considered.

Positive

- Impacts are beneficial to the relevant communities and valued ecosystem components.

5.2 Description of Potential Environmental and Social Impacts

The table below (**Error! Reference source not found.**) gives an indication of the potential impacts and the mitigative measures from implementing the ctivities under the SCADP.

Table 5-4: Potential impacts, significance and mitigation measure

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Rehabilitation and provision of new feeder roads			
Construction phase			
Air Quality	• Impacts due to emissions generated by construction machinery • Fugitive emissions from various sources • Dust pollution (PM10, PM2.5)	• Moderate	• Sprinkling of water to minimize dust pollution • Ensure vehicles conveying materials are covered • Use of converters to minimize emissions
Solid Waste	• Solid waste generated from construction materials • Solid waste from workers	• Moderate	• Materials to be properly stored • At the end of construction of work, sites to be cleaned with proper disposal of waste
Ground & Surface Water	• Water extraction i.e. exploitation of water for construction purposes • Reduced water quality due to siltation • Loss of surface water bodies • Water logging	• Moderate • Major	• Exploitation of water to be done with consent of local community • Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
	• Contamination by fuel and lubricants		• Proper disposal of construction waste and prevent wastewater entering waterways
Noise Levels	• Increase noise levels due to construction machinery • Increase in noise levels due to human activity • Increased noise from blasting activities	• Moderate	• Contractor to consider use of sound barriers or other measures as required • Community awareness raising • Noisy activities to be scheduled to occur within prescribed normal working hours • Limit quarrying near communities
Soil	• Potential loss of arable land • Erosion and loss of top soil • Compaction of soil • Pollution due to oil spills and other pollutants	• Moderate	• Store top soil and replace on completion of works • Create contour drains during construction; • Soil Erosion Management strategies to including-vegetation and bunds • Avoid/control spilling of oil, grease and paints • Avoid heavy machinery on agriculture / productive soils;
Flora and Fauna	• Removal of forest trees • Loss of habitat and feeding grounds for fauna • Loss of migratory corridors	• Moderate	• Undertake compensatory reforestation • Crossing work for wild life and indicators for drivers for wildlife

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
			zones; no horn zones
Land Use & Land Take	• Potential resettlement of communities • Change of land use pattern	• Moderate • Minor	• Priority to be given to existing farms/plantations, no new farm-lands/plantations to be supported under the project; no resettlement of people expected under the project; • Compensate for loss of land if applicable (unlikely); • All affected families will be compensated based on the plan highlighted in the RPF.
Drainage	• Change in natural drainage pattern • Disruption of drainage due to improper waste disposal	• Moderate	• Provide cross drains • Backfilling and levelling to prevent water Percolation and accumulation
Raw Material Usage	• Exploitation of raw materials such as sand mining, stones, etc.	• Moderate	• Identify raw materials well in advance and consult with community for sustainable use
Occupational Health and Safety	• Risks from the use or handling of machinery including risks from noise, vibration etc	• Moderate	• Raise awareness on safety procedures • Provide adequate and easily understood signs
Socio-Economic	• Direct employment opportunities for construction workers from local communities	• Moderate	• Promote recruitment of locals for labour force • Proper Sanitation, Health Care, Solid

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
	• Indirect income opportunities to local suppliers • Skills transfer to local workers • Transmission of communicable diseases • Increased in-migration into communities		waste disposal,, adopt disease control measures and employ local man power
Operational phase			
Air Quality	• Exhaust emissions due to traffic • SO_2 & NO_x	• Moderate	• Promote education on regulations for air pollution
Water Quality	• Contamination of water bodies from road surface run-off	• Moderate	• Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems
Noise Levels	• Increased noise levels due to increased traffic	• Moderate	• The use of sound barriers or other measures should be considered where warranted. • The public will be educated about the regulations of noise from vehicles
Soil	• Soil contamination due to road surface run-off	• Minor	• Develop proper drains
Fauna and Flora	• Collision with fauna	• Moderate	• Sign posting of animal crossing

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Ground & Surface Water	• Degradation due to road runoff	• Moderate	• Provide cross drains • Backfilling and leveling to prevent water Percolation and accumulation
Drainage	• Change in natural drainage pattern • Disruption of drainage due to improper waste disposal	• Moderate	• The roads cross and side drainage systems shall be periodically checked and cleared so as to ensure adequate storm water flow
Public Safety	• Improper disposal waste disposal resulting in breeding of disease vectors • Increased accident risks from traffic	• Moderate	• Ensure proper disposal of waste • Provide adequate and easily understood signs • Signs for slow driving to be put up
Continued use of infrastructure	• Availability of and use of funds for maintenance	• Major	• Make provision for funds to maintain roads
Potential impacts from provision of rural markets & storage infrastructure			
Construction phase			
Solid Waste	• Waste from bush clearing and removal of trees • Solid waste from construction	• Moderate	• Materials to be properly stored • At the end of construction of work, sites to be cleaned with proper disposal of waste

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Surface and Ground Water	• Sediment laden runoff from exposed areas mainly due to vegetation • clearing during construction; • Improper use of waste oils from construction equipment; • Improper disposal of sanitary waste from work camps	• Moderate	• Exploitation of water to be done with consent of local community • Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems • Proper disposal of construction waste and prevent waste water entering waterways
Noise Levels	• Use of heavy machinery and vehicles	• Moderate	• Contractor to consider use of sound barriers or other measures as required • Community awareness raising • Noisy activities to be scheduled to occur within prescribed normal working hours • Limit quarrying near communities
Soil	• Exposed land surfaces from cleared vegetation may induce erosion	• Moderate	• Soil Erosion Management strategies to including-vegetation and bunds
Flora & Fauna	• Loss of flora and fauna due to land clearance	• Moderate	• Undertake compensatory reforestation
Public Safety	• Badly managed work activity/ site within community • Poor housekeeping leading to stagnant	• Moderate	• Ensure proper disposal of waste • Awareness raising • Provide adequate and easily

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
	water as breeding grounds for insect vectors (causing malaria etc) • Movement of heavy trucks and equipment and road safety		understood signs
Land Use	• Conflicts with incompatible activities and land uses	• Minor	• Consult with community
Land Take	• The facility will occupy some space in the community. It may either be private or public land for which compensation may be required	• Moderate	• Priority to be given to alternative land to prevent resettlement • Compensate for loss of land; • All affected families will be expropriated according to Resettlement Action
Raw Material Usage	• Exploitation of raw materials i.e. Timber, sand, stones from local and external sources (quarries etc)	• Moderate	• Identify raw materials well in advance and consult with community for sustainable use • Encourage recycle and reuse
Occupational Health and Safety	• Hazards from handling heavy equipment, including noise, ergonometric stress, lifting heavy materials etc	• Moderate	• Raise awareness on safety procedures • Provide adequate and easily understood signs
Socio-Economic	• Use of local labour and therefore income earning; • Destruction of property- farm crops,	• Major	• Promote recruitment of locals for labour force • Proper Sanitation, Health Care, Solid waste disposal,, adopt disease

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
	structures; • Community convenience vs Consultant's technical judgment for chosen sites • Visual intrusion by heavy trucks and equipment; • Disruption of social activities		control measures and employ local man power
Operation phase			
Air Quality	• Emissions from vehicles transporting agricultural goods • Odours from poorly disposed waste food/crops	• Moderate	• Ensure vehicles conveying materials are covered • Use of converters to minimize emissions
Water Quality	• Sediment laden storm runoff	• Moderate	• Silt catch basins or Silt traps shall be put along drainage systems • Proper disposal of waste and prevent waste water entering waterways
Solid Waste	• Market refuse and other waste	• Moderate	• Materials to be properly stored • Sites to be cleaned with proper disposal of waste
Sanitary Waste	• Health risks and aesthetic problems from poor sanitary conditions	• Moderate	• Proper Sanitation, Health Care, Solid waste disposal,, adopt disease control measures and employ local man power

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Noise Pollution	• From the movement of heavy vehicles carting food stuff, etc.	• Moderate	• Community awareness raising • Noisy activities to be scheduled to occur within prescribed normal working hours
Soil Erosion & Contamination	• Erosion may be induced or enhanced by vegetation clearing	• Moderate	• Undertake strategies including-vegetation and bunds • Avoid/control spilling of oil, grease and paints
Surface and Ground Water Quality	• Sediment laden storm runoff	• Moderate	• Proper disposal of waste and prevent waste water entering waterways • Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems
Public Nuisance & Health Risks	• Public health risks may arise from poor facility maintenance • leading to breeding of rodents and poor hygienic conditions	• Moderate	• Ensure proper disposal of waste • Provide adequate and easily understood signs • Signs for slow driving to be put up
Continued use of infrastructure	• Availability of, and accessibility to maintenance funds	• Moderate	• Make provision for funds to maintain roads
Potential impacts from use of improved agricultural technologies			

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Negative Impacts			
Use of fertilizers/pesticides	• Improper disposal of packaging materials resulting in environmental pollution and health concerns for farmers • Poor training in use of pesticides may result in health problems	• Moderate	• Training in the use of agro-chemicals • Promote use of protective wears during use
Crop pest and diseases problems	• Problems may increase due to the crop residues left in the field	• Majority	• Promote composting of residue and other techniques
Natural or Semi Natural Habitats	• New farming practices could encourage conversion of natural or semi natural habitats	• Moderate	• Awareness raising • Promote use of existing farming sites
Soil Erosion	• Exposed land surfaces from cleared vegetation may induce erosion from rain events	• Moderate	• Undertake strategies including-vegetation and bunds • Compensatory reforestation
Flora/ Fauna	• Loss of flora & fauna from land clearing	• Moderate	• Compensatory reforestation
Water Use	• Potential increased use of agro-chemicals resulting in point & non-point pollution of water bodies • Improved agricultural systems could increase water demand	• Moderate	• Exploitation of water to be done with consent of local community • Training in water management practices • Silt catch basins or Silt traps shall be put along drainage systems • Proper disposal of construction

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
			waste and prevent waste water entering waterways
Facility Management	• Requires higher management skills and is labour intensive	• Minor	• Training and education in facility management
Land Use	• Conflicts with incompatible activities and land uses	• Minor	• Consult with community
Occupational Health and Safety	• Hazards from handling agro- chemicals and presence of dangerous reptiles (snakes) and other animals	• Moderate	• Raise awareness on safety procedures
Positive Impacts			
Crop Yields	• Optimal and stable crop yields and reduced commercial inputs	• Major	• Positive impact
Profits	• Increased profit	• Major	• Positive impact
Security	• Improved food security	• Major	• Positive impact
Land Use	• Continuous use of same piece of land	• Moderate	• Encourage fallow periods
Erosion	• Reduced erosion	• Moderate	• Encourage vegetative cover to minimise loss
Land Degradation	• Reduced shifting cultivation and land degradation	• Moderate	• Encourage intercropping to promote local nutrient deposition

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Poverty	• Reduction in rural poverty and hunger threats	• Moderate	• Positive impact
Socio- Economic	• Use of local labour and therefore income earning; • Improved standard of living of farming households	• Majority	• Positive impact
Potential impacts from provision of rural agro-based processing facilities			
Construction phase			
Solid Waste	• Waste from bush clearing and removal of trees	• Moderate	• Materials to be properly stored • At the end of construction of work, sites to be cleaned with proper disposal of waste
Water Pollution	• Sediment laden runoff from exposed areas mainly due to vegetation • clearing during construction; • Improper use of waste oils from construction equipment; • Improper disposal of sanitary waste from work camps	• Moderate	• Exploitation of water to be done with consent of local community • Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems • Proper disposal of construction waste and prevent waste water entering waterways
Noise Pollution	• Movement of heavy vehicles	• Moderate	• Contractor to consider use of sound barriers or other measures as

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
			required • Community awareness raising • Noisy activities to be scheduled to occur within prescribed normal working hours • Limit quarrying near communities
Soil Erosion	• Exposed land surfaces from cleared vegetation may induce erosion from rain events	• Minor	• Store top soil and replace on completion of works • Soil Erosion Management strategies to including-vegetation and bunds • Avoid heavy machinery on agriculture / productive soils;
Flora/ Fauna	• Loss of flora and fauna due to loss of vegetation	• Moderate	• Undertake compensatory reforestation • Crossing work for wild life and indicators for drivers for wildlife zones; no horn zones
Public Safety	• Badly managed work activity/ site within community • Poor housekeeping leading to stagnant water as breeding grounds for insect vectors (causing malaria etc.) • Movement of heavy trucks and equipment and road safety	• Moderate	• Training in facility management • Encourage and promote maintaining sanitary environment

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
Land Use	• Conflicts with incompatible activities and land uses	• Minor	• Consult with community on potential use
Land Take	• The facility will occupy some space in the community. It may either be private or public land for which compensation may be required	• Moderate	• Priority to be given to alternative land to prevent resettlement • Compensate for loss of land; • All affected families will be expropriated according to Resettlement Action Plan
Occupational Health and Safety	• Hazards from handling heavy equipment, including noise, lifting heavy materials etc	• Moderate	• Raise awareness on safety procedures • Provide adequate and easily understood signs
Socio- Economic	• Use of local labour and therefore income earning; • Visual intrusion by heavy trucks and equipment; • Disruption of social activities	• Moderate	• Promote recruitment of locals for labour force • Proper Sanitation, Health Care, Solid waste disposal,, adopt disease control measures and employ local man power
Operation phase			
Water Quality and Pollution	• Sediment laden storm runoff; • Disposal of process wastewater	• Moderate	• Avoid/control spilling of oil, grease and paints • Silt catch basins or Silt traps shall be put along drainage systems

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
			• Proper disposal and prevent waste water entering waterways
Solid Waste	• Disposal of wastes	• Moderate	• Materials to be properly stored • Sites to be cleaned with proper disposal of waste
Noise Pollution	• From the poorly maintained processing facilities	• Minor	• Ensure routine maintenance of facilities • Noisy activities to be scheduled to occur within prescribed normal working hours
Odour Management	• Odour from organic process waste not suitably disposed of	• Minor	• Promote good sanitary environment • Promote proper disposal
Continued use of facility	• Availability of, and accessibility to maintenance funds	• Major	• Continue provision of funds for maintenance of facilities
Potential adverse social impacts/issues from feeder roads construction			
Employment and loss of livelihood	• No farmers are expected to lose parts of their farmlands due to feeder roads because rehabilitation works will be done on already existing rural roads and foot-paths. Otherwise, no person will lose employment or livelihood from the project. Rather there will be job opportunities for the youth, local food vendors and communities who will be supplying contractors with sand and stones	• Moderate	• Provision of livelihood assistance based on crops affected in accordance with the Resettlement Policy Framework (RPF) • Job opportunities for the youth, women food vendors and income for community members who will serve as local contractors or labour force

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
			and also project beneficiaries.
Deprivation of use of land	• New feeder roads to be rehabilitated may take up individual or community land	• Moderate	• Land compensation (where necessary) to be based upon current market value of land in the area and in accordance with the resettlement policy framework (RPF).
Loss of crops/properties	• Roads to be rehabilitated have been demarcated already and free from any encumbrance. No new roads will be rehabilitated.	• Moderate	• Appropriate compensation should be paid for any damaged or destroyed crops and propriety that belongs to the affected persons. • All compensation process should satisfy the RPF developed for the project.
Impact on vulnerable groups	• No negative impacts on vulnerable groups in the society (such as the elderly, disabled, women, children and minority groups) will occur as a result of the proposed development. The Project has no inherent negative impact or bias towards any vulnerable group.		• Positive impacts
Impact on Social and Cultural Structures	• The Project will have positive impacts on social and cultural structures as the Project activities will bring together persons from different communities and interact for their common good.		• Positive impacts
Impact on Cultural Heritage/ Archaeological	• There are no known sites of significant		• Positive Impacts

Environmental and/or Social Parameters	Potential Impacts	Environmental and/or Social Significance	Mitigation Measure
interest	cultural heritage or archaeological interest in the vicinity of the projects. The risks to cultural heritage would be on buried resources encountered during excavation on land.		
Impacts on Human Health/ Safety and sanitation	• Human health and safety could be compromised through road traffic accidents involving construction vehicles/equipment. • Occupational injury associated with construction activities will be limited to the work force only. • Indiscriminate disposal of human waste or free-range defecation by project workers could create environmental health problems for local communities • Indiscriminate disposal of litter at the project sites and work camps will create unsightly conditions and pose safety and health risks	• Major	• Ensure vehicles conveying materials have appropriate safeguards to prevent emissions • Promote use of protective wears • Ensure appropriate and easily understood signs • Promote speed limits in sensitive locations • Promote good housekeeping and sanitary conditions • Ensure back-filling of dugout areas to reduce risks of disease or accidents

5.3 Impacts of the Ebola Virus Disease (EVD) Epidemic

Agriculture supports over 80 percent of the rural population in Sierra Leone; however, low levels of agricultural productivity render the sector less competitive and depress rural wages, discouraging employment among youth who are the most non/under-employed in the country. The EVD epidemic has also negatively affected the operations of agribusinesses, farmer-based organizations and the stakeholders along the agricultural value-chains. Many markets for agricultural produce have been disrupted due to the restricted movement of goods. This has created a dampening effect on prices in the production areas while creating an upward pressure on prices in the supply constrained areas.

The EVD epidemic has had a heavy toll on the social services, particularly health and education. Health services were stretched to the limit, and the epidemic has worsened the capacity situation with the EVD-related death of doctors, nurses and other health personnel. The education sector has been affected because of the closure of all schools as a preventive measure to curb the spread of the epidemic (currently schools have since been opened). The economic sectors such as mining, tourism and agriculture have also been hard-hit by the epidemic. The disruption to mining activities (due to the departure of expatriate staff), the significant reduction in tourism (due to travel bans and the withdrawal of airlines), and the negative effect on agricultural production due to labor constraints arising from EVD-related deaths, morbidity, fear and panic, and market distortions (due to quarantines) will all affect the country's economic prospects.

Various assessments on the impact of EVD on agriculture indicate a reduction in food and cash crop production attributed to the epidemic. Food production is likely to be reduced due to labor-related production constraints during the 2014/15 cropping season, a result of higher mortality and/or morbidity and self-imposed restrictions due to the general sense of fear and panic associated with the epidemic, particularly in hard-hit districts (Kenema and Kailahun, Port Loko, Moyamba and Bombali) where quarantines had been enforced since May 2014. The two initial Ebola epicenter districts (Kailahun and Kenema) are considered the bread-basket for the country producing over 20% of the national food supply.

6 PROCEDURES FOR SUB-PROJECT PREPARATION AND ASSESSMENT

6.1 Environmental Screening under OP 4.01 Environmental Assessment

The classification of each subproject under the appropriate environmental category will be based on the provisions of the World Bank Operational Policy on Environmental Assessment (OP 4.01). The environmental and social screening of each proposed sub-project will result in its classification in one of the three categories i.e. A, B or C, depending on the type, location, sensitivity and scale of the subproject and the nature and the magnitude of its potential environmental and social impact. The existing Project was assigned an Environmental Category B, as is similarly expected for the proposed project. It is possible that no sub-project is will fall under an Environmental Assessment (EA) Category A. The following is a description of various EA categories that subprojects may be grouped into -

- **Category A:** Impacts are expected to be 'adverse, sensitive, irreversible and diverse with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forests and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances. The impacts under this category affect broader areas than the sites or facilities subjected to physical works. Such subprojects would require a full ESIA.
- **Category B**: A project which is likely to have fewer and less adverse potential environmental and social impacts (which are less adverse than those of category A projects), on human populations or environmentally important areas including wetlands, forests, grasslands and any other natural habitat fall within this category. The impacts are usually site specific, few or none of them are irreversible, and most of them are mitigated more readily than impacts from category-A sub projects. Although an ESIA is not always required, some environmental analysis is necessary. Such subprojects would require an ESMP.
- **Category C:** A project which is likely to have minimal or no adverse environmental and social impacts would fall into this category. Beyond screening no further Environmental and Social Assessment action is required. Typical projects include education, family planning, health, and human resource development.

6.2 Environmental and Social Assessment Process in Sierra Leone

The key regulations for environmental and social assessment in Sierra Leone is the Environment Protection Agency Act, 2008 (amended 2010) as discussed in Section 3.1.5.

The section below illustrates the steps involved during environmental and social assessment and management process as per Sierra Leone regulations that will lead to the review and approval of subprojects under the SCADP.

6.2.1 Key Steps

6.2.1.1 Stage One – Registration

1. Project Proponent/Developer is required to register the project proposal through an application process. The letter is addressed to the EPA-SL Executive Chairperson and copied to the Director for the attention of the EIA Committee.
2. EIA Application and Screening Forms are issued to the Proponent/Developer after a payment of two hundred thousand Leones (Le 200,000) at an account designated for EIA's application fees.
3. The Proponent is required to return duly completed forms to the EPA-SL office.

6.2.1.2 Stage Two – Project Screening

1. Project proposal and Screening Forms are screened to determine whether or not the development proposal should be subject to an EIA and, if so, the level of detail required.
2. This stage of the EIA licensing process is expected to be completed within two weeks.

6.2.1.3 Stage Three – Scoping

This is to determine the depth of the environmental assessment, i.e. the scope of factors to be considered, the parties involved and their interest and concerns, the appropriate level of efforts and analysis, and to prepare guidelines for the conduct of the EIA.

1. After the project has been classified and a determination is made that the activity requires an EIA Licence, the Proponent will be required to submit an ESIA Scoping Report on the project.
2. The EPA-SL and the Project Proponent will agree on the Terms of Reference (ToR) before the commencement of the ESIA studies.
3. Upon receipt of the EIA Scoping Report, the process for the determination of the ToR shall be within two weeks.
4. EPA-SL staff will visit the location of the project before approval of the ToR.

6.2.1.4 Stage Four – Environmental and Social Impact Studies and Preparation of the Report

1. Upon approval of the ToR the Proponent undertakes the ESIA studies.
2. The ESIA report must document clearly and impartially the project's impacts, the proposed measure for mitigation, the significance of effects and impacts on the environment, and the concerns of the interested public and the communities affected by the project. In this regard, management plans including the environmental and social management plan (ESMP), community development and action plan (CDAP), resettlement action plans (RAP), etc., must be clearly articulated in the document.
3. Upon completion of the ESIA studies, the Proponent should submit eighteen (18) hard and soft copies of the ESIA report to the EPA-SL for circulation to the EPA-SL's Board members and other relevant professional bodies.

6.2.1.5 Stage Five – Review of the ESIA Report

1. The EPA-SL will determine whether the ESIA report meets the terms of reference and provides a satisfactory assessment of the proposed project and contains the information required for decision making.
2. The ESIA report will be publicised in gazette and circulated to professional organisations by the EPA-SL for comments. The Proponent will have to disclose the ESIA report through publication of dates for disclosure in newspapers, and hold two or more public hearing meetings for public participation in the decision–making process. The placement of the ESIA report in specific places will enable the affected or interested persons to make comments on the ESIA studies and submit to the EPA-SL for decision making. The EPA-SL staff will also visit the site or operational areas of the project to ascertain the component and content of the ESIA report in the review stage.
3. Depending on the location of the project the proponent will be required to make announcements over the media in the local languages.

6.2.1.6 Stage Six – Decision Making

1. This is the stage where the ESIA report is approved or rejected.
2. The EPA-SL Board is vested with the power to approve or reject an application for an EIA Licence. If an application for an EIA Licence is approved, it will be subjected to the terms and conditions, provided by the Board and is issued for twelve (12) months and subjected to renewal annually. Also licence fees must be paid as prescribed by the EPA-SL.
3. When an application has been rejected by the EPA-SL Board, the proponent has the right to seek legal redress.

6.2.1.7 Stage Seven – Compliance and Enforcement

This is the implementation stage; environmental monitoring and auditing of the project activities will be undertaken to ensure compliance with the terms and conditions of the EPA Act 2008 (as amended in 2010).

6.3 Other Safeguard Documents

6.3.1 Pest Management Plan

Since the Project triggers OP 4.09 for pest management, a guide for the Pest Management Plan (PMP) has been prepared (Appendix B). The Pest Management Plan is meant to enhance integrated pest management within the project areas to ensure a guided acquisition, storage, handling and application of pesticides. The plan will include development of comprehensive strategies for handling, transportation, application and disposal of pesticides in compliance with national and international requirements relating to different agrochemicals. The PMP will address relevant stakeholder concerns about pests and pesticides. It stresses the need to monitor and mitigate negative environmental and social impacts of the SCADP and emphasizes the need for an integrated approach to the management of pests.

6.3.2 Resettlement Policy Framework

The project will support a range of sub-components, some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions of access to resources or livelihoods. The Bank's Policy on Involuntary Resettlement (OP/BP 4.12) maybe triggered and a Resettlement Policy Framework will be prepared to mitigate any associated risks. RPF/RAPs will be used as planning and monitoring tools for addressing all land acquisition issues. To identify all risks associated with land acquisition, the project will undertake a land acquisition audit as part of its due diligence before agribusinesses will become eligible for support under the project.

7 ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING TO MITIGATE NEGATIVE IMPACTS

7.1 Management Plan

This section provides the Environmental Management Plan (EMP), which has been developed in order to address the environmental concerns discussed in Section 6. It also gives procedural frameworks to ensure that all mitigation measures and monitoring requirements listed in the ESMF report will actually be carried out in different stages of the project design, construction, operation and maintenance.

7.1.1 Objective of EMP

Environmental management/monitoring is essential for ensuring that identified impacts are maintained within the allowable levels, unanticipated impacts are mitigated at an early stage (before they become a problem), and the expected project benefits are realized. The objective of the EMP is to provide a mechanism to manage the environmental issues that may arise during the proposed activities, particularly the design, construction and operation of the project. The EMP defines the roles and responsibilities of various stakeholders in the environmental management of the project and also provides guidelines to be followed during program implementation. The EMP will ensure that the beneficiaries and their communities are provided for and developed to meet the needs of all stakeholders, and safeguard the national interest.

7.1.2 Management approach

The overall responsibility of the EMP implementation and for environmental performance of the program would rest with the National Oversight Committee (NOC) under the Chairmanship of MAFFS and Deputy Chairmanship of MTI. There will be a Project Coordinating Unit (PCU) answerable to the NOC. A District Coordinating Unit (DCU) answerable to the PCU would also be put in place. MAFFS/PCU/MTI would among its staff designate an environmental coordinator or a member of site management team for all matters relating to the environmental issues of the program. The implementation of the EMP will involve rolling down the requirements of the EMP to contractors and NGOs/Local Councils that will be involved in certain activities. A designated environmental coordinator or member of the site management team will oversee the implementation of the EMP. In addition, staff training will be required as part of the EMP to ensure compliance to the environmental guidelines as presented in **Error! Reference source not found.**.

The NOC under the chairmanship of MAFFS and PCU should implement the EMP mitigation measures during operation.

Relevant Government authorities (MTI and Local Government Administrators) will be involved in auditing project performance and will receive copies of monitoring reports.

7.1.3 Roles and Responsibilities

During the construction, the contractor will enforce all environmental mitigation and enhancement measures. The NOC will advise the PCU on the acceptance of the design and proposed measures expected to be implemented prior to construction. The NOC, PCU. DCU and contractors will monitor the implementation of the EMP during construction phase. During operational phase, environmental mitigation measures will be enforced by the PCU and DCU. The environmental responsibilities of various parties at various stages of the project implementation (EMP) include the National Oversight Committee comprising:

- The Ministry of Agriculture, Forestry and Food Security (MAFFS) - Chair
- Ministry of Trade and Industry – Deputy Chair
- Ministry of Finance and Economic Development
- Project Coordination Unit
- Ministry of Social Welfare Gender and Children affairs

- Local Councils' representatives (two persons)
- Representative of Local level NGOs, CBOs etc. (one person).
- Representative of National Farmers' Association (one person.
- Director General, SLARI
- Dean, Faculty of Agriculture, Njala University
- The PCU and DCU will be constituted by WAAPP and ratified by NOC.

The main roles and responsibilities of the different parties/stakeholder at various stages of the project implementation (EMP) are briefly summarized in **Error! Reference source not found.**.

Table 7-1 : Environmental and Social Management Plan

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
Loss of fauna and flora species	• Biodiversity assessment and monitoring and evaluation of fauna and flora species • Ensure re-vegetation of the proposed project site • Clearing of natural vegetation shall be kept to a minimum • Provide landfill requirements in design of sub-projects and contracts • Avoid highly sensitive areas	Construction and operational phase	MAFFS, PCU, and Contractors	• Number and variety of terrestrial flora and fauna prior to land clearing for each planting phase • Habitat surveys, including areas suitable for protected areas, ecological corridors and buffer zones within the plantation; use of available remote sensing materials and field surveys. • Biodiversity Management Plan, including delineation of important habitats to be left outside of plantation areas
Increase in Dust/Noise due to rehabilitation of infrastructure	• Dust from the transporting and handling of construction works will be minimised by watering and other means such as enclosure of construction sites. • Adopt routine safety measures for construction activities • Noise generation activities to be relegated during the daytime	Construction and operational phase	MAFFS, PCU and Contractors	• Monitor/measure emissions of particulate matter (PM), CO, SO_2 and NO_X on an annual basis to confirm if emissions from the project are within the guideline limits set by relevant standards.

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
	• Ensure noise level complies with the Noise Prevention and Control Rules			• Monitor/measure concentrations of dust and gaseous emissions at selected locations surrounding the project area, so that the results can be assessed in relation to relevant international air quality standard. • Noise levels have to be taken on a monthly basis to ensure that noise levels do not exceed the applicable standards.
Contamination from construction waste	• All debris, construction and wood waste will be stored within the work site. • Open burning and illegal dumping will not be permitted. • Proper sites for earth/clay and sand disposal will be determined	Construction phase	Contractors	• Waste Management Plan, including responsibilities, and supervision of landfills. • All the waste formed at the mill will be utilised, either as fuel or as soil conditioner in the plantations. • Construct and monitor landfill for all wastes, including construction waste. • No-burning policy to be implemented and

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
				monitored at the plantations.
Soil and land degradation	• Appropriate containment measures for all operational areas and proper disposal of used lubricants • Soil erosion control measures (re-vegetation, reseeding of grasses, land preparation, terracing etc.) • Restoration of borrow pits, sand and quarry stone abstraction sites and brick moulding sites	Construction and operational phase	MAFFS, PCU and Contractors	• Prepare, implement and monitor an erosion and sediment control plan. The plan should include measures appropriate to the situation to intercept, divert, or otherwise reduce the storm water runoff from exposed soil surfaces. • Integrate vegetative and non-vegetative soil stabilization measures in the erosion control plan
Wastes from processing or leftover crop	• Provide for proper waste disposal	Operational phase	MAFFS, PCU, District Agric. Officer, NGOs	
Effluent and solid waste	• Seek guidance of local environmental officers to identify acceptable disposal sites • Waste from agricultural activities can be further processed into other uses e.g. organic manure. Reuse and recycling must be preferred over disposal of the waste.	Operational phase	PCU, Local Environmental Officer	• Monitor/measure pH, Conductivity, TDS, Chlorine, Nitrate, Coliforms, Colour, Odour, Turbidity, Salinity, BOD, COD, Oil/Grease • Design and

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
				construction of the waste water treatment system mechanical-biological treatment.
Exposure to agro-chemicals	• Encourage organic farming and limit the use of agro-chemicals like inorganic fertilizers • Use Integrated Pest Management approaches to minimize pesticide use • Conduct awareness training and workshops on safe handling of chemicals and IPM approach	Operational phase	MAFFS, PCU, Management Committee	• Integrated Pest Management Plan to be implemented to minimise the use of pesticides. • Proper chemical storage to be constructed for plantation chemicals, including pesticides and fertilisers, to minimise risks for human health and the environment, including chemical book-keeping.
Employment opportunities	• The contractor should give priority to local people to cover manual (unskilled labour) • In case of technical positions, the contractor should give priority to local experts	Construction and operational phase	PCU, Contractors	• Monitor and review periodic assessments of job opportunities/employment of local residents and the effectiveness of the environmental management programme and relevant plans (CDAP, ESAP etc.) as well as unusual events that

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
				have occurred and have resulted in environmental and or social impacts (some unusual events may require immediate notification). • Annual reports are provided for the affected communities on issues that are of concern to those communities. • Regular consultations with local communities; use of a grievance system. • Monitor and evaluate the effectiveness of recruitment policy to give preference to local residents.
Grievance mechanism	• PCU will establish grievance mechanism that will specify procedures for lodging and registering complaints – by external parties, employees and contractors. The grievance mechanism will be applicable to all project phases and any areas of operation	Construction, operation and closure	PCU/community affairs	• Keep track of planned and implemented plantation areas, and to secure that enough land is left for agriculture and collection of forest/garden products in the concession area; linked to the plantation

Impacts Identified	Mitigation/Enhancement Measures	Project phase	Responsible Institution	Monitoring Indicators
				management and environmental monitoring systems. • Regular consultations with local communities; use of a grievance system. • Monitoring of the land use situation, the disbursement and distribution of the lease payments, and the operation of the grievance system by an independent actor.

7.2 Monitoring Procedure

Environmental monitoring will be designed to ensure that mitigation measures are implemented. The EMP should demonstrate that all identified impacts are matched with mitigation measures and monitoring plans. The monitoring plan will use the findings of existing baseline data, as the means to measure the progress in compliance with the EPA and the World Bank Safeguard Policies. Implementation of the ESMF will include both internal monitoring and reporting and external monitoring and evaluation.

7.2.1 Internal Monitoring and Reporting

At local level, the respective project management team members in the different agencies, local government and local communities will be responsible for monitoring to ensure that all required environmental and social mitigation measures for each project component are being implemented satisfactorily. Information collected from various stakeholders together with observations of project activities will be reported quarterly to WAAPPSL. Quarterly monitoring reports will include:

- List of consultations held, including locations and dates, name of participants and occupations
- Main points arising from consultations including any agreements reached
- A record of grievance applications and/or grievances redress dealt with
- Monitoring data on environmental and safety parameters
- Trainings conducted

7.2.2 External Monitoring and Evaluation

External assessment of compliance with mitigation measures will also be carried out on a regular basis by an external agency/independent party to be appointed by NOC and the results communicated to MAFFS and the World Bank. Government agencies and stakeholders will be critical in external monitoring as below:

Agency	Roles
EPA-SL	Implementation of environmental and social mitigations through compliance audits in addition to inspections
Third Party Valuer	Review and approve compensation rates and reports
MWR	Monitor water contamination
MAFFS	Monitor the impact of Project activities on wetlands and other agro-ecosystems in terms of degradation
SLIECAD	Monitor the presence of fake pesticides on the market
NGOs	Collect information on farmers' awareness and practices Monitor gender related issues to ensure that vulnerable women, the poor and elderly etc. are compensated adequately and equitably.

7.3 Institutional Capacity Strengthening Programme

Institutional capacity challenges have been identified in the various institutions and other potential partners that would be involved in the implementation of this ESMF. For the development of skills and understanding of the ESMF process the key handicap at the national and regional levels in the implementation of the ESMF is the inadequate expertise in environmental management and low capacity of the EIA Working Group at both national and regional levels. Competence of the EIA Working Group and other government institutions will, to a large extent, determine the success and sustainability or otherwise of the smallholder commercialisation projects ESMF and subsequently the sub project EMPs. Therefore, addressing the challenges and gaps identified will go a long way to enhance the capacity of the relevant stakeholders. These experts trained will contribute to the objectives of the project, which include:

- Preparing, together with the implementing entities, of annual work programs and budgets;
- Monitoring project progress as it relates to compliance with the ESMF guidelines, resolving implementation bottlenecks, and ensuring that overall project implementation proceeds smoothly;
- Collecting and managing information relevant to the project and accounts (i.e., environmental monitoring and audit reports); and
- Ensuring that the implementing bodies are supported adequately and that they adhere to the principles of the project, specific to compliance with ESMF guidelines.

Other forms of capacity building will include sustained sensitization programs on education, awareness on issues of development, environment, health and safety to be carried out for the other stakeholders to facilitate the implementation of this ESMF. These include members of the Regional DAOs, and farmer groups as well as members of the village communities. Knowledge and understanding of the implementation of the World Bank policies (OP 4.01, OP 4.09, and 4.12) would help to make them more effective. The indicative budget for this form of training is indicated in **Error! eference source not found.**.

Table 7-2: Budgetary provisions for Capacity Building

Activity	Description	Unit Cost (Le)	Frequency	Total Cost (Le)
Capacity building of EIA Working Groups at both national and regional, DAO and PIU	Training workshops on EIA procedures, implementation of the ESMF, conduct of environmental audits, and on the relevant World Bank policies (OP 4.01 and OP 4.04, OP 4.09, and OP 4.36)	96,000	8	768,000
Awareness creation and capacity building of project beneficiaries, MAFFS/Project Coordinator and staff	Training workshop on the national EIA procedures, guidelines, Regulations, implementation of the ESMF, and monitoring and evaluation	115,000	10	1,150,000
	Study tours (local) for selected environmental and social “Converts” participating in Smallholder commercialisation drawn from the EIA Working Groups	122,000	9	1,098,000
Capacity building for members, and VDCs	Regional training workshops on EIA procedures and implementation of the ESMF	106,000	9	954,000

Awareness creation and information dissemination workshops	Investors, consultants, general public on social and environmental issues and relevant World Bank policies relating to Smallholder commercialisation project	98,000	9	882,000
Technical training workshop for PIU	Implementation of the EMP (Contract clauses), Monitoring EMPs (and RAPs), and preparation of budgets	115,000	14	1,610,000
Total		652,000	59	6,462,000

Table 7-3: Summary of Cost of Implementation of ESMF (Leones)

Activity	Indicative Cost (Le)
Capacity Building for Participating Institutions	6,462,000
Implementation of sub project EIAs/EMPs	2,800,000
Implementation of the project monitoring indicators	2,500,000
Total Cost	11,762,000

8 CONSULTATION, ESMF DISCLOSURE AND GRIEVANCE MECHANISM

8.1 Stakeholder Consultation

8.1.1 Introduction

The implementing agency, Ministry of Agriculture, Forestry and Food Security (MAFFS) through the West African Agricultural Productivity Programme in Sierra Leone (WAAPPSL), has the responsibility to effectively engage stakeholders in achieving the project objectives for the benefit of all. The public consultation plan forms part of the environmental plan ESMP and is the same for all categories of agricultural projects. It is for use during public consultation in the screening processes for every programme funded under the sub-project.

8.1.2 Objectives

This plan provides a framework for achieving effective stakeholder involvement and promoting greater awareness and understanding of issues so that the project is carried out effectively within the budget limits and on time to the satisfaction of all concerned. To ensure effective implementation of this plan, the MAFFS/WAAPPSL shall be committed to the following principles:

- Promoting openness and communication channels;
- Ensuring effective stakeholder involvement
- Evaluating the effectiveness of the engagement plan in accordance with the expected outcomes

8.1.3 Stakeholders Identification

Stakeholders for the purpose of this project shall be defined as all those people and institutions that have an interest in the successful planning and execution of the project. This includes those likely to be positively and negatively affected by the project. The different key stakeholders identified will include but not limited to:

- Ministry of Agriculture, Forestry and Food Security
- Ministry of Finance and Economic Development
- Ministry of Local Government and Rural Development
- Ministry of Lands, Country Planning and the Environment
- Ministry of Trade and Industry
- Ministry of Social Welfare, Gender and Children's Affairs
- MAFFS District Staff
- EPA SL
- Potential programme beneficiaries including Agribusiness Development
- Farmer groups including smallholder farm families
- Farmer Based Organisations
- Police local unit commands in Project Areas
- City and District Councils
- Relevant NGOs operating in the area

The consultation process shall ensure that identified as stakeholders are consulted with. Subject to MAFFS's approval, the Environmental/Social Consultant will share information about the project with the public to enable meaningful contributions and thus enhance the success of the project.

Stakeholder consultation and will take place through workshops, seminars, meetings, radio programs, request for written proposals/comments, questionnaire administration, public reading and explanation of project ideas and requirements.

8.2 ESMF Disclosure

For projects such as the SCADP, the World Bank procedures require that an ESMF be prepared and publicly disclosed prior to project appraisal. This allows the public and other stakeholders to comment on the possible environmental and social impacts of the project, and also enable the appraisal team to strengthen the frameworks as necessary, particularly in measures and plans to prevent or mitigate any adverse environmental and social impacts.

The findings of the Consultant will be disclosed to a wide spectrum of the stakeholder (discussed in section 8.1.3) as well as other project interested/affected parties i.e. FBOs, CBO, women's groups etc in the selected representative communities. Copies of the document will be made available to communities and interested parties in project locations through local government authorities (local councils, district offices). Copies of the ESMF will also be provided to the implementing agencies and the World Bank. The report will then be presented at major towns in the project area of influence on dates to be recommended by the Proponent.

8.3 Mechanism for Resolving Grievance and Complaint

Grievance redress mechanisms provide a way to provide an effective avenue for expressing concerns and achieving remedies for communities, promote a mutually constructive relationship and enhance the achievement of project development objectives. Grievance redress mechanisms are increasingly important for development projects where ongoing risks or adverse impacts are anticipated. They serve as a way to prevent and address community concerns, reduce risk, and assist larger processes that create positive social change.
The management of grievances is therefore a vital element of stakeholder management and an important aspect of risk management for the Project.

8.3.1 Grievance Redress Procedure

The Grievance Redress Procedure will support the long-term goal of building strong and effective relationships with all those to be directly impacted by project activities. The procedures for Grievance /Complaints and Redress Mechanism will be as described below:

- **Stage 1**: The grievance /complaints will be made by an individual household or as a Community depending on the type of complaint that they are facing. First the complainant will go to the Village Chief to explain their problem. The Village Head will then review the complaint and either redress it at village level or refer it to a higher authority if a solution cannot be reached. The Village Chief will provide and assist in filling in the Project Complaint Register Form by making clear statement in describing the causes for the problem(s) and with a possible/preferable settlement proposal of the problems. The complaint and settlement proposal in writing will be signed by the complainant and the Village Head.
- **Stage 2**: After completing the Project Complaint Register Form one copy each will be filed at Village Chief's Office, one copy for the individual complainant or representative of the complainants and each will be submitted to the District Coordinating Unit, Agriculture Officer Force and the Project Coordination Unit (PCU). Within 15 working days after receiving the official complaint, the DAO, Village Chief, PCU and including the related field specialists, will visit the complainant at his village to evaluate the severity of all grievances to determine the appropriate management response, and commences an investigation into the causes of the concern and agree up on the solution. This solution will be signed by all concerned parties.
- **Stage 3:** In cases where the complainant is dissatisfied with the outcome of the intervention of the officer in stage two, a further official complaint appeal will be submitted to the DCU/PCU for settlement within 10 working days. If a solution is reached, it will then be signed by all concerned parties.
- **Stage 4:** In cases where the settlement or solution of the grievance/complaint is not acceptable to the complainant, the next step will be to take the matter to an appropriate court

in the land for adjudication. This implies that the matter at this point is a judicial issue for which the applicable Sierra Leonean Laws will be applied. However, at this stage, the responsibility will be with the courts and not with the DCU or PCU.

8.3.2 Anticipated Grievances

Under the project some of the potential grievances envisaged include:

- Conflicts over ownership of farmlands and/ or communal access for other uses such as livestock grazing, watering animals, etc.
- Loss of livelihoods such as food including bush meat, medicinal plants etc. during land clearing
- Conflicts over water resources
- Potential displacement of sacred bushes and sites
- Cutting down of economic trees and deforestation
- Issues relating to compensation and restoration of borrow pits
- Distribution of agro-chemicals
- Location of community access roads

8.3.3 Grievance Prevention

There are ways to proactively solve issues before they even become grievances. Project implementers should be aware and accept that grievances are likely to occur, that dealing with them is part of the work, and that they should be considered in a work plan. Project implementers should do the following:

- Provide sufficient and timely information to communities
- Conduct meaningful community consultations involving all stakeholders
- Build capacity for project staff, particularly in community facilitations and other field-related issues

8.3.4 Time Frame

There is no ideal model or one-size-fits-all approach to grievance resolution. The best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs, and project conditions and scale. In its simplest form, a grievance mechanism can be broken down into the following primary components:

- Receipt and register of a complaint.
- Formulate a response.
- Select a resolution approach, based on consultation with affected person/group.
- Implement the approach.
- Settle the issues.
- Track and evaluate results.
- Learn from the experience and communicate back to all parties involved.

8.3.5 Identification of Vulnerable Groups

The aged, women, children and youth make up the majority of vulnerable people in communities across the country. This is particularly seen in farming communities which are mostly patriarchal with regards land ownership, expenditure of household income etc. even though women are crucial in food production systems in the country. Vulnerable people also include elderly people, those who are sick, disabled and those who are part of any ostracised or disempowered minority. The construction and operation of the project could affect vulnerable people differently to others as whilst employment opportunities will be made equal between racial and religious groups, but sick and heavily disabled persons may be unable to work. Accessibility to credit facility has been a challenge because of lack of

clear guidelines and conditions which favor only large scale farmers and not small farmers, the majority of whom are women.

8.3.5.1 Gender Issues

Women in governance is still a challenge; there are very few female paramount chief in the 14 Districts of Sierra Leone while the number of female councillors is also insignificant. The culture of the project area is based on patrilineal tendencies where the males are dominant. This male dominance phenomenon always places women as second-class citizens.

8.3.5.1.1 Women in development

Women provide more than 65% of the work force in food and agricultural production in Sierra Leone. The contributions of women to agriculture have nevertheless often been under represented, a major reason for their neglect by most agricultural development programmes in the country over the years. Thus, women are marginalized and constrained in their access to production resources and extension services, which adversely affects their farming activities. In order to redress this situation, women and their needs must be mainstreamed in development, not only because of equity concerns but also from the realization that sustainable development cannot be achieved if the women are left in the fringes of development efforts.

As is common in Sierra Leone there is a complete division of labour between men and women: women are engaged in all aspects of agriculture and cultivation except for the more energy-demanding jobs such as land clearing and digging. In addition to this, women are dominant players in the cultivation of vegetables and other crops.

Women also have additional responsibilities in the preparation of food for the family and also caring for the younger members of the family. Food preparation is tedious and time consuming and involves the collecting of wood, water and vegetables. Women encounter a number of constraints which can best be explained in terms of the dominant culture and religious milieu of the proposed project region.

8.3.5.1.2 Gender division of roles during farming

There is complete division of labour based on gender during the various stages of the farming calendar, especially rice cultivation. Rice cultivation in the project area entails a series of activities, which include brushing, burning, digging and channel construction. During this stage men are the key players while women help play prominent roles in planting, weeding and harvesting. These role divisions are only customary, but in actual fact women do assist the men whenever and wherever it is physically expedient. For example, both men and women may carry out the burning and levelling activities, even though men dominate in these operations.

The second stage of rice cultivation is the nursing of seed rice, up-rooting and transplanting of the up-rooted rice and weeding. Men and the women share in the rice nursing activity, while mainly the women do the up-rooting of the nursed rice. The men dominate the transplanting, but the women help when and as necessary. Weeding is done entirely by the women. The third stage of the rice production process involves activities such as bird scaring, harvesting, and conveying the harvested bundles of rice to threshing sites, threshing, winnowing and transporting the winnowed rice to storage places. The women and children do the bird scaring, while harvesting is a combined responsibility of the men and women. The women and older children carry the harvested rice to threshing sites while the men do the threshing. The women do the winnowing and carry the winnowed rice to storage places. The women have the important and additional responsibility of preparing food for the family and any hired labour during the farming period and beyond. This activity is tedious and involves collection of fuel wood and water (sometimes from faraway places) as well as obtaining vegetables from back gardens.

9 ESMF IMPLEMENTATION COST

The total investment for SCADP is estimated at US$ 40 million over a period of 5 years (2016-2020). Actions to be taken under the ESMF will be mainstreamed into SCPABP activities. Screening procedures will be an integral part of the participatory planning processes for each type of activity. Training on awareness of environmental and social issues and community engagement will be part of the preparation for participatory planning activities, and their implementation will be overseen by the project Field Environmentalists and District Environment Officers. Training on specific approaches to mitigate potential environmental or social impacts, such as IPM in relation to activities promoting agricultural intensification, will be conducted as part of the capacity for those activities. In the event that screening reveal needs to conduct specific additional EIA studies, the costs of conducting them will have to be found from the contingency within the budget for the concerned subcomponent. Otherwise ESMF activities and costs are fully integrated into the existing activities and budget lines, and therefore there is no separate budget prepared.

10 CONCLUSIONS

This Environmental and Social Management Framework (ESMF) has been prepared in order to guide project planners, implementers and other stakeholders to identify and mitigate environmental and social impacts under the SCADP. This framework will apply to any project activity within the SCADP. It is also to be appreciated that the project sites proposed for the SCADP are dynamic and not prone to any environmental and social impacts that may be generated from activities of other future development projects. These impacts may affect the project locations for the SCADP. Successful implementation of this ESMF will depend to a large extent on the involvement and participation of local communities. Specifically it is recommended that:

- Environmental and Social awareness and education for the key stakeholders and affected communities must be an integral part of the ESMF implementation.
- District and local community structures should be adequately trained to implement the screening process, and where required to develop and to implement appropriate Environmental and Social Management and Monitoring Plans.
- This ESMF should be regularly updated to respond to changing local conditions. It should also go through the national approval processes, reviewed and approved. It should also incorporate lessons learned from implementing various components of the project activities.

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12 APPENDICES

12.1 Appendix A - Summary of World Bank Environmental and Social Safeguard Policies

- **Environmental Assessment (OP 4.01)** requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed investments. The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and trans-boundary and global environmental aspects.
- **Natural Habitats (OP 4.04).** The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified. Should the sub-project-specific EMPs indicate that natural habitats might be affected negatively by the proposed sub-project activities with suitable mitigation measures, such sub-projects will not be funded under this project.
- **Pest Management (OP 4.09).** The policy supports safe, affective, and environmentally sound pest management. It promotes the use of biological and environmental control methods. An assessment is made of the capacity of the country‘s regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. This policy was not triggered by the proposed project.
- **Physical Cultural Resources (OP/BP 4.11)**. The policy is triggered by projects which, prima facie, entail the risk of damaging cultural property (e.g. any project that includes large scale excavations, movement of earth, surface environmental changes or demolition). The policy is not directly triggered by the project, but lessons learned from other projects in Sierra Leone have shown that in some of the districts in which the project will be implemented. The project will prepare a Cultural Resources Management Plan in readiness for opportunistic finds during the implementation of the project.
- **Involuntary Resettlement (OP 4.12).** This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. The project did not trigger this policy.
- **Indigenous Peoples (OD 4.20).** This directive provides guidance to ensure that indigenous peoples benefit from development projects, and to avoid or mitigate adverse effects of Bank-financed development projects on indigenous peoples. Measures to address issues pertaining to indigenous peoples must be based on the informed participation of the indigenous people themselves. Sub-projects that would have negative impacts on indigenous people will not be funded under the proposed project.
- **Forests (OP 4.36).** This policy applies to the following types of Bank-financed investment projects: (a) projects that have or may have impacts on the health and quality of forests; (b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and (c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned. The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical habitats. If a

project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures. Sub-projects with likelihood of having negative impacts on forests will not be funded under the project.

- **Cultural Property (OPN 11.03).** The term ―cultural property‖ includes sites having archaeological (prehistoric), paleontological, historical, religious, and unique natural values. The Bank's general policy regarding cultural property is to assist in their preservation, and to seek to avoid their elimination. Specifically, the Bank (i) normally declines to finance projects that will significantly damage non-replicable cultural property, and will assist only those projects that are sited or designed so as to prevent such damage; and (ii) will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. The management of cultural property of a country is the responsibility of the government. The government's attention should be drawn specifically to what is known about the cultural property aspects of the proposed project site and appropriate agencies, NGOs, or university departments should be consulted; if there are any questions concerning cultural property in the area, a brief reconnaissance survey should be undertaken in the field by a specialist. The proposed project will not fund sub-projects that will have negative impacts on cultural property.
- **Safety of Dams (OP 4.37).** For the life of any dam, the owner is responsible for ensuring that appropriate measures are taken and sufficient resources provided for the safety to the dam, irrespective of its funding sources or construction status. The Bank distinguishes between small and large dams. Small dams are normally less than 15 m in height; this category includes, for example, farm ponds, local silt retention dams, and low embankment tanks. For small dams, generic dam safety measures designed by qualified engineers are usually adequate. This policy does not apply to the proposed project.
- **Projects on International Waterways (OP 7.50).** The Bank recognizes that the cooperation and good will of riparian's is essential for the efficient utilization and protection of international waterways and attaches great importance to riparian's making appropriate agreements or arrangement for the entire waterway or any part thereof. Projects that trigger this policy include hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, and similar projects that involve the use or potential pollution of international waterways. The proposed project did not triggered this policy
- **Disputed Areas (OP/BP/GP 7.60).** Project in disputed areas may occur in the Bank and its member countries as well as between the borrower and one or more neighbouring countries. Any dispute over an area in which a proposed project is located requires formal procedures at the earliest possible stage. The Bank attempts to acquire assurance that it may proceed with a project in a disputed area if the governments concerned agree that, pending the settlement of the dispute, the project proposed can go forward without prejudice to the claims of the country having a dispute. This policy is not expected to be triggered by sub-projects. This policy is unlikely to be triggered by sub-projects to be funded by this project.

12.2 Appendix B - Stakeholders Consultation List for the ESMF

12.2.1 First Meeting with the World Bank, May 2015

In attendance

- Hardwick Tchale (World Bank)
- Alari Mahdi (World Bank)
- Josephine Scott –Manga (INTEGEMS)
- Prof. A.M Alghali (INTEGEMS)

The meeting address

- Introduction of WB staff (Hardwick Tchale and Alari Mahdi)
- INTEGEMS staff (Josephine Scott-Manga and Prof. Alghali)
- Raison d'ette for the meeting which was to engage INTEGEMS as a possible consultancy firm for an ESHIA related study.
- Introduction of the proposed SCADP project (i.e. background, concept, conceive preliminary details etc.)
- Draft TOR which would be further discussed with WAAPP.
- Time frame and scope for an ESMF (against end of June 2015 for submission to WB board against August 2015)

12.2.2 Second Meeting with the World Bank, May 2015

In attendance

- Hardwick Tchale (WB)
- Alari Tejan (WB)
- Sulaiman Sesay (Project Coordinator, WAAPP)
- Josephine Scott –Manga (INTEGEMS)
- Prof. A.M Alghali (INTEGEMS)

Purpose of meeting was to introduce the INTEGEMS team to Sulaiman Sesay and to request that WAAPP and the INTEGEMS team should now go draft the TOR, procurement procedure and contract agreement.

12.2.3 Third Meeting with WAAPP, May 2015

In attendance

- Sulaiman Sesay, (Project Coordinator, WAAPP)
- Mr. Salim (Procurement Officer, RPSDP/WAAPP)
- Desmond Ngebeh (Procurement Officer, WAAPP)
- Josephine Scott –Manga (INTEGEMS)
- Prof. A.M Alghali (INTEGEMS)

The meeting discussed:

- The draft TOR
- INTEGEMS was asked to review and make suggestions for firming it up
- The procurement procedure to follow, scope of work and time frame (between 20th May and 20th June)

12.2.4 Fourth Meeting with the EPA-SL, June 2015

In attendance

- Jattu Jallow (Executive Chairperson, EPA-SL)
- Momodou Bah (Director, EPA-SL)
- Desmond Ngebeh (Procurement Officer, WAAPP)
- Mr. Alimamy Kargbo (Economist, WAAPP)
- Josephine Scott–Manga (INTEGEMS)
- Prof. A.M Alghali (INTEGEMS)

The discussion centered on the need for using the categorisation (B) given to the former RPSDP, the precursor project to the proposed SCADP. This was rejected by EPA-SL saying that there was need for filling a new screening form and starting the categorisation process afresh.

12.2.5 Fifth Meeting with WAAPP, June 2015

In attendance

- Sulaiman Sesay, Head
- Desmond Ngebeh (Procurement Officer, WAAPP)
- Alimamy Kargbo (Economist, WAAPP)
- Josephine Scott –Manga (INTEGEMS)
- Prof. A.M Alghali (INTEGEMS)

The meeting was to agree on the procedures to follow and discuss the status of the procurement and contract agreement.

- It was agreed to halt further discussions for now on the categorisation process with EPA.
- It was also agreed to go ahead with developing of the ESMF using the following stakeholders consultation process due to the short time frame:
- RPSDP and WAAPP document including the ESM, etc.
- The final TOR document
- WB document including RPF, etc.
- INTEGEMS was informed that the procurement procedure has been agreed and would be finalised for the draft contract to be prepared.

12.3 Appendix C - Integrated Pest Management (IPM) Plan

12.3.1 General objective

To strengthen crop and livestock pests protection at the local levels by improving on the efficiency of protection through enhanced cultural practices and reduced pesticides usage that is free or minimized from human health or environmental hazards.

12.3.2 Specific objectives

- Support the crop protection unit of the MAFFS in strengthening pest management approaches and encourage minimum pesticides usage in accordance with the National Action plant on food hygiene and safety, food security, adaptation to climate change and other approved international conventions.
- Strengthening the capacity for IPM in SL through farmers' school training for farm families and field officers involved in rice, cacao, oil palm and poultry production, distribution and marketing.
- Strengthening environmental protection and food safety through enhanced roles for natural enemies such as parasites, predators and pathogens that are safe for human interactions.
- Packing pest management practices that will be effective and at the same times ensure reduced pesticide residues in food and environmental pollution (i.e. air, water and soil).

12.3.3 IPM approach and definition

This approach focuses on the reduction of the risks of abuse and excessive use of chemicals for plant and livestock pest protection and emphasizes community knowledge on pest identification and monitoring, cultural practices used in the farming activities and farm sanitation/diversification. IPM is thus defined in this specific context of the environmental management as a 'pest management system utilizing the combined approach of the population dynamics of the species causing damage and all possible appropriate techniques and measures to maintain the density of the pests below those causing economic damages.

12.3.4 The basic principle of the IPM framework

The following principles will be applied in the implementation of the project in terms of chemical pesticides and fertilizers usage.

- The prohibited list of banned pesticides will be prepared and used to inform purchase (if needed).
- The IPM strategy for the project will be designed in conformity to the Government policies on food safety and security, sustainable land use, environmental safety emphasizing reduced chemical pesticides and increased fertilizer use.
- Improvement in the community knowledge and experience in the use of chemicals through research surveys and farmers field training courses will be emphasized.
- Integration of all possible measures/practices will be utilized for effective and cost efficient control of the selected crops and livestock.

12.3.5 The contents of the IPM model

- Collection of information and selection of solutions.

Before implementing the IPM programme, investigation must be mounted and discussion entered to with local stakeholders to solicit necessary information such as:

- Pest identification and their status on the selected crops and livestock.
- Damage levels and impacts.
- Control measures in use.
- Knowledge about and the experience gained using the control measures.

On the basis of these findings, IPM protocols will be designed and evaluated for the specific crops or livestock utilizing one or more of the following:

- Land preparation methods.
- Cultivation methods.
- Planting materials or poultry stock.
- Biological control measures.
- Determination of levels of harm and thresholds for triggering protection interventions.

Development of IPM models for demonstration, coaching and training of field officers, farmers and other staff.

Each sub project will organise workshops and staff training on IPM. The contents and preparation of the training will include:

- IPM approach and its benefits.
- Distinguishing between the major and minor pests and their damages.
- Identifying the natural enemies in the field.
- Identifying the components for IPM, for examples:
- Type of land preparation
- Seed or stock selection (resistant/tolerant variety)
- Time of seeding, densities, weeding regimes etc.
- Pesticides selection (levels, safety concerns, application schedules etc.
- Damage threshold
- Development of model IPM plots for practical demonstration/classes.
- Development of IPM manual guide for teaching and as a reference text

The expected results will be:-

- Effective pest control measures in place.
- Enhanced food safety achieved.
- Reduction in environmental hazards.
- Human health safety considered and hence maximized.
- Awareness of pests and their control measures facilitated within communities.
- National pests control programmes strengthened and capacitated.
-

12.3.6 Pesticide legislation in Sierra Leone

There is currently no law relating to pesticide importation and distribution in Sierra Leone. Nonetheless, Ministry of Agriculture, Forestry and Food Security (MAFFS) in collaboration with the Ministry of Trade and Industry (MTI) has a draft Phytosanitary and Pest Control Act, 2010 which is an update of the Phytosanitary and Plant Import Act, 1974.

12.3.6.1 Pesticides Recommended for Use in Sierra Leone 2011-2015

1. Tebuconazole 6% FS - Seed treatment
2. Deltamethrin 2.5% EC - Insecticide

3. Difenoconozole 25% EC	-	Fungicide
4. Metamitron 70 % SC	-	Herbicide
5. Chlorpyriphos 50 % EC	-	Insecticide
6. Cypermethrine 25% EC	-	Insecticide
7. Deltamethrin 0.5 % Chalk	-	Insecticide (Household)
8. Deltamethrin 25 % Tablet	-	Insecticide (Bed net treatment)
9. Alphacypermethrin 10% SC	-	Insecticide (Crop)
10. Propanil		Herbicide
11. Aluminum phosphide		Fumigant (Insecticide/Rodenticide)
12. Glyphosate		Herbicide
13. Zinc phosphide		Rodenticide
14. Malathion		Insecticide
15. Maltodextrin		Insecticide
16. Green Cure		Fungicide (organic)
17. Potassium Bicarbonate		Fungicide (organic)
18. Savona		Insecticide /Acaricide

12.4 Appendix D - Proposed Waste Management Strategy

The principal issue of waste management relates primarily to the lack of existing treatment and disposal facilities in Sierra Leone. In order to minimize the impact on the limited local waste infrastructure, the top priority for the project will be waste recycling, re-use and reduction and where unavoidable final disposal in designated land fill sites.

The most significant risks associated with waste management are the handling of hazardous wastes (i.e. chemical pesticides and fertilizers) used mainly in crop management including weed control and the diminished aesthetic values of the farming and agribusiness environments. These will have to be mitigated using appropriate technologies including training of staff on safe use and disposal.
The project waste management practices will comply with the relevant national and International regulatory requirements including the World Bank's Safe Guards to be triggered. The typical waste products of the selected agricultural crops/livestock of the SCADP and some of their possible re-use are given in Table 1. For meaningful benefits to be derived from the suggested re-use, appropriate cottage industries/enterprises would have to be developed, supported and encouraged throughout an initial incubation period. This initiative have the potential to reduce waste, increase productivity, cut down costs in some instances and increase farmers income; thus minimizing rural poverty.

Table 12-1: Types of wastes for the crops and poultry and some possible re-use

Crop/ livestock	Waste Products	Possible reuse
Rice	Stubbles/straws	Incorporation into the soil for nutrient recycling.
		Dried and used as animal feed.
		Thatching materials in house construction to keep house cool in warm season and hot in old season.
		Used bedding for livestock.
	Husks	Fuel for burning mud bricks to strengthen them.
		Burned to ash and used as bonding material with cement (1:1 ratio) in low cost house construction.
		Ash used as excellent binding material with ceramic in improved stove fabrication.
		Making of briquettes (clean energy) to be used as an alternative to charcoal.
		Soil I incorporation to amend Fe and Al toxicities in rice farming and to improve soil organic matter content.
	Straws and Husk	Mulching materials for small scale vegetables production i.e. helps to conserve soil moisture, moderate soil temperature, suppress weeds, control erosion and when it decomposes add organic matter to improve soil quality.
Cacao	Husks	Incinerated and ash used with Potash to produce soft soap (black soap)
		Incorporated into soil for soil amendments, nutrient recycling and mulching purposes
		Used in making cocoa butter pomade
		Dried shell milled in powder containing Theobroma, fat and vitamin D which can be used as substitute to maize in feeds for poultry, Pigs and cattle (up to 35% of their rations).
		Milled shell can also be used as crop fertilizer.
	Pulp juice/ Sweating	Used in preparing alcoholic beverages, pectin, jelly, jam, marmalade, vinegar and soft drinks

Crop/ livestock	Waste Products	Possible reuse
Oil Palm	Palm fronds	Used in making brooms, brushes, mats and materials for shading.
	Fronds and Kernel	Constituents in animal and Poultry feeds.
	Fronds, empty fruit bunches, kernel shells and fibres	Used to fire boilers in oil extraction.
	Effluent from mill	Used to produce methane and biomass gas to generate electricity.
	Shells (kernel)	Used for hardening roads and buildings under construction.
Poultry	Droppings	Manure for vegetable gardening. Feed for aquaculture and fish farming.
		Biogas production for cooking and electricity generation.

12.5 Appendix E - Physical Cultural Resources Plan

Cultural heritage resources are normally not fully known during project preparation, but some road works may be located in the influence area of some sites. Graves for instance, could be located along road project sites. Construction and rehabilitation operations may require borrow pit excavations or some limited movements of earth. Such activities may have potential impacts on previously unidentified physical cultural resources through chance finds of an archaeological nature. Physical Cultural Resources (OP/BP 4.11) policy requires that whenever physical cultural resources are encountered an investigation and inventory of cultural resources potentially affected need to be carried out.

Mitigation measures will be included where there are adverse impacts on physical cultural resources. This ESMF provides a clear procedure for identification, protection and treatment of archaeological artefacts discovered; these procedures will be included in the environmental and social management plan and in standard bidding documents. The environmental and social screening tool will include the identification of chance finds. The project will be reviewed for potential impact on physical cultural property and clear procedures will be required for identification, protection of cultural property from theft, and treatment of discovered artefacts will be included in standard bidding documents. While not damaging cultural property, sub-project preparation may identify and include assistance for preservation of historic or archaeological sites.

There is a possibility that project activities may result in damage to physical cultural property unless these are identified early on. The World Bank will not fund any activity that involves the removal, alteration or disturbance of any physical cultural resources (defined as movable or immovable objects, sites, structures, and natural features and landscapes that have archeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance). Recognizing that physical cultural resources may be present in projects areas, the screening criteria and review process aims to ensure that they are identified and adverse effects are avoided and/or mitigated.

Project proposals with activities that may occur in areas with possible physical cultural resources will specify procedures for identifying physical cultural property and for avoiding impacts on these, including:

- Consultations with the appropriate authorities and local inhabitants to identify known or possible sites during project planning (Stakeholder Engagement Plan;
- Siting of project activities to avoid identified sites (including identifying such areas in
- protected and natural resource management planning and zoning);
- “Chance finds” procedures will include cessation of work until the significance of a “find” has been determined by the appropriate authorities and local inhabitants, and until fitting treatment of the site has been determined and carried out.
- Construction contracts will include the same procedures for dealing with “chance finds;”
- Buffer zones or other management arrangements to avoid damage to cultural resources such as “sacred” forests and graveyards. Indigenous Peoples and local communities to which these areas belong should decide access procedures and should not be excluded from accessing these areas.

The ESMF highlights the importance of community participation (noted in the Involuntary Resettlement and Indigenous Peoples safeguards) since local and traditional knowledge is important in identifying, designing and planning the implementation of practical mitigation measures. It is especially important where the success depends on community support and action, both in implementing mitigation measures and in monitoring their success.

12.6 Appendix F – EPA-SL Screening Project Form for ESIA

APPLICATION FORM FOR THE ACQUISITION OF AN ENVIRONMENTAL IMPACT ASSESSMENT (EIA) LICENCE

- NAME OF INSTITUTION/COMPANY:
- TYPE OF BUSINESS:
- BUSINESS REGISTRATION NO:
- CONTACT ADDRESS:
- E-MAIL OR TEL NO:
- NATIONALITY:
- PROPOSED DEVELOPMENT:
- (ATTACH PROPOSAL)
- PROPOSED LOCATION:
- (INCLUDE RELEVANT MAP)
- COST OF PROPOSAL:
- ESTIMATED DURATION OF DEVELOPMENT ACTIVITIES:
- STATE THE IMPACT OF ACTIVITIES OF THE FOLLOWING:
-

TICK THE APPROPRIATE COLUMNS

	Positive	Negative
SUBSTANTIAL IMPACT ON ECOSYSTEM OF THE LOCALITY		
SOCIAL		
AESTHETIC		
SCIENTIFIC		
HISTORICAL		
STATE OTHER IMPORTANT ENVIRONMENTAL PARAMETERS		

Signed:……..

EXECUTIVE DIRECTOR/HEAD

EIA Screening Form

Serial No

ENVIRONMENTAL IMPACT ASSESSMENT SCREENING FORM

Please type or print clearly, completing this form in its entirety. You may provide additional information on a separate sheet of paper if necessary. Kindly note that the information you are to provide is required by the National Environment Protection Act of 2000 for the insurance of an EIA License. (See Section 15 (2)

SECTION 1: INFORMATION ON THE CONTACT PERSON

Name:

Institutional Affiliation:
Business Title/position:

Business Address:

Telephone:

Email*:*

SECTION 2: DESCRIPTION OF THE EXISTING COMPANY/PROJECT

Name of Project:
Date expected to start construction:
Proposed location of project:
Land Area:

Current Land Use (Describe how the land is being used at present):

Describe any possible alternative Site (s):

Describe other types of industries or facilities (including health centres and school) which are located within 100 metres of the site, or the proposed to be located near the proposed facility. Indicate the proximity of the proposed industrial site to residential areas, national parks or areas of ecological, historical or cultural importance

Indicate whether adequate infrastructure exists at the proposed location, or whether new buildings, road, electricity and water lines, or drainage systems will need to be constructed as a part of the proposed project.

SECTION 3. EMPLOYEES AND LABOURERS

Number of people employed or to be employed:

Employees and Labourers	During Construction	During Routine Operation

Indicate whether you plan to construct housing/sanitation facilities for temporary or permanent workers.

SECTION 4: DESCRIPTION INDUSTRIAL PROCESS

Briefly describe the type and nature of industrial processes to be conducted at the installation

State the type and quantity of energy to be used (including the origin of the energy, i.e. public utility, on –site generator, wood, solar, wind, etc.)

Type(s)	Quantity	Period (per day & per week)

Estimate the quantities of water to be used for the following:

Use (s) of water	Quantity	Period	Source

List the type and quantity of raw materials to be used per year in the production process (including soil, Sand, cement, aggregates, wood, animals, etc.). Identify the sources of all raw materials.

Type	Quantity	Source

List all of the chemicals used or expected to be used for an aspect of the Production process (A separate list may be attached with more detailed information)

Name/Type	Description	Source

SECTION 5 PRODUCTS

Briefly state the nature of the produce (s) or output of the proposed facility, and the expected quantities on a quarterly or annual basis. Indicate the intended uses of the product (s).

Name of Product/Output	Description of Uses	Anticipated Output per Qtr/yr

SECTION 6: BY PRODUCTS, WASTE MANAGEMENT AND DISPOSAL

Specify the nature of each waste or by-product and the quantity to be generated

Type	Description	Quantity in Kg per wk/month

Proposed method of disposal or management of wastes (e.g. burning, bury, etc.)

Type of Waste	Method of Disposal/Management

Indicate sources of noise pollution, the type/quantity of noise (i.e. machine/repetitive pounding, etc.)

Sources of Noise	Type of Noise

SECTION 7 ENVIRONMENTAL IMPACT

Please indicate environmental impacts that may occur as a result of the proposed project.

Nature of Impact	Y/N	Brief Description of the Anticipated Impacts

SECTION 8 PROPOSED MITIGATION MEASURES

Indicate whether measures are being considered to mitigate against damage likely to be caused by the proposed project to human and/or the environment. Briefly describe these measures.

No.	LIKELY DAMAGE TO	MITIGATION MEASURES
1		
2		
3		
4		
5		
6		
7		
	Others	

State any and all experience you have with implementing the above mentioned mitigation measures. If you do not have prior experience, what skills do you possess to implement these mitigating measures?

What staff training will be provided to ensure compliance with health and environmental safety standards?

SECTION 9	TESTIMONY

I confirm that the information provided herein is accurate to the best of my knowledge. I will also endeavor to provide additional information and facilitate a site visit if required.

_____

Signed: Developer Date

For Official Use Only

Received by: Date: Classified A B C
Reasons for the Classification
Endorsed By: Date: Approved by Director Date: