



REPUBLIC OF RWANDA

RWANDA AGRICULTURE BOARD

**SUSTAINABLE AGRICULTURAL INTENSIFICATION AND FOOD
SECURITY PROJECT**



**ENVIRONMENTAL AND SOCIAL MANAGEMENT
FRAMEWORK**

FINAL REPORT

May 2018

EXECUTIVE SUMMARY

The Government of Rwanda through the Ministry of Agriculture and Animal Resources and the World Bank are preparing the implementation of the Sustainable Agricultural Intensification and Food Security Project (SAIP) to increase agricultural productivity, market access and food security in 8 LWH/RSSP sites across the country. This project will receive funding from the World Bank and targets to cover a total area of 2,500 Ha.

It has 4 components including:

Component 1: Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement

Component 2: Irrigation and Water Use Efficiency

Component 3: Market Linkages and Value Addition Investment Support

Component 4: Project Management and Technical Assistance

The potential SAIP sites include Muyanza, Rwamagana 34, Karongi 12, Karongi 13, Kayonza 4, Nyanza 23, Gatsibo 8 and Nyabihu. The Project activities include (i) strengthening farmers organizations, youth and women as successful enterprises through skills enhancement, vocational training, exposure visits, farmer field schools (FFS); (ii) improving farmers organizations' access to financial services through financial literacy and improved financial services and products; (iii) sustain and further increase productivity and profitability of selected agriculture crops and horticulture; (iv) analyze and develop select value chains to help farmers to transition from subsistence farming to commercial farming, strengthening market linkages and value addition; (v) build capacity of youth and women for self-employment, jobs, improved nutrition, off-farm activities, small livestock and fish farming; and (vi) enhance availability of water for agriculture through efficient use of water and rehabilitation and scale up of existing irrigation schemes.

The SAIP investments associated with environmental and social concerns include small scale irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructure. The provision of essential infrastructure and technology for small-scale irrigation with total area of 2,500 ha, the support of inputs supply (including improved/bio-fortified seeds, fertilizers, pesticides, etc) as well as the construction of drying shelters, storage facilities, horticulture collection centers and cold rooms are the SAIP investments anticipated to have environmental and social risks. However, planned activities and target area per site have not yet been confirmed. The crops targeted by SAIP are maize, climbing bean, irish potato, vegetables (tomato, onion, sweet pepper, chili and French bean) and fruits (watermelon, papaya, avocado, passion fruit and tree tomato). The estimated cost of the proposed project for 5 year duration amounts to 26.3 Million US \$.

SAIP triggers the following World Bank Operational safeguards policies: (i) Environmental Assessment (OP/BP 4.01); (ii) Involuntary Resettlement (OP/BP 4.12); (iii) Natural Habitats (OP/BP 4.04); (iv) Pest Management (OP/BP 4.09), (v) Safety of Dams (OP/BP 4.37), (vi) Physical cultural resources (OP/BP 4.11) and (vii) Project on International Waterways (OP/BP 7.50). However, the Project will seek a riparian notification exception under OP/BP 7.50 because it (i) would not adversely change the quality and quantity of water flow to the other riparian and (ii) would not be adversely affected by the other riparian possible

water use. The ESMF will also include “chance finds procedures” during civil works though highly unlikely since works will be done in already developed schemes.

Given that the actual locations of the project interventions, target area per site and activities per site are not yet confirmed, the Project was required to prepare the Environmental and Social Management Framework (ESMF) to give guidance on the management of environmental and social impacts and risks, provide the institutional arrangements and environmental and social safeguards instruments to be prepared. This instrument was prepared by the Government of Rwanda (GoR) through RAB/SPIU RSSP-LWH-RCSP. The ESMF is a dynamic instrument that should be reviewed and updated periodically to include new information (law, regulations, etc.), and lessons learned during the ESMF implementation.

This project will be implemented by Rwanda Agriculture Board (RAB) under the Ministry of Agriculture and Animal Resources (MINAGRI). Other stakeholders in SAIP implementation include RDB, REMA, Districts, Supervising firms, Contractors and Cooperatives. The Monitoring of the implementation of this ESMF will be carried out by RAB/SPIU, REMA and all key implementing institutions of the project (Ministry of Environment, Ministry of Land and Forestry, RLMUA, RWFA, Districts and farmers organizations).

The RAB/SPIU SAIP has enough capacity to implement and monitor Project activities. The safeguards team at the SPIU is made of 3 staff (2 Social safeguards specialists and 1 Environment specialist) who have been overseeing the overall issues related to safeguards in the LWH and RSSP project sites. The existing SPIU safeguards team will be repositioned to RAB under the new institutional arrangement and there is no doubt they will still execute the same responsibilities for the implementation of SAIP.

After the clearance of the ESMF by the World Bank, the Government of Rwanda through MINAGRI will locally disclose the ESMF and will authorize the Bank to disclose it through its external website. The estimated budget for ESMF for SAIP is US \$ 250,800.

Grievance redress mechanisms (GRM) will be set during subproject implementation to address community concerns, reduce risks and assist larger processes that create positive social change. Grievance Redress Committees (GRC) per subproject will be formed at the cell/sector level to assure accessibility for affected people. The committee shall include representative of Sectors and Cells covered by the subproject site, representatives of the Contractor, supervising firm and community representatives.

Given the nature of the project, the potential adverse impacts associated with small scale irrigation, agricultural productivity enhancement and market and processing infrastructures, the impacts are minimal and can be managed through proposed mitigation measures in this ESMF and ESIA/ESMP.

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GLOSSARY OF TERMS

Cumulative impacts/effects: This is the impact on the environment which results from the incremental impact of the action when added to other past, current and reasonably foreseeable future actions.

Developer/Proponent/Sponsor: the entity – person/ company/agency – proposing to develop/implement/install a new project/sub- project or expand an existing project under a given project.

Direct impacts: These are effects which occur through direct interaction of an activity with an environmental, social, or economic component.

Disclosure: Information availability to all stakeholders at all stages of the development of projects.

Environment: this is a diversity of things made up of natural and artificial environment. It includes chemical substances, biodiversity as well as socio-economic activities, cultural, aesthetic, and scientific factors likely to have direct or indirect, immediate or long term effects on the development of an area, biodiversity and on human activities.

Environmental Impact Assessment (EIA): It is an instrument to identify and assess the potential environmental impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.

Environmental Monitoring: This is an instrument which provides, during project implementation, information about key environmental aspects of the project that enables the borrower and the bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed.

Grievance: An issue, concern, problem, or claim (perceived or actual) that an individual or community group wants a company or contractor to address or resolve.

Impact: A positive or negative effect caused by a project or an activity in the environment.

Indirect impacts: are effects which are not a direct result of the project, often produced away from or as a result of a complex impact pathway. They are also known as secondary or even third level impacts.

Involuntary resettlement: This is a policy triggered in situations involving (a) 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 policy aims at avoiding involuntary resettlement to the extent feasible, or minimizing and mitigating its adverse social and economic impacts.

Mitigation measures: feasible and cost effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels.

Pollution: is the contamination caused by waste, harmful biochemical products derived from human activities that may alter man's habitat and cause adverse effects on the environment like man's social wellbeing, animals, flora and fauna and the world he or she lives in.

Project and sub-project: a set of planned activities designed to achieve specific objectives within a given area and time frame.

Scoping: Scoping is the process of determining the content and extent of matters that should be covered in the environmental information to be submitted to a competent authority or other decision making body.

Screening: this is the determination of whether or not an EIA is needed and is a formal requirement under the EIA Regulations.

Stakeholder: Any person or group that has an interest in the project; can either affect or be affected by the project and the environmental effects that the project may bring about.

ACRONYMS AND ABBREVIATIONS

| | |
|----------|--|
| BP | : Bank Procedures |
| CSA | : Climate Smart Agriculture |
| DEO | : District Environment Officer |
| DRC | : Democratic Republic of Congo |
| EA | : Environmental Assessment |
| SAIP | : Sustainable Agricultural Intensification and Food Security Project |
| EDPRS | : Economic Development and Poverty Reduction Strategy |
| ESIA | : Environmental and Social Impact Assessment |
| ESMP | : Environmental and Social Management Plans |
| ESMF | : Environment and Social Management Framework |
| EA | : Environmental Assessment |
| FAO | : Food and Agricultural Organization |
| GDP | : Gross Domestic Product |
| GoR | : Government of Rwanda |
| HIV/AIDS | : Human Immune Deficiency Syndrome |
| IPM | : Integrated Pest Management |
| M&E | : Monitoring and Evaluation |
| MoE | : Ministry of Environment |
| MINAGRI | : Ministry of Agriculture and Animal Resources |
| MINALOC | : Ministry of Local Government |
| MINILAF | : Ministry of Land and Forestry |
| OP | : Operational Policy |
| PDO | : Project Development Objective |
| PMP | : Pest Management Plan |
| RAP | : Resettlement Action Plan |
| REMA | : Rwanda Environment Management Authority |
| RPF | : Resettlement Policy Framework |
| RLMUA | : Rwanda Land Management and Use Authority |
| RWFA | : Rwanda Water and Forestry Authority |

SPAT : Strategic Plan for Agricultural Transformation

SWAp : Sector Wide Approach

WBG : World Bank Group

CHAPTER ONE: INTRODUCTION

1.1 General Context

Rwanda is a small landlocked country, with arable land estimated to be 48 percent of the total area of 26,338 km² with a population of 10.7 million (2012). It has achieved impressive growth and poverty reduction over the last decade. Its economy has grown at 7.9% per year since 2000 and its gross domestic product (GDP) per capita has increased from \$242 in 2000 to \$729. The poverty has fallen from 60.3 to 39.1% during that period.

Agriculture is crucial for Rwanda's economic growth and reduction of poverty. The 2015 report showed that the agriculture accounted for about 33 percent of the gross domestic product (GDP) and contributes to 35 % of the total decline in poverty rates over the past decade. Also, about 70 percent of population is engaged in the sector. It is also a major source of export earnings, and exports of agricultural and agro-processed goods were roughly 52 per cent of total goods exports.

Various agricultural projects aiming at increasing the agricultural productivity both in the marshlands and hillsides were implemented over the past 15 years by the Ministry of Agriculture and animal Resources (MINAGRI). The Rural Sector Support Project (RSSP) and Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH) are among the projects which boosted the country's economy. They received funding from the World Bank.

Despite substantial growth in agricultural production over the past 10 years, food security and nutrition remain a concern, especially when looking at the vulnerability to shocks at the household level. While stunting and undernourishment have been reducing at a steady pace, overall stunting rates remain high by international comparison (38 per cent), and 17.8 per cent of the children between 6 and 23 months old do not meet the minimum acceptable diet. By the CARI measure, 20% of Rwandan households are food insecure. The Food Consumption Score has improved from 65 per cent in 2006 to 74 per cent by 2015 but a large share of the population remains dependent on rain-fed agriculture and auto-consumption. Hence, people's ability adequately to feed themselves is vulnerable to shocks to the domestic harvest such as periodic droughts and floods. Consequently, food security and nutrition remains important areas to which agriculture development can contribute.

The Government of Rwanda through the Ministry of Agriculture and Animal Resources and the World Bank are preparing the implementation of the Sustainable Agricultural Intensification and Food Security Project (SAIP) to increase agricultural productivity, market access and food security in 8 LWH sites across the country. The Project will focus on consolidating and expanding results obtained in the Bank funded projects, Land Husbandry, Water Harvesting and Hillside Project (LWH) and the Third Rwanda Sector Support Project (RSSP3), and other selected MINAGRI developed schemes. It will receive funding from the World Bank and will focus on 8 LWH and RSSP3 sites, including Muyanza of Rulindo District in Northern Province; Rwamagana 34 of Rwamagana District, Gatsibo 8 of Gatsibo District and Kayonza 4 of Kayonza District in Eastern Province, Nyanza 23 of Nyanza District in Southern Province and Karongi 12 and Karongi 13 of Karongi District, and Nyabihu of Nyabihu District in Western Province.

However, the list of sites may expand during the SAIP implementation as needed by the GoR. The crops targeted by SAIP are maize, climbing bean, irish potato, vegetables (tomato, onion, sweet pepper, chili and French bean) and fruits (watermelon, papaya, avocado, passion fruit and tree tomato). Although potential project sites were proposed, the targeted area and planned activities per site are not yet confirmed. The estimated cost of the proposed project for 5 year duration amounts to 26.3 Million US \$.

SAIP triggers the following World Bank Operational safeguards policies: (i) Environmental Assessment (OP/BP 4.01); (ii) Involuntary Resettlement (OP/BP 4.12); (iii) Natural Habitats (OP/BP 4.04); (iv) Pest Management (OP/BP 4.09), Safety of Dams (OP/BP 4.37) and (v) Project on International Waterways (OP/BP 7.50). However, the Project will seek a riparian notification exception under OP/BP 7.50 because it (i) would not adversely change the quality and quantity of water flow to the other riparian and (ii) would not be adversely affected by the other riparian possible water use. Given that the actual locations of the project interventions, target area per site and activities per site are not yet confirmed, the Project was required to prepare the Environmental and Social Management Framework (ESMF) to give guidance on the management of environmental and social impacts and risks. The ESMF will also provide the institutional arrangements as well as environmental and social safeguards instruments to be prepared as part of the implementation of SAIP activities. This instrument was prepared by the Government of Rwanda (GoR) through RAB/SPIU RSSP-LWH-RCSP. The ESMF is a dynamic instrument that should be reviewed and updated periodically to include new information (law, regulations, etc.), and lessons learned during the ESMF implementation.

The objectives of the present ESMF are:

- To establish clear procedures and methodologies for environmental and social planning, review, approval and implementation of subprojects to be financed by SAIP;
- To prescribe project arrangements for the preparation and implementation of subprojects in order to adequately address World Bank safeguards issues;
- To assess the potential environmental and social impacts of envisaged subprojects;
- To propose mitigation measures which will effectively address identified negative impacts, and to outline a simple Environmental and Social Management Plan (ESMP);
- To propose appropriate grievances redress mechanisms to ensure that the project affected people are able to lodge complaints or concerns, without cost, and with the assurance of a timely and satisfactory resolution of the issue;
- To comply with Chance Finds Procedures during the implementation of civil works (Annex 4);
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to subprojects;
- To define a public consultation and disclosure process;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF; and

- To establish the project funding required to implement the ESMF requirements

The SAIP investments associated with environmental and social concerns include small scale irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructure. Once planned activities and target area per site are confirmed, an Environmental Assessment for each site/subproject will be prepared. Therefore, the ESMF refers to the Environmental and Social Impacts Assessment (ESIA) and Environmental and Social Management Plans (ESMP) when addressing their environmental management requirements.

1.2 Project Description

1.2.1 Project Development Objective

The SAIP development objective is to increase agricultural productivity, market access and food security in targeted project areas.

1.2.2 Project components

SAIP will be implemented through four (4) components including three (3) technical components and one (1) administrative component. The project components are detailed below:

Component 1: Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement

The objective of this component is to strengthen selected farmer organizations for improved agricultural productivity and healthier household nutrition. The project will proactively engage youth and women. Specifically, the project will work closely with the youth groups who have gained exposure to modern agriculture practices in other countries (with the support of the Government), to support farmers to shift from subsistence agriculture to commercial agriculture. The Food and Agriculture Organization of the United Nations (FAO) will work closely with the project and provide technical assistance (TA) and support to the component, implementing the FFS and farming as business (FAB) approach. The component has three subcomponents.

Subcomponent 1.1: Strengthening farmer organizations

This subcomponent will build on and further strengthen existing farmer organizations formed under the World Bank funded LWH and RSSP3 to help them transform into dynamic, successful, climate-smart, and sustainable farming businesses with productive linkages and access to agricultural markets. The project will provide demand driven organizational development, climate-smart FAB, and entrepreneurial training to farmer groups. There will be a special emphasis on business planning, CSA practices and technologies, inventory management and stock checking, understanding input cost and pricing, quality control, financial planning, business audits, accounting and bookkeeping, market analysis, buying and selling in the market, and dealing with middlemen, traders, retailers, and wholesalers.

Farmer organizations created by the LWH and RSSP3 Projects are at different levels of maturity. Some newly created organizations still need support to strengthen their physical capital and increase their competitiveness, while the more mature cooperatives that have already benefited from previous investments in post-harvest infrastructure will be supported to plan necessary investments with their own capital.

Because of these varying levels of organizational maturity, farmers organizations would benefit from exchange visits and experience and knowledge-sharing events across groups within and outside the country. The project will also seek for opportunities to involve the more mature organizations in the support of the younger organizations.

The project will also enhance capacity and skills of public sector extension agents by providing support to farmers to transform their farms into successful market-leading farming businesses. Local extension experts (youth and women) identified by farmer groups will be trained to provide fee-based extension services at the local level. The project will introduce ICT-enabled learning and knowledge exchange to strengthen farmer organizations and extension services.

Subcomponent 1.2: Agricultural productivity enhancements

Key to achieving agriculture transformation is raising farm productivity levels with due consideration to CSA. The subcomponent will support interventions aimed at sustaining and further increasing productivity and profitability of selected crops. Under this subcomponent, the project will carry out the analysis of five selected value chains on a need basis for a deeper understanding of productivity constraints, potential, and opportunities. Limitations and barriers will be addressed, and the untapped potential harnessed to the fullest with due respect to climate-smart practices. The interventions will include the promotion of improved climate-sensitive agricultural inputs, upgraded farm management practices, farm mechanization and technology, and so on.

Subcomponent 1.3: Improving nutrition outcomes at household level

This subcomponent aims to improve nutritional outcomes at the household level in the project areas by increasing access to healthy and diversified foods and promoting good practices for improving nutrition. A healthy and diversified diet will be promoted through (a) increasing the availability of safe and diverse vegetables and fruits locally, including bio-fortified foods such as iron-fortified beans and orange-fleshed sweet potatoes with Vitamin A, through the promotion and upgrading of existing kitchen gardens and village gardens; (b) ensuring availability of animal proteins for household consumption through backyard poultry; (c) improving the year-round availability of nutrient-rich foods at the household level by encouraging the processing and conservation of locally produced foods (through special groups); and (d) increasing the availability of safe, affordable, and nutrient-rich food items through the selection and promotion of nutrition-sensitive value chains. The promotion of good practices for improved nutrition will also be done through nutrition education interventions, including Behavior Change Communication (BCC) for improved nutrition, social marketing campaigns through the media including radio programs, ICT messaging, and healthy cooking menu/demo meals.

These interventions will be implemented in close collaboration with the World Bank-funded Stunting Prevention and Reduction Project, which was approved in FY18, and other Government initiatives. Identified areas of collaboration include (a) the use of the nutrition education materials developed by the stunting project, in the extension messaging; and (b) in the districts where the two projects are overlapping (Karongi, Kayonza, and Nyabihu), the Sustainable Agriculture Intensification and Food Security Project (SAIP) will be able to supply nutritious foods to the beneficiaries of the stunting project.

Component 2: Irrigation and Water Use Efficiency

The objective of this component is to promote technology and best practice for increased availability and efficient use of water for irrigation to increase crop productivity and increase farmers resilience to climate volatility. This component will be implemented in two subcomponents.

Subcomponent 2.1: Improved efficiency and expansion of existing irrigation schemes

Hillside irrigation constructed by the LWH is designed with an irrigation efficiency ranging from 60 percent to 65 percent. By maximizing the irrigation efficiency using other existing techniques of irrigation, efficiency of up to 75 percent or more can be achieved. The LWH sites were designed so that irrigation can be done without additional equipment using unlined open irrigation ditches on the top of terraces, furrows, and big hose pipes. Farmers have successfully adopted these approaches to irrigate different types of crops. However, because the system allows for the integration of other irrigation technology, greater irrigation efficiency can be achieved by using water-efficient irrigation technologies.

This project will build on the existing infrastructure by providing matching grants for small-scale irrigation equipment to the farmers such as sprinkles, drip, gated-pipes, or hose-furrow technologies and creating awareness on how to use that equipment effectively and efficiently. Reduction in the water use because of more efficient irrigation will allow expansion and improvements to the existing schemes by 1,500 ha.

To promote the development of affordable and sustainable irrigation technologies, the GoR introduced the subsidized farmers owned Small-Scale Irrigation Technology Development Program (SSIT) for improved productivity and commercial farming. The project will contribute to this program by providing matching grants and a support package (maintenance and business plan development) for farmers to access small-scale irrigation equipment. It is estimated that through this support, an additional 1,700 ha of land will benefit from using small-scale irrigation infrastructures and techniques.

The access to small-scale irrigation equipment through the project's support will target primarily farmers in existing hillside sites without irrigation schemes within the selected project sites. However, small-scale irrigation activity will also be implemented outside the selected sites where support will be targeted for specific value chains (especially horticulture) and to youth and/or women groups.

Subcomponent 2.2: Strengthening irrigation capacity

The introduction of more efficient methods of irrigation will require training and TA to farmers during installation and operation. This will go along with the social mobilization and creation of awareness of the benefits of different irrigation systems. This subcomponent will fund on-farm training in the handling, assembling, and proper use of different irrigation equipment to improve adaptation rates and improve irrigation practices by farmers.

This subcomponent will also finance targeted capacity building of WUAs to strengthen their capacity to make them effective organizations capable of managing the irrigation systems they are assigned to manage. Capacity building of the WUAs and the farmer members will allow for the sustainable operations and maintenance (O&M) activities and management of these irrigation schemes.

This will include training on irrigation water management, to enable them to collect and use water fees more effectively for the operation and maintenance of the targeted irrigated schemes. In addition, they will receive training to strengthen their management skills such as planning, organizational management, infrastructure O&M, O&M costing and water pricing, financial planning, accounting, and book keeping.

Component 3: Market Linkages and Value Addition Investment Support

The objective of this component is to enhance market linkages and value addition by strengthening the capacity of farmers' organizations and other value chain actors and improving their access to finance. The project will consolidate and scale-up the efforts undertaken by the LWH and RSSP3, strengthening the development of sustainable market linkages and value addition, through increased performance and commercialization of selected value chains. This component, will work in tandem with Component 1, working with the farmer organizations, to improve their market orientation, and connecting farmers to markets, channeling the productivity gains made in Components 1 and 2.

Subcomponent 3.1: Capacity building to foster market linkages

The objective of this subcomponent is to strengthen the capacity of farmer organizations and value chain actors to connect to both domestic, regional, and in some cases international markets, to be able to more effectively respond to market requirements and needs. It will build on activities initiated under the LWH and RSSP3, on strengthening the market linkages and value addition potential for selected value chains. This subcomponent will also support the capacity development of farmers to access finance to meet their growing business needs. The project will first provide capacity building in post-harvest handling in priority value chains to minimize losses and reduce perishability. Secondly, the project will support farmer groups in capturing value, by promoting quality enhancing and pre-processing activities, such as cleaning, grading, sorting, and packaging.

Following the above pre-processing activities, the project will support selected cooperatives, farmers and agro-processors to obtain quality certification, to ease access to domestic and export markets. These will include targeted efforts to improve food safety, such as the elimination of aflatoxin contamination in maize and help agro-processors supported by the project in obtaining the Quality Standard Mark (S-Mark) for processed goods, from the Rwanda Standards Board (RSB) and other quality standards to allow them access premium markets both local or international. The project will also provide matching grants for packaging and processing equipment (under Subcomponent 3.2) and technology, including preservation, to reduce food loss and preserve nutrition value of produces. These interventions build on Component 1, skills development and business training, of youth and women in cooperatives and/or individual entrepreneurs, already managing or wanting to start up a business.

Limited access to agricultural finance products constrains subsistence farmers' ability to take measured risks to increase productivity and/or profitability. To support farmers' capacity to access finance, the project will build on the activities and interventions of the LWH and focus on the identification of financial services and products required by farmer organizations, youth, and women groups.

The project will continue to support financial literacy of farmers, provision of financial skills to cooperatives for example, business planning and financial management (FM), enhancement of the culture of savings, and use of credit and better portfolio management of selected Savings and Credit Cooperatives (SACCOs).

The project will fund workshops and training for financial institutions and intermediaries to enhance their understanding of the agriculture sector, build awareness to the market/business potential (that is, business case for investing/supporting the sector), and utilization of SACCOs for agent banking. The project will reach out to and collaborate with existing Government ministries/agencies that are tasked with supporting the capacity building of SACCOs and microfinance institutions (MFIs) to develop financial products that better meets the needs of farmers, de-risk their investments, and enhance their access to timely and appropriate financial services.

The project will support farmer organizations, entrepreneurs, and micro and small enterprises in developing business development plans. These business plans will form the basis for the grant agreements and could also be utilized by beneficiaries to access finance through MFIs or banks, especially for more mature farmers organizations. Complementing these, the project staff, together with farmers groups, will facilitate dialogue between farmers groups and buyers/processors, to establish market linkages to intermediary and end markets. This will be done through organization of sellers' forum and facilitation of contracting modalities, between farmers/farmers organizations, buyers/processors, and other relevant intermediaries.

Subcomponent 3.2: Investment support to market linkages

The objective of this subcomponent is to support the provision of post-harvest facilities and equipment for improved market linkages. Through the value chain approach, the project will bundle its interventions along the value chains ensuring that market infrastructure and equipment are demand-driven and market-oriented. To complement the interventions in Subcomponent 3.1, the project will finance through matching grants post-harvest, marketing and processing facilities to the benefit of those cooperatives, which are not yet mature enough to be able to fully self-finance required facilities's needs, while the project will support more mature organization to plan necessary investments with their own capital. The project will also provide capacity building for O&M activities and management of those facilities.

The project will finance the construction of these drying shelters, drying grounds, collection centers, and storage and cold storage facilities, through grant agreements, and wherever possible, will be co-financed through private capital, based on agreed joint business plans. In that case, the level of private capital co-financing will be determined in the joint business plans. Financing these facilities will be done based on a needs and suitability assessments on necessary facilities, and feasibility studies will inform the location and designs of these facilities. Rehabilitation to allow multiple use of existing facilities will be prioritized. With regard to post-harvest handling and quality equipment, the project will provide matching grants to finance equipment, such as threshers, weighing balances, dryers, including solar bubble dryers, moisture meters, hermetic bags, aflatoxin kits, and relevant processing equipment.

The project will train farmer groups to manage these facilities and equipment to ensure their profitability and sustainability. In addition, the project will facilitate the quality control and certification of the above infrastructure and equipment according to relevant standards and requirements.

Component 4: Project Management and Technical Assistance

Subcomponent 4.1: Project management

This component will support all aspects of project management including (a) management and coordination, (b) monitoring and evaluation (M&E), (c) communication and knowledge sharing, (d) TA, and (e) a grievance redress system (GRS). Specifically, the project will finance the operating costs for the project implementation at the national and district levels led by the SPIU, and the establishment of the project M&E system and communication and knowledge management system.

Subcomponent 4.2: Technical assistance

This component will fund TA from the FAO to improve project performance, incorporate best practices, and document lessons learned. Three specific technical areas (a) support to the further development of the extension services, (b) nutrition, and (c) implementation of the farmer-led small-scale irrigation technologies have been identified for the FAO TA based on their comparative advantage and experience in Rwanda. The TA activities are designed to strengthen the capacities of the targeted beneficiaries of the project and to enhance the effectiveness of the project interventions. The TA will emphasize knowledge management and support coordination among stakeholders.

Farmer organizations will be strengthened to improve their FAB skills to help farmers build knowledge and skills to make their farm operations more profitable. This entails support to organizational management, business planning, and making market-led production decisions. Specific emphasis will be given to building women and youth leadership skills. An FFS approach will be adopted, working within the framework of MINAGRI extension system (Twigire Muhinzi). Capacity development will target cooperatives, but can be extended to include individual farmers and agribusiness small and medium enterprises (SMEs), which can demonstrate externalities. The FAO will provide the technical know-how for the FFS/FAB and Training of Trainers (ToT) costs, with the project covering the rollout to farmer cooperatives (including WUAs). The relevant technical guidelines and ToT manuals will be contextualized for Rwanda and will be available in Kinyarwanda.

The TA from the FAO will also support the design of the value chain analyses, which will be conducted by the project. This analysis will include market exploration, contract farming models (including public-private partnerships [PPPs]), and strengthen contract negotiations. Building farmers' business and investment planning skills, through the practical application of Rural Invest, under Subcomponents 1.1 and 3.1, will also ease the implementation of the matching grants modalities of physical assets and small-scale irrigation as proposed by the project.

TA implementation of the interventions related to nutrition improvement at the household level will be done through the FAO providing the technical know-how for the improvement and scaling-up of improved kitchen gardens models, introducing backyard poultry, and adopting new varieties of nutrient-rich bio-

fortified crops, and promoting new ways of preserving and processing nutrition dense food. The TA will cover the ToT training costs, while the project will cover the rollout of training for farmers. Building on the ongoing efforts, the TA will support the practical application of food-based dietary guidelines (FBDGs) when they are available, using a social and behavior change communication (SBCC) approach, promoting nutrition education and creating menus based on the locally available seasonal food items. Project management support will be provided for implementation and monitoring of nutrition outcomes at the household level.

The implementation of the farmer-led small-scale irrigation component will be supported through TA interventions that will build on the ongoing work in assessing the feasibility and suitability of the small-scale irrigation kits for different agro-ecological sites and by providing capacity building on using the technologies and O&M. The capacity development will include the transfer of know-how on land husbandry under irrigated production using the FFS approach. The TA will cover the ToT training costs, while the project will cover the rollout of training.

1.3 Project activities

The specific Project activities include (i) strengthening farmers organizations, youth and women as successful enterprises through skills enhancement, vocational training, exposure visits, farmer field schools (FFS); (ii) improving farmers organizations' access to financial services through financial literacy and improved financial services and products; (iii) sustaining and further increasing productivity and profitability of selected agriculture crops and horticulture; (iv) analyzing and developing select value chains to help farmers to transition from subsistence farming to commercial farming, strengthening market linkages and value addition; (v) building capacity of youth and women for self-employment, jobs, improved nutrition, off-farm activities, small livestock and fish farming; and (vi) enhance availability of water for agriculture through efficient use of water and rehabilitation and scale up of existing irrigation schemes.

The activities associated with environmental and social concerns comprise of small scale irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructures. Though the list of activities to be performed per site is not yet confirmed, the Project will provide small-scale irrigation infrastructure/ technologies ready to use 1ha, 5ha, and 10ha complete sprinkler, drip and rain-gun kits with portable diesel/petrol pump-units and pipes as well as the treadle pump etc. and support package (maintenance and business plan development). While the project will focus on supporting farmers' access to small scale irrigation technologies, the project will also support farmers in the sites with large scale irrigations, especially in hillside to adopt more efficient technologies for irrigation.

In addition to provision of small scale irrigation technologies, the project will fund activities aiming at sustaining and further increase productivity and profitability of select agriculture crops, including but not limited to : (i) maintenance and expansion of land husbandry and climate smart agriculture interventions; (ii) establishment of demo plots, green houses, tunnel farming etc.; (iii) use of ICT for productivity enhancement; (iv) adoption of improved farm implements technologies ; (v) adoption of appropriate technology, especially for female farmers; Support inputs supply (including improved/bio-fortified seeds, fertilizers, pesticides, etc); (vi) support seed production, multiplication and storage; (vii) climate smart

agriculture interventions; (viii) preparation and utilization of compost; (ix) appropriate application of fertilizer and pesticide; and (x) introduction of standard operating procedures (SOPs) and protective gear for application of fertilizer and pesticides.

With regards to market and processing infrastructures, SAIP will support the construction of drying shelters and drying grounds, collection centers, storage facilities and cold rooms for post-harvest handling. Agro-dealership shops, processing and storage facilities will also be constructed to enable entrepreneurs, in particular, youth and women, to establish micro and small enterprises.

The project will train farmers' groups to manage these facilities to ensure their profitability and sustainability. In addition, it will facilitate the quality control and certification of the above infrastructure per relevant standards and requirements.

1.4 Methodology for preparation of ESMF

The study for the preparation of the ESMF was conducted by the SPIU Safeguards team using the following approach and methodology:

a) Desk review

The preparation of ESMF involved a review on the existing baseline information and literature material. Detailed review and analysis of the national relevant legislations and policies as well as World Bank Safeguards Policies and other relevant documents were done.

b) Field Visits

The project team carried out visits to some potential project sites, namely Nyabihu in Nyabihu District of Western Province, Muzanza of Rulindo District in Northern Province, Rwamagana 34 of Rwamagana District in Eastern Province and Karongi 12 and Karongi 13 of Western province in order to be familiar with the issues on the ground and appreciate the possible environmental and social issues of concern.

c) Public consultations

Various discussions and consultation meetings were held with Project beneficiaries, relevant districts and sectors' officials, other relevant staff of the key implementing partners of the SAIP including among others Rwanda Environment Management Authority (REMA), Rwanda Cooperative Agency (RCA), Rwanda Land Management and Use Authority (RLMUA), Rwanda Agriculture Board (RAB), and MINAGRI projects and farmers from Nyabihu, Muzanza, Rwamagana and Karongi sites.

d) Preparation of ESMF

The preparation of ESMF for SAIP consisted of:

- Collection of baseline data on social-environment of the project areas;
- Identification of positive and negative environment and social impacts
- Identification of environment and social mitigation measures;
- Preparation of screening procedures to be used while screening subproject activities
- And formulation of environment and social management and monitoring plans.

CHAPTER TWO: POLICY, INSTITUTIONAL AND LEGAL FRAMEWORK

This section of the ESMF outlines and reviews the existing legislations, policies and institutions and identifies requirements as well as gaps and conflicts of the relevant legal and institutional arrangements that would guide the development of the project in line with the national and international laws applicable to SAIP. Rwanda being a signatory to various international conventions and laws, it is important that national projects are in line with these laws and as such some of the relevant international conventions are reviewed in this chapter.

2.1 National environmental and social management requirements

2.1.1 Policy framework

a) Rwanda Environment Policy

The overall objective of the Environmental Policy is the improvement of man's wellbeing, the judicious utilization of natural resources and the protection and rational management of ecosystems for a sustainable and fair development. The policy seeks to achieve this through improved health and quality of life for every citizen and promotion of sustainable socio economic development through a rational management and utilization of resources and Environment, integrating Environmental aspects into all the development policies, planning and in all activities carried out at the national, provincial and local level, with the full participation of the population, conservation, preserve and restoration of ecosystems and maintenance of ecological and systems functions.

The SAIP investments that trigger this policy include small scale irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructure. SAIP will integrate the Rwanda Environmental policy in its implementation by protecting, restoring or maintaining both the quality of ecological and systems functions, involving all stakeholders in project activities and improving/maintaining public health.

b) Agriculture Policy

The main objective of Rwanda agricultural policy is to intensify and transform subsistence agriculture into a market oriented agriculture, and which requires the modern inputs, notably improved seeds and fertilizers. To achieve sustainable agricultural development, the policy emphasizes rational use and environmentally sustainable exploitation of natural resources for food production.

SAIP will focus on the role of agricultural inputs as drivers of higher yields and subsequent economic transformation through availing agriculture inputs, and to develop the network of agro-dealerships in the project sites. SAIP also intends to strengthen the market linkages and value addition potential for selected value chains. The project will emphasize the rational use and environmentally sustainable exploitation of land for food production.

c) Land policy

The Rwanda land policy calls for rational use and sound management of national land resources, and that land use be based on established master plans. The policy also provides development of land use plans based on suitability of the areas/lands thus distinguishing the different categories of land and their purpose.

On the use and management of hillsides and marshlands, the policy stipulates that marshlands meant for agriculture should be cultivated after adequate planning and Environmental Impact Assessment.

SAIP activities will be implemented based on the suitability of the areas/lands thus distinguishing the different categories of land and their purpose and will observe the procedures of the land policy that stipulates that marshlands meant for agriculture should be cultivated after adequate planning and Environmental Impact Assessment. They will also improve irrigation systems, facilitate inputs and mechanization to diversify and enhance the level of productivity in small farms.

d) Health Sector Policy

One of the objectives of Rwanda Health Sector Policy is to improve the quality of and demand for services in the control of disease. The policy identifies the most common illnesses in Rwanda and puts priority to addressing these diseases.

The policy also calls for the strengthening of measures of prevention and the improvement of the management of cases building on the multi-sectoral approach. The approach consists of rapid diagnosis and treatment of cases, increase in the protection of individuals and communities using preventative methods (impregnated mosquito nets, intermittent presumptive chemo-prophylaxis treatment for pregnant mothers, management of the environment, including vector control), making decision based on evidence, monitoring, community sensitization and adapted interventions, targeted research and coordinated activities aimed at reinforcing existing health services.

The irrigation projects and marshlands having a role to play in malaria incidences, the policy in these subproject areas should emphasize more on environmental control of the disease vector especially in marshy areas as opposed to curative services.

SAIP will emphasize more on community sensitization on waterborne and communicable diseases while reinforcing existing health services and environmental control of the disease vector especially in command areas and irrigation canals.

e) National Biodiversity strategy and action plan

This strategy defines the objectives and priorities for the conservation and sustainable management of biodiversity. The plan includes hillsides and wetlands and protected areas as some of the areas that need to be conserved. The strategy focuses on five major areas i.e. improved conservation of protected areas and wetlands; sustainable use of biodiversity in natural ecosystems and agro-ecosystems; rational use of biotechnology; development and strengthening of policy, institutional, legal and human resources frameworks; and equitable sharing of benefits derived from the use of biological resources. The Action Plan consists of urgent and priority actions which are attainable in a period of five years.

SAIP will trigger this policy by protecting natural habitats within the project area or in its surroundings, whether protected or not, wetlands downstream the developed schemes, improving agro-ecosystems by avoiding land degradation through efficient use of natural resources for agriculture, responsible use and storage of irrigation water and development of drought-tolerant crops, increased organic matter, improved soil structure and thereby reduced erosion, etc.

f) National Poverty Reduction Strategy

The National Poverty Reduction Strategy identifies the transformation of the subsistence agriculture, into modernized agriculture that is market oriented. Other priority areas include human development which covers the actions of improving living conditions of the poor, economic infrastructure, governance, development of the private sector and the institutional reinforcement.

SAIP is in line with the EDPRS targets to raise agricultural productivity and ensure food security. This objective will be realized through (i) increased developed schemes for growing high value crops, (ii) Expansion of irrigated areas through provision of equipment for small scale irrigation for hillsides and lowlands using various irrigation technologies; (iii) Greater use of improved seed will be encouraged by supporting the efforts of private seed distributors and by training farmer's cooperatives in seed multiplication and utilization; (iv) Informed use of organic and inorganic fertilizers and (v) Promote commodity chains and support the development of agribusiness.

g) National Water Resources Management Policy

The water policy aims at fair and sustainable access to water, improvement of the management of water resources, etc. through reforestation on hillsides and water catchments areas. This policy would seem in conflict with other sector policies including agriculture and marshland development. The policy also needs to adopt a holistic approach to the management of water resources and integrate other policies related to it including the forest, wetlands, agriculture and land.

This policy is relevant to SAIP subprojects as some of the project activities will be undertaken in areas with water resources and one of the key project input is water which is governed by the policy. SAIP will promote technology and best practice for increased availability and efficient use of water for irrigation.

h) Forest Policy

The forest policy is relevant to this project due to the role forests play in water regulation and soil conservation. The forest policy aims at curbing the continuous wood shortage and but most important to this study the alarming deterioration of soil. Forest management is linked intricately to marshlands existence, soil productivity, and water quality and flooding. The policy provides strategies for reforestation and for environmental protection.

This policy is relevant to SAIP as some of the activities of the project touch on afforestation and re-vegetation of degraded areas especially catchments areas whether protected or non-protected. The agroforestry activities in the hills will also have positive impacts on the country's forest stock if successful through supply of firewood and rejuvenating the soil productivity thus intensifying crop production as opposed to encroachment to forested areas.

i) International Agreements and Conventions

Rwanda being a signatory to some of the international conventions that are relevant to the SAIP, it is imperative that proposed SAIP sub-projects and activities are screened in light of the commitments made under such conventions:

- ❖ United Nations Convention on Biological Convention
- ❖ RAMSAR Convention on Wetlands
- ❖ Convention on the Conservation of Migratory Species
- ❖ EAC Protocol on Environment
- ❖ United Nations Framework Convention on Climate Change (UNFCCC)
- ❖ United Nations Convention to Combat Desertification
- ❖ Montreal Protocol on Substances that Deplete the Ozone Layer
- ❖ Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC)
- ❖ Stockholm Convention on Persistent Organic Pollutants (POPs)
- ❖ World Health Organization (WHO) Recommended Classification of Pesticides by Hazard
- ❖ Food and Agriculture Organization's International Code of Conduct

2.1.2 Environmental Regulatory framework

This section describes the relevant policies and strategies, legal instruments, institutional arrangement and framework applicable to the implementation of SAIP with respect to resettlement and compensation. The awareness of social issues started as early as in 1920. Since 1977 action program were initiated such as: human settlement (1977), stockbreeding (1978), soil protection and conservation (1980), water supply in rural areas (1981), erosion control (1982) and reforestation (1983). The national environment strategy was prepared in 1988-1989 to keep a balance between population and natural resources.

The aims of this strategy are as follows:

- To enable the country to strike a dynamic balance between population and resources while complying with the balance of ecosystems; and
- To contribute to sustainable and harmonious socio-economic development such that, both in rural and urban areas, men and women may realize their development and well-being in a sound manner.

a) Rwanda Constitution

The constitution is the supreme law of the country. Any law, decision or act contrary to this Constitution is without effect. The Constitution of the Republic of Rwanda, particularly articles 29, 30, 49, 62, 88, 90, 93, 108, 118, 190, 191 and 201, make various provisions for environmental management; from guaranteeing rights to a healthy environment for every citizen.

b) Organic law on Environment Protection and Management

The most relevant legislation for this study is the Organic Law on Environmental Protection, Conservation and Management. The legislation sets out the general legal framework for Environment protection and management in Rwanda. The law centres on avoiding and reducing disastrous consequences on Environment. The Ministry of Environment puts in place the organic law regarding environment conservation.

SAIP will observe this law by preparing Environmental and social impact assessment (ESIAs) or Environmental and Social Management Plans (ESMPs) or updating existing site ESIAs in order to ensure reduction of disastrous consequences on the Environment in its activities.

Until very recently, REMA was responsible for the approval of ESIA reports; this responsibility has now been transferred to Rwanda Development Board (RDB) where there is a department for ESIA responsible for review and approval of all ESIA reports.

c) Ministerial Order determining the length of land on shores of lakes and rivers transferred to public property N° 007/16.01 of 15/07/2010

This law sets the boundary for development and settlement activities next to water bodies. This Order aims at setting aside the length of land on shores of lakes and rivers affected in the public domain for environmental protection. The land within a distance of fifty (50) meters from the lakeshore and twenty (20) meters from the boundaries of swamps/ marshlands is public property. The land within a distance of ten (10) and five (5) meters from the shore of big rivers and small rivers respectively is public property. The length set is calculated beginning from the furthest line reached by water depending on successive flooding record; and such land is statutorily regarded as a protected area and not is allowed to erect private property on such land. The only activities aimed at protecting the water bodies are permitted in these protected areas. Specifically the following are protected: dumping solid wastes; and dumping liquid wastes.

During RSSP and LWH implementation, agricultural activities have respected a distance of ten (10) and five (5) meters away from the banks of big rivers and small rivers/ streams respectively, 5m along main irrigation and drainage canals, at least 20 meters in the surroundings of the reservoirs. The buffer zones around reservoirs or along the water courses were planted with trees and grasses. SAIP shall respect the above distance and maintain the established buffer zones during its implementation.

d) Law No. 62/2008 of 10/09/2008 putting in place the use, conservation, protection and management of water resources regulations

The present law defines the applicable rules to the use, conservation, protection and management of water resources in Rwanda. With regards to irrigation, the Article 48 specifies that the lawful land owners shall be required to rationally and optimally utilise water resources. The administration in charge of irrigation shall apply principles of integrated management of the water resource as provided for in this Law. The water resource should be protected. The Article 4 of the law indicates that Protecting and appropriately using water resources, in the natural balance respect, are of general interest and constitute an imperative duty for all, notably the State, the local communities, private sector, civil society and citizens. The SAIP activities will be implemented in a way they prevent serious and irreversible risks for water resources.

2.1.3 National Resettlement Regulations

This part describes national legal framework for resettlement requirements in Rwanda, applicable to the project as well as the international provisions that bear relevance to the implementation of this project.

a) Rwanda Constitution

The constitution of Rwanda has provisions related to land and resettlement aspects. Under Article 34 of the Rwanda constitution, every citizen has a right to private property, whether personal or owned in association with others. Further it states private property, whether individually or collectively owned, is inviolable. However this right can be interfered with in case of public interest, in circumstances and procedures determined by law and subject to fair and prior compensation.

There might be land loss due to SAIP activities but the acquisition of any land under SAIP will be guided by the law No 32/2015 relating to expropriation in the public interest.

b) Law n° 43/2013 of 16/06/2013 governing land in Rwanda

The law No N° 43/2013 of 16/06/2013 governing land in Rwanda is the law that determines modalities of allocating, acquisition, transfer and management of land in Rwanda. It also establishes the principles applicable to rights recognized over all lands situated on Rwanda's national territory and all rights united or incorporated with land, whether naturally or artificially.

According to the Law, Land in Rwanda is categorized into two: Individual land and Public land. The latter is subdivided into two categories: the state land in public domain and the state land in private domain. The Article 12 and 13 of the land law stipulates that State land in the public domain consists of all land meant to be used by the general public or land reserved for organs of State services as well as national land reserved for environment conservation. The activities under SAIP shall respect the land use plans of the area where the land is located.

c) Expropriation Law for Public interest

The law No. 32/2015 of 11/06/2015 relating to expropriation in the public interests determines the procedures relating to expropriation of land in the interest of the public. Article 3 of the law stipulates that it is only the government that has authority to carry out expropriation. However the project, at any level, which intends to carry out acts of expropriation in the public interest, shall provide funds for inventory of assets of the person to be expropriated and for just compensation on its budget.

According to the above expropriation law, no person shall hinder the implementation of the program of expropriation on pretext of self-centered justifications and no land owner shall oppose any underground or surface activity carried out on his or her land with an aim of public interest. In case it causes any loss to him or her, he or she shall receive just compensation for it. The law identifies properties to be valued for just and fair compensation including land and activities that were carried out on the land such as different crops, forests, buildings or any other activity aimed at efficient use of land or its productivity. However, as per Article 27 of the law No 32/2015 of 11/06/2015, the owner of land designated for expropriation in the public interest shall provide proof of rights to land and property incorporated thereon, like land titles or any other documentary evidence showing he/she has property ownership.

Some activities under SAIP will acquire private land (development of infrastructures), however the value of assets to be affected by the project shall be paid before any commencement of any activities.

d) Law establishing and organizing the Real Property Valuation Profession in Rwanda

Law No.17/2010 of 12/05/2010 Establishing and Organizing the Real Property Valuation Profession provides conditions for registration of land valuers in Rwanda, establishes the Institute for real property Valuers and sets conditions to exercise the profession. The law also allows the Government staff to conduct valuation when mandated by their government institutions.

Article 23 of the law explains the appointment of valuers. The law also specifies that the price for the real property shall be equal to the prevailing market value. Where sufficient comparable prices are not available to determine the value of affected asset, the replacement cost approach shall be used to determine the value of improvements to land by taking real property as a reference.

Consequently, the valuation of land and property incorporated thereon shall be conducted by valuers certified by the Institute of Real Property Valuers in Rwanda under the SAIP.

2.1.4 Institutional framework for environmental and social management in Rwanda

The institutional framework for environmental management is currently enshrined in the Organic Law determining the modalities of protection, conservation and promotion of the environment in Rwanda, published in the Official Gazette N° 9 of the 1st May 2005, particularly in its chapter III relating to the establishment of the institutions.

a) Ministry of Environment (MoE)

This Ministry is composed of two sectors: Water Resources and Environment. Environment is a crosscutting. MoE is responsible for the development of policies, laws and regulations as well as coordination of all activities in the management of water resources activities and environment, as well as their follow up and evaluation.

b) Ministry of Agriculture and Animal Resources (MINAGRI)

The Ministry of Agriculture and Animal Resources (MINAGRI) through RAB will oversee the execution of SAIP throughout the country.

c) Ministry of Land and Forestry (MINILAF)

The Ministry of Lands and Forestry (MINILAF) has the general mission to ensure sustainable protection, conservation and development of lands and forestry. Specifically, MINILAF is responsible for:

- a) Developing and disseminating the sector policies, laws, strategies and programs that aim at conserving, developing and ensure optimal and rational utilization of land and forestry through:
- b) Developing institutional and human resources capacities in the sector of land and forestry and sub-sectors;
- c) Monitoring and evaluating the implementation of sector and sub- sectors policies, strategies and programs through:
 - ✓ Setting up and implementation of appropriate mechanisms and systems for monitoring and evaluation of climate change situation in the country and in the region that may affect the land, forestry;
 - ✓ Monitoring and assessing the implementation and mainstreaming of policies and laws that enhance the protection of land and forestry and their rational utilization in all crosscutting sectors in the Country;
 - ✓ Submitting to the Government periodic and annual reports on the impact of the sector policies, strategies, programs and projects on sustainable national socio economic development.
- d) Overseeing the institutions under supervision through:
 - (i) Guidance and orientations on the implementation of specific programs to be realized by the institutions under supervision and decentralized entities;
 - (ii) Supervision and orientations on the functioning of sector public institutions and promote synergies

between various actors intervening in the sector;

iii) Mobilizing resources for the development of the sector and related programs through:

- Coordination of mobilizing resources and supervise actions to ensure their rational utilization in the sector development;
- Put in place mechanisms for promoting investment and development in the sector.

d) Rwanda Agriculture Board (RAB)

RAB ensures improved food security and livelihoods of all Rwandans by transforming agriculture from subsistence into modern farming through generating research and extension innovations that generate sustainable crop, animal husbandry and natural resources management. RAB is the implementing agency of SAIP.

e) Rwanda Environment Management Authority (REMA)

Rwanda Environment Management Authority (REMA) was established in 2004 to act as the implementing organ of environment-related policies and laws in Rwanda. REMA is also tasked to coordinate different environmental protection activities undertaken by environmental promotion agencies; to promote the integration of environmental issues in development policies, projects, plans and programmes; to coordinate implementation of Government policies and decisions taken by the Board of Directors and ensure the integration of environmental issues in national planning among concerned departments and institutions within the Government; to advise the Government with regard to the legislation and other measures relating to environmental management or implementation of conventions, treaties and international agreements relevant to the field of environment as and when necessary; to make proposals to the Government in the field of environmental policies and strategies; etc.

f) Rwanda Development Board (RDB)

RDB was created by Organic Law N° 53/2008 of 02/09/2008 with a mission of improving the well-being of all Rwandans by fast-tracking development, catalysing sustainable economic growth, and creating prosperity for all. According to the recent restructuring of government institutions, RDB was assigned the responsibility of reviewing the ESIA report and authorising the project to proceed by issuing an ESIA certificate.

g) Contractor and code of conduct

The contractor will review and update the ESMP before the start of works and shall be required to submit it for approval. The Contractor shall also implement the site specific ESMP during construction phase. The Contractor must have a code of conduct to ensure proper behavior of the workers during the project construction. He/She shall submit its Code of Conduct that will apply to its employees to ensure compliance with Environmental, Health and Safety (EHS) obligations under the contract. In addition, he/she shall detail how this Code of Conduct will be implemented, ie how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

2.2 World Bank environmental and social safeguard policies

The World Bank's has developed 10 environmental and social safeguard policies, which are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for Bank and borrowers in the identification, preparation, and implementation of programs and projects.

This ESMF has been designed so that all SAIP activities funded under the World Bank will comply with the Environmental laws of the Government of Rwanda. The bank's safeguards policies and their applicability to the agriculture sector are presented below:

1. Environmental Assessment (OP4.01)
2. Natural Habitats (OP/BP 4.04)
3. Forestry (OP/BP 4.36)
4. Pest Management (OP 4.09)
5. Physical Cultural Resources (OP 4.11)
6. Indigenous Peoples (OP 4.10)
7. Involuntary Resettlement (OP/BP 4.12)
8. Safety of Dams (OP/BP 4.37)
9. Projects on International Waters (OP/BP 7.50).
10. Projects in Disputed Areas (OP/BP 7.60)

The World Bank (WB) and GoR agreed that SAIP will trigger seven (7) WB environmental and social safeguards policies discussed below:

Environmental Assessment (OP 4.01)

This policy requires environmental assessment (EA) of projects/programs proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. The core requirement of this policy is to screen early for potential impacts and select appropriate instrument to assess, minimize and mitigate the potentially adverse impacts. Relevant safeguard instrument for the policy include Environmental and Social Impact Assessment (ESIA), which is prepared for specific projects already identified before project appraisal; Environmental and Social Management Framework (ESMF), which is prepared to establish a mechanism to determine and assess future potential environmental and social impacts during implementation of the project activities and investments, which are not specified before project appraisal; and Environmental and Social Management Plan (ESMP).

The policy calls for the proposed project as a whole, and for activities/investments to be identified at a later stage during project implementation to be environmentally screened to determine the extent and type of the EA process. At screening stage, the proposed project of sub-projects will be classified as Category A, B or C, depending on the type, location sensitivity, and the full scale of the project and the nature and magnitude of its potential environmental impacts. For Category A: full Environmental and Social Impact Assessment (ESIA) will be required, since project activities may have adverse, irreversible and significant environmental impacts. For Category B: a limited ESIA will be adequate, since projects may have site-specific environmental impacts, and their mitigation measure can be designed more readily.

Under Category C: subprojects are likely to have minimal or no adverse environmental impacts, hence beyond screening; no further environmental assessment action may be required. OP 4.01 further requires that the ESIA and ESMF report must be disclosed as separate and stand-alone documents by the Government of Rwanda and the World Bank as a condition for Bank Appraisal of the proposed project. The disclosure should be both in Rwanda where it can be accessed by the general public and local communities and at the Info-shop of the World Bank.

Categorization procedures:

Category "A" Projects

A full EIA is always required for projects that are in this category, and for which 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 significant involuntary displacement of people or other significant social disturbances.

Category "B" Projects

Although an EIA is not always required, some environmental analysis is necessary and some form of environmental management plan should be prepared.

Category B projects have impacts that are 'less significant, not as sensitive, numerous, major or diverse. Few, if any, impacts are irreversible, and remedial measures can be more easily designed. Typical projects include rehabilitation, maintenance, or upgrades, rather than new construction.

Category "C" Projects

No EIA or other analysis is required. Category C projects result in negligible or minimal direct disturbance of the physical environment and biological.

Only subprojects classified as category B or C will be eligible for financing under SAIP in Rwanda. This ESMF sets out to establish the EA process to be undertaken for implementation of project activities in the proposed SAIP when they are being identified and implemented. This process requires that SAIP and its implementing partners screen their activities to identify their potential adverse impacts and thereby determine the corresponding mitigation measures to incorporate into their planned activities.

Natural Habitats (OP 4.04)

This Bank Operational Policy recognizes that conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats. Natural habitats are land and water areas where (i) the ecosystems biological communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the areas primary ecological functions. All natural habitats have important biological, social, economic, and existence value.

Therefore, the Bank natural habitats operation policy (OP 4.04) is triggered in all cases where the proposed investments are likely to have potential adverse impacts on Rwanda's natural habitats including wetlands, underground water sources, open water bodies and forests.

The Bank natural habitats operational policy requires that any activities funded under the SAIP that adversely impacts these ecosystems must have a successfully mitigation plan so as to maintain the overall balance and integrity of the ecosystems impacted. This requires that SAIP designs appropriate conservation and mitigation measures to remove or reduce adverse impacts on these ecosystems or their functions, keeping such impacts within socially defined limits of acceptable change. Specific measures may depend on the ecological characteristics of the affected ecosystem. Such measures must include provision for monitoring and evaluation to provide feedback on conservation outcomes and to provide guidance for developing or refining appropriate corrective actions. Activities that risk significantly degrading or converting critical natural habitat will not be funded under the project.

Pest Management (OP 4.09)

This policy aims at the management of pests that affect either agriculture or public health. The World Bank supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides.

The policy supports safe, effective, 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.

The SAIP project components will trigger this policy especially those activities that will focus on improving land productivity. In appraising a project that will involve pest and disease management, the Bank assesses the capacity of the country's regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. As necessary, the Bank and the borrower incorporate in the project components to strengthen such capacity.

The Bank uses various means to assess pest management in the country and support integrated pest management (IPM) and the safe use of agricultural pesticides: Economic and sector work, sectorial or project specific environmental assessments, participatory IPM assessments, and investment projects and components aimed specifically at supporting the adoption and use of IPM.

For World Bank funded agriculture projects, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. The Bank may finance the purchase of approved pesticides when their use is justified under an IPM approach.

The policy calls for assessment of the nature and degree of associated risks, taking into account the proposed use and the intended users for procurement of any pesticide in Bank financed projects. The policy sets criteria to apply for the selection and use of pesticides in Bank financed projects including must have negligible adverse human health effects, must be shown to be effective against the target species, and must

have minimal effect on non-target species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies.

The policy requires putting in place a Pest Management Plan (PMP) and structure for adoption of IPM and safe use of pesticides. The SAIP has prepared a PMP which was shared with the Bank for review and clearance. The project will also adopt to use Integrated Pest Management (IPM) techniques during its implementation.

Involuntary Resettlement (OP/BP 4.12)

Interventions in the agriculture sector could lead to displacement, loss of assets and restriction of access to sources of livelihood. Project areas would be screened for impacts and a Resettlement Action Plan (RAP) will be prepared, if required.

Resettlement Policy Framework (RPF) sets the guidelines for the Resettlement and Compensation Plans (RAPs) that would have to be prepared when any project investment (activity) triggers this policy. The standalone Resettlement Policy Framework (RPF) has to be prepared by the Government and approved by the Bank in compliance with OP 4.12. The RAPs would be prepared by the subproject implementers (e.g. districts) and would have to be submitted to the Bank for approval.

This policy is triggered when a project activity causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets (c) loss of income sources or means of livelihood, whether or not the affected persons must move to another location. Therefore, people are in most cases compensated for their loss (of land, property or access) either in kind or in cash of which the former is preferred. The resettlement policy applies to all displaced persons regardless of the total number affected, the severity of the impact and whether or not they have legal title to the land. Particular attention should be paid to the needs of vulnerable groups among those displaced.

The policy also requires that the implementation of the resettlement plans are a pre-requisite for the implementation/start of the construction to ensure that displacement or restriction of access does not occur before necessary measures for resettlement and compensation are in place. For chosen sites involving land acquisition, it is further required that these measures include provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, the taking of land and related assets may take place only after compensation has been paid, and where applicable, resettlement sites, new homes, related infrastructure and moving allowances have been provided to displaced persons.

It is to be noted that SAIP will trigger this policy as activities related to the construction of postharvest infrastructures will acquire land, and therefore, affect land and properties.

Safety of Dams (OP/BP 4.37)

The World Bank distinguishes between small and large dams for application of its policy on safety of dams, OP 4.37, states:

- a) Small dams are normally less than 15 meters in height. This category includes, for example, farm ponds, local silt retention dams, and low embankment tanks.

- b) Large dams are 15 meters or more in height. Dams that are between 10 and 15 meters in height are treated as large dams if they present special design complexities (for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials). Dams under 10 meters in height are treated as large dams if they are expected to become large dams during the operation of the facility (e.g. tailing dams).

Dam safety plans are also required for high hazard dams. High hazard dams are those between 10 and 15 m height, with special design complexities, e.g. unusually large flood handling requirements, location in zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials.

Though the Project is not constructing new irrigation dams, it triggers OP/BP 4.37 because the proposed irrigation schemes/infrastructure will rely on existing dams. However, it will not develop new dam safety plans but will use existing dam safety plans prepared under RSSP/LWH.

Physical Cultural Resources (OP/BP 4.11)

This policy addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community. These sites, when stumbled upon, require that the authorities are informed and the site is demarcated and protected.

The policy on Physical Cultural Resources (OP/BP 4.11) is triggered by SAIP. However, the chances of discovering those resources are very little as the project will be implemented in sites that have already been developed under LWH/RSSP. 4. The ESMF and ESIA will address impacts on physical cultural resources. The present instrument also provides “Chance Finds” procedures as the Construction works for postharvest handling infrastructure may lead to opportunistic finds of physical cultural resources. The chance finds procedures are presented in Annex 4.

Projects on International Waterways (OP/BP 7.50)

This policy applies to the following types of international waterways:

- (i) any river, canal, lake, or similar body of water that forms a boundary between or any river or body of surface water that flows through, two or more states, whether bank members or not;
- (ii) any tributary or other body of surface water that is a component of any waterway described in (i) above and;
- (iii) any bay, gulf, strait or channel bounded by two or more states or, if within one state, recognized as a necessary channel of communication between the open sea and other states and any river flowing into such waters.

This policy applies to the following types of projects:

(i) hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways as described in paragraph 1 above, and

(ii) Detailed design and engineering studies of projects under paragraph 2 (i) above, including those to be carried out by the Bank as executing agency or in any other capacity.

The Project ascertains whether riparian agreements are in place, and ensures that riparian states are informed of and do not object to project interventions.

The SAIP will co-finance small scale irrigation (SSI) infrastructure and support package (maintenance and business plan development). The SSI technology includes ready to use 1ha, 5ha, and 10 ha complete sprinkler, drip and rain-gun kits with portable diesel/petrol pump-units and pipes as well as the treadle pump, etc. Given that the activities to be financed by the project will not adversely change the quality and quantity of water flows to the other riparian, SAIP has requested for a riparian notification exception in line with the requirements of OP/BP 7.50.

Comparison between Rwandan and World Bank EA System

This section compares the similarities and differences between the National requirements and the World Bank environmental safeguards policies.

Basically, there is no big difference in regards to environment and Social management framework between national requirements and World Bank safeguards. Some gaps identified the national Rwandan legislation and the World Bank Policy OP4.01 are presented below:

Table 1: Differences between Rwanda regulations and World Bank OP 4.01

| Area | Rwandan Law | World Bank OP 4.01 |
|--|---|---|
| Environmental safeguards instruments | Rwandan national legislation is silent on the ESMF, regional or sectoral EA. It makes emphasis on ESIA. | All EA instruments are considered depending on the project. |
| Project categorization/ classification | The Rwandan regulation does not have the same project categorization as the World Bank but specifies projects/ activities requiring full ESIA study or partial ESIA and others which do not require it. | Depending on the type, location, sensitivity and scale of the project and nature & magnitude of its potential impacts, the WB classifies the proposed projects into Category A, B, C or FI. |
| Documents Approval and Disclosure | The law specifies the Institution competent for ESIA review and approval (ie RDB) but remains silent on its disclosure. | WB 4.01 requires that prepared documents are approved by the Bank and disclosed at WB external website |

2.3 World Bank industry Sector Guidelines for Agribusiness and Guidelines of pesticide manufacturing, formulation and packaging

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The General EHS Guidelines contain information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors. Under SAIP, the General EHS guidelines shall be used together with the relevant Industry Sector Guideline(s) and Guidelines of pesticide manufacturing, formulation and packaging.

The WB industry Sector EHS guidelines for Agribusiness cover EHS Guidelines for annual crop production, aquaculture, breweries, dairy processing, fish processing, food and beverage processing, mammalian livestock production, meat processing, perennial crop production, poultry production, poultry processing, sugar manufacturing and vegetable oil processing. SAIP is anticipated to comply with the annual crop production, perennial crop production as well as food and beverage processing (possible processing of vegetables like tomato, sweet pepper and chili as well as fruit raw materials such as passion fruit, tree tomato, watermelon, etc into value-added food and beverages).

The Environmental, occupational health and safety and community health and safety issues both in annual crop production and perennial crop production primarily include Soil Conservation and Management, Nutrient Management, Crop Residue and Solid Waste Management, Water Management, Pest Management, Use and Management of Pesticides, Fertilizers, Biodiversity and Ecosystems, Genetically Modified Crops, Energy Use, Air Quality and Greenhouse Gas (GHG) Emissions. Occupational health and safety (OHS) issues associated with annual and perennial crop production include the physical hazards (operational and workplace hazards, machinery and vehicles, confined and restricted space entry, exposure to organic dust), risk of fire and explosion as well as biological and chemical hazards.

In addition to WB industry Sector EHS guidelines for Agribusiness, SAIP will comply with the guidelines of “Pesticide manufacturing, formulation, packaging and distribution”. The Pesticides manufacturing, formulation and packaging processes generate air emissions (eg. volatile organic compounds (VOC), fine particulates, exhaust gases and greenhouse gases), hazardous and non-hazardous wastes (both solid and liquid wastes) (eg active pesticide ingredients, cyanides and metals; off-specification products not accepted for packaging, etc) and wastewater (eg. methanol, ethanol, acetone, isopropanol, and phenol; organic acids; and organic esters, etc) which contain active ingredients that may be toxic to humans and the environment.

The potential exposure to pesticides and presence of pesticides or by-products in potentially harmful concentrations in foodstuffs and postharvest products, potential exposure to pathogens associated with the use of manure, potential exposure to air emissions from the combustion of gas or diesel in various machineries (like turbines, boilers, compressors, pumps and other engines for power and heat generation) fires, burning of crop waste, residues, liquid or solid waste and increased risk of vehicle or machinery injuries on roads and access routes around the community are the major community health and safety risks. The EHS guidelines together with the WB industry sector and chemical guidelines provide specific recommendations and performance indicators to monitor to minimize risks to communities and environment which SAIP will observe.

CHAPTER THREE: ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

During the SAIP preparation, it was agreed that the implementation will focus on 8 LWH and RSSP3 sites but this may be expanded during SAIP implementation as needed by the GoR. These sites comprise of Karongi 12 and 13 in Karongi district, Nyabihu of Nyabihu District in the West, Nyanza 23 of Nyanza District in the South, Muyanza of Rulindo District in the North and Rwamagana 34 of Rwamagana District, Gatsibo 8 in Gatsibo District and Kayonza 4 of Kayonza District in the East. The following map presents the project location.

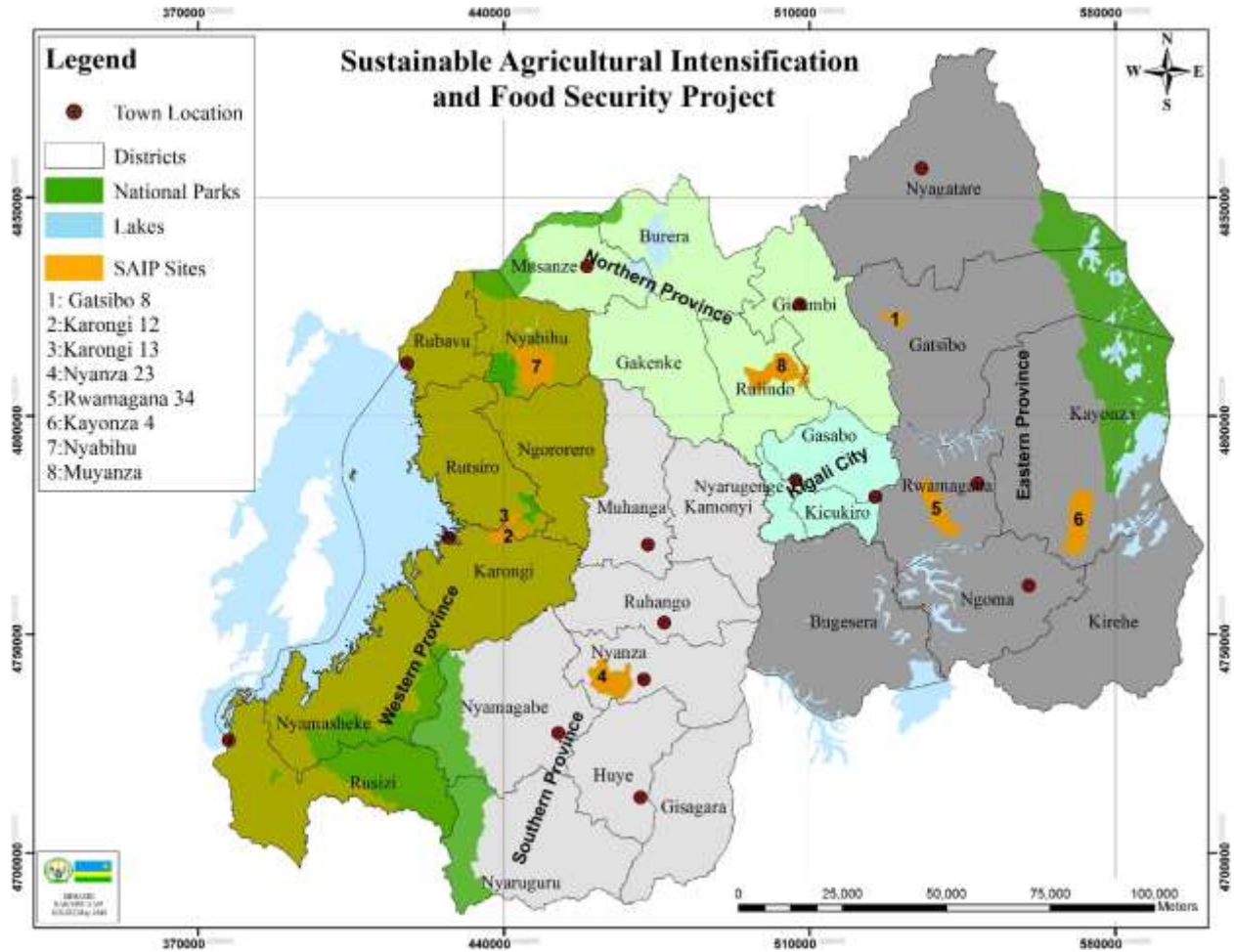


Figure 1. Location of project sites across the country

The overall baseline condition of the proposed sites in terms of biophysical environment as well as the socio economic and cultural attributes are described below:

3.1 Physical environment

Rwanda is a mountainous landlocked country, located in Central Africa, at latitude 2.00 S and longitude 30.00 E, bordered to its south by Burundi for about 290km, Tanzania to its east for 217 km, Uganda to its

north for 169km and the Democratic Republic of Congo (DRC) to its west for 217 km. Rwanda has a total surface area of 26, 338 sq. km of which the total land area is 24, 948 sq. km and 1, 390 sq. km is water.

The 8 sites can be divided into three topographical regions as follows:

- ✚ Highland region including Nyabihu and Karongi 12 & 13 sites;
- ✚ Middle land region comprising of Nyanza 23 and Muyanza sites,
- ✚ Low land region covering Gatsibo 8, Kayonza 4 and Rwamagana 34 sites.

3.1.1 Climate

a) Highland sites

Karongi 12 and 13 sites (See 2 and 3 in Figure 1 above) on fall in the Moist Mid-Highland agro-climatic zone, which covers 41.65% of the land of Rwanda with greater potential for agriculture. The annual rainfall of the area is around 1300mm, with rainfall maxima exceeding 200mm/month, observed in April, during the main wet season of the year which lasts from mid-February to June. The second wet annual period from late September through December, shows monthly rainfall maxima of more than 100mm. The long dry season extends from June to August or early September, with July as the driest month. The short dry season extends from January to mid-February.

The Karongi 12 and 13 sites cover Rubengera and Rugabano Sectors of Karongi District and Mukura Sector of Rutsiro District. The mean annual temperature at the project site is less than the 18°C. The mean annual rainfall is estimated at 1371mm, with mean monthly maximum in April (204mm) and minimum in July (18mm).

Nyabihu site (See 7 in Figure 1 above) covers Muringa, Rambura, Jomba and Karago Sectors of Nyabihu District and is characterized by high, rocky and steep mountains. The climate is generally mild, with an average temperature of 15°C, and rainfall reaching 1,400 mm per year. Two rainy seasons and two dry seasons are also observed in Nyabihu and not different from those in Karongi.

b) Middle land sites

Muyanza (See 8 in Figure 1 above) and Nyanza 23 (See 4 in Figure 1 above) were selected sites in middle land areas of Rwanda. The 2 sites with large dams have hillside irrigation components. Muyanza site partially covers Burega, Buyoga and Ntarabana Sectors of Rulindo District while Nyanza 23 is comprised of Rwabicuma and Nyagisozi Sectors of Nyanza District.

Nyanza 23 also falls in the Moist Mid-Highland agro-climatic zone. The annual rainfall of the site is around 1,177 mm, with rainfall maxima of 200 mm/month and rainfall minima of around 7 mm/month in July. However, the variation, as observed from the 35 years data is frighteningly high. For instance, at dry year, the total rainfall can be as low as only 788 mm while at wet year it could be nearly double or as high as 1,595 mm. For June, July and August, the minimum mean monthly rainfall is recorded as zero. The site has two rainy seasons and two dry seasons.

The temperature at Nyanza-23 is excellent for plant growth. The wind speed is low and the relative humidity shows that there is quite good amount of moisture in the air. The sunshine hours are short in all months except in the driest months of Jun, July and August.

The seasonal pattern of the rainfall regime at Muyanzena site is such that there are two (2) rainy seasons extending from February to May and late September to November with generally high spatial and temporal rainfall variability. The seasonal variation indicate the relatively dry period between June and August with monthly rainfall amounts predominantly below 40 mm. July is the driest month in the catchment while the wettest month is April with the average rainfall amounts recorded as high as 173 mm. The average annual rainfall recorded for Muyanzena catchment is estimated at about 1,183 mm. The temperatures at Muyanzena are relatively constant. The mean minimum temperature is 15°C and a mean maximum reaches 26°C.

c) Lowland sites

Gatsibo 8 (See 1 in Figure 1 above), Kayonza 4 (See 6 in Figure 1 above) and Rwamagana 34 (See 5 in Figure 1 above) sites are selected sites in low lands of Eastern Province. Gatsibo 8 and Kayonza 4 command areas cover Gatsibo and Kabare Sectors respectively. Rwamagana 34 site partially comprises of Mwulire and Nzige Sectors of Rwamagana District.

The annual rainfall for the Kayonza-4 site is 990 mm with annual dependable rainfall of 815 mm. On average 83% of the annual total rainfall falls during the wet seasons. The dependable rainfall varies from 81 mm in February, peaking to 110 mm in April, and declining to 18 mm/month in June and from 43 mm in September rising to 102 mm in November. It is less than 20 mm during the dry season; often with little rainfall from June through August. The minimum cloud cover is observed during the month of April and November. The high maximum and low minimum monthly temperatures are observed in September and July respectively; relative humidity is at its minimum in July and sunshine duration at its maximum in June.

From August to October average temperature reaches a maximum because of high day maxima and limited night cold; wind speed is also at a maximum. In August/September and January to May, the daily variation of temperature is low. Relative humidity is high in April and November. Sunshine duration is short in November and wind speed is low in April.

Gatsibo 8 is characterized by two main seasons: the dry season with the annual average temperature varying between 20.3 °C and 21.7°C and the rainy season. The rainy season is short and negatively influences the availability hydraulic for agro-pastoral activities. The project site falls in the Dry Low Land agro climatic zone with a mean annual rainfall of about 863.5 mm (ranging between 827mm and 900mm) and these rain falls are bimodal. Main rainy season extends from February to mid-June; the maximum rainfall is in March, exceeding 120 mm/month. In November the project area receives the largest rainfall as part of the second rainy season (October to December). The driest month is August. In fact, rainfalls are both very weak and very unpredictable to satisfy the needs in agriculture and livestock.

Rwamagana-34 project area is located in the Lake Mugesera basin, part of the Akagera basin. The climate of the project area on the northern shore of Lake Mugesera is dominated by the April and November rains.

The seasonal rainfall is characterized by two wet seasons from March to May and from October to December displaying a bimodal pattern whereby monthly rainfall varies from 119 mm in March, 162 mm in April declining through to 9.3mm in July. The annual rainfall for the Rwamagana-34 site is 931 mm with annual dependable rainfall of 772 mm. On average 71% of the annual total rainfall falls during the wet seasons. The dependable rainfall varies from 74 mm in February, peaking to 123 mm in April, and declining to 90 mm/month in May and from 50 mm in September rising to 88 mm in November. It is less than 20 mm during the dry season; often with little rainfall from June through August.

This seasonal pattern determines the annual variation of all climatic parameters. The minimum cloud cover is observed during the month of November. The high maximum and low minimum monthly temperatures are observed in September and November respectively; relative humidity is at its minimum in July and sunshine duration at its maximum in June. From August to October average temperature reaches a maximum because of high day maxima and limited night cold; wind speed is also at a maximum. In August/September and January to May, the daily variation of temperature is low. Relative humidity is high in April and November. Sunshine duration is short in November and wind speed is low in April.

3.1.2 Relief

Karongi 12 and 13 and Nyabihu sites have a hilly and mountainous relief with an altitude ranging between 1600 m and 3000 m. Nyabihu site is dominated in the Northwest by the volcanic ranges consisting of five volcanic massifs of which the highest is Kalisimbi with 4,507 m. Karongi 12 & 13 sites have steep and undulating topography with elevations varying from +1922m to +1616m.

Muyanza and Nyanza sites present a relief of hills with an altitude ranging between 1,500 m and 2,000 m. The lowlands of the East are dominated by a depression characterized by hills with more or less round top and 1,000 to 1,500 m in altitude.

Out of 8 project sites, Karongi and Nyabihu sites are landslide and flood and earthquake prone areas while the sites in Eastern Rwanda (Rwamagana 34, Kayonza 4, Gatsibo 8) regularly face with prolonged droughts.

3.1.3 Hydrology

Rwanda has abundant water resources estimated at 417,000 ha, including 101 lakes covering almost 128,000 hectares, water courses (7,260 ha) with 6,400 km of rivers and 860 marshlands spanning an estimated 278,000 hectares. The country is divided into two hydrographical basins with a separating line called Congo-Nile Ridge, moving from the North to the South and approximately perpendicular to the volcanic chain, making natural obstacles exchange between the catchments basins of the Northern Kivu and the Southwest of Uganda and those of Rwanda.

In the West of that line, there is the Congolese basin (33 % of the surface of the national territory) that drains 10 % of water resources of the country. In the East of the Congo Nile Ridge, there is the Nile basin which covers 67 % of the National territory and drains 90 % of Rwandan waters by two main rivers namely Nyabarongo and Akagera. Nyabihu and Karongi sites belong to the Congolese basin while the remaining 5 sites are part of the Nile basin.

The hydrographic network is very limited in the Eastern Province sites but becomes so dense in Western, Southern and Northern Province sites. Very few and small rivers, some of them erratic and intermittent, are observed in Eastern Province sites. Nyakagezi in Gatsibo 8, Cyinzange stream and four small streamlets in Kayonza 4 are some of the water bodies in lowland sites.

Surface water resources in the Muyanza catchment include; the Muyanza stream and its small tributaries from the hills. There are no major wetlands and swamps located within the Muyanza catchment, except for the small narrow wetland area along the Muyanza River. The latter is one of the major tributaries of Nyabugogo river. Kagondo stream, and many other small streamlets, tributaries of Mwogo river are found in Nyanza 23 site. Ndaba and Ntaruko rivers in Karongi sites and many other streams are permanent water courses flowing into Kivu lake. Giciye river with many tributaries is the main river in Nyabihu site.

The quality of water is generally good with a pH ranging between 6 and 7.5. Surface water often carries a lot of soil sediments and, in mining and volcanic regions, the water can contain traces of arsenic, lead, mercury, fluoride, iodide and other toxic metalloids and heavy metals, leading to water resources degradation. The physico-chemical pollution of water is not frequent due to the low level of industrialization and use of agricultural chemical inputs. The microbiological pollution is often observed and it comes from various domestic wastes and debris carried by rain water. The pollution of watercourses and lakes by the water hyacinth and other invasive species is a very recent and alarming phenomenon in Rwanda.

3.1.4 Wetlands

Wetlands cover a total area of 278,000 ha or about 10.6 % of the national territory. They include a variety of ecosystems, ranging from large, permanently flooded swampy peat-lands to smaller, seasonally flooded wetlands with a more mineral soil.

The wetlands are composed of marshes, lakes, rivers and streams representing around 10.6 % of the national territory. In the highland sites, there is Kivu lake. In the middle land of the country, wetlands are associated with rivers crossing the sites, such as Nyabarongo and Muyanza while Mugesera and Gashanda lakes are located in the downstream part of Rwamagana 34 and Kayonza-4 sites.

Given the importance that the Government of Rwanda attaches to wetlands, in 2003, Rwanda ratified the RAMSAR Convention (or convention on wetlands) and has already registered on the RAMSAR list the site of Rugezi and identified other potential sites that will be registered in the future, like the complex of Mugesera-Rweru, Kamiranzovu marshes and the wet zones of the Akagera National Park. However, none of them falls under the project sites.

3.1.5 Soils

The Rwandan pedology is characterized by six types of soils namely: Soils derived from schistose, sandstones and quartzite formations (50%); Soils derived from granite and gneissic formations (20%); Soils derived from basic intrusive rocks (10%); Soils derived from recent volcanic materials (10%); Soils derived from old volcanic materials (4%); Alluvial and colluvial soils (6%).

There is also an assortment of deposits of minerals such as tin, wolfram, Colombo tentelite and gold with the mining sector playing significant role in the national economy and as one of the key drivers of foreign direct investment in the country. Rwanda's soils contain many of the metal compounds found in laterite soils, but are generally lighter, more fertile, more workable, and less problematic to farmers than true laterite soils. There are two sub zones, with vastly different soils. To the northwest and the lower portions of the larger river valleys are very fertile volcanic soils covering approx. 10% of the country. Elsewhere, the largely metamorphic bedrock has produced generally poor quality with fertility varying and depending on extent of erosion and leaching.

Volcanic soils, humic acrisols and cambisols in highland areas, Humic Acrisols and Dystric cambisols in Nyanza 23, Anthrosol and Mollic-Nitisol in Muyanza, Haplic Ferralsols in Rwamagana 34 and Kayonza 4 and haplic Acrisols in Gatsibo 8 are the major soil types in project sites.

About 30% of Rwanda's land is suitable for farming, and another 30% for grazing. Except where the land is seriously eroded or leached by heavy farming, the soils have good humus content and fertility. Intensive food crop production, often on steep slopes, has led to serious soil erosion.

3.1.6 Air

Rwanda in general and Project sites in particular, have one of the lowest emissions per capita in the world, estimated at 0.65 tonnes CO₂/person (including land use change), compared to a global average of 4.63 tonnes CO₂/person (Nsengimana *et al.*, 2011). The majority of greenhouse gases (GHG) emissions were CO₂ (87%) at 531 Gg, dominated by transport (52%) and industrial processes (28.5%).

The air pollution from dust particles and vehicle emission is increasingly growing. During the dry season, there is a marked increase in air borne diseases due to dust particles emission especially in urban areas (REMA, 2009). Poorly maintained roads, motorcycles and vehicles cause an increasing concentration of different air pollutants (Henninger, 2009). The air pollution resulting from dust is not expected to increase during SAIP implementation.

3.2 Biological Environment

The Project sites are covered with diverse ecosystems that include forests, savannahs, wet and aquatic zones, and agro ecosystems. All these ecosystems have a rich flora and fauna. From the initial environment assessment, the proposed sub projects do not affect any critical natural habitats, as they will be implemented in the already cropped areas. There are no protected areas in the project sites.

3.2.1 Biodiversity of wetlands

The Lake Kivu, in the downstream part of Karongi 12 and 13 sites, contains very poor aquatic flora and the density of the phytoplankton is relatively low due to the lack of mixture of layers (the nutrients are found at the bottom of the lake). Aquatic fauna in the lake is also poor due to its physical isolation.

The flora in Mugesera and Gashanda wetlands, Rwamagana 34 and Kayonza 4 sites exist respectively, is dominated by the papyrus, *Cyperus papyrus* mixed with *Miscandium violaceum* and *Nymphaea nouchallii*.

An invasive species, the Water Hyacinth (*Eichornia crassipes*), is present and has recently started spreading, thus posing a threat to biological diversity of the lakes. Crocodiles in Mugesera, fish species, various birds' types in those wetlands dominate the fauna within the sites.

3.2.2 Protected areas

Rwanda has four national parks (Nyungwe, Akagera, Volcanoes national Parks and Mukura - Gishwati) and forest reserves. Volcanoes National Park, 160 km², covers 3 Districts (Musanze, Nyabihu and Rubavu) and has become famous worldwide due to the presence of mountain gorillas-*Gorilla gorilla beringei* and variety of plants and animal species (mostly mammals like black-fronted duiker (*Cephalophus niger*), buffalo (*Syncerus caffer*), spotted hyena (*Crocuta crocuta*) and bushbuck (*Tragelaphus scriptus*). There are also reported to be some elephants in the park, though these are now very rare. There are 178 recorded bird species. The Vegetation varies considerably due to the large altitudinal range within the park from lower montane forest between 2400 -2500 m to bamboo forest (*Arundinaria alpine*) between 2500 to 3200 m and grassland above 3600 m asl. This park, created in 1929, borders Virunga National Park in the Democratic Republic of Congo (DRC) and Mgahinga Gorilla National Park in Uganda. It is home to five of the eight volcanoes of the Virunga mountains (Kalisimbi, Bisoke, Muhabura, Gahinga and Sabyinyo).

Nyungwe National Park has more than 1,200 species of flora (265 species are trees and shrubs and of these 24 are endemic to the Albertine Rift), 275 species of birds, 75 species of mammals, including 13 species of primates with some on the IUCN red list such as the Eastern Chimpanzee (*Pantroglydytes schweinfurthii*), owl-faced guenons (*Cercopithecus hamlyni*) and the Angolan Colobus monkey (*Colobus angolensis ruwenzorii*). The park partially covers Nyaruguru, Nyamagabe, Karongi, Rusizi and Nyamasheke Districts.

Akagera National Park in the Eastern Rwanda covers a surface area of about 108,500 ha and inhabits more than 900 species of plants and 90 mammals (buffaloes, zebras, antelopes, elephants, hippopotamus, warthogs, baboons, Giraffes, etc), reptiles (crocodiles, etc), lions, 530 bird species and 35 fish species. Many species in the Akagera National Park are protected by the CITES convention such as *Loxodonta africana* (African elephant), *Syncerus caffer* (buffalo), *Panthera leo* (leopard) and *Tragelaphus spekii* (Sitatunga). The flora of the Akagera National Park is diverse and 6 species of orchids are recorded. The grass savanna is dominated by *Themeda triandra* and *Hyparrhenia sp.* accompanied with normal species like *Sporobolus pyramidalis* and *Botriochloa insculpta*. *Acacia spp.* are the most trees found in the forest savannah.

Mukura – Gishwati forest reserve becomes a national park in 2015. The new National Park has an area of 4,420 ha including 1,440 ha of Gishwati Forest, 1,988 ha of Mukura forest and 992 ha of the Park buffer zone. The park only covers Rutsiro District while its buffer zone is located in Rutsiro and Ngororero Districts of Western Province.

Gishwati – Mukura national park is rich in fauna species including *Pantroglydytes schewinfurthii*, *Colobus angolensis ruwenzorii*, *Potamochoerus porcus*, *Cephalophus nigrifons*, *Dendrohyrax arboreus*, *Felis serval* and *Felis aurata* (MINAGRI, 2002 in Munanura *et. al*, 2006), Tree squirrel (*Funisciurus pyrrhopus*), Rwenzori sun squirrel (*Heliosciurus ruwenzori*), Ground hog (*Thryonomys swinderianus*) and the jackal species (*Canus spp.*).

The Park is also rich in birds with 59 species recorded, among them 7 Albertine Rift endemic species: *Tauraco johnstoni*, *Apalis personata*, *Apalis Ruwenzori*, *Cynnyris regia*, *Zoothera tanganjicae*, *Bradypterus graueri* and *Parus fasciiventor* (Munanura et. al, 2006).

As mentioned above, there is no protected area within the project sites but Nyabihu and Karongi sites are in the vicinity of Mukura – Gishwati Park. The irrigation water at Karongi 12 and Karongi 13 comes.

3.2.3 Biodiversity in agricultural systems

a) Croplands

The SPIU LWH-RSSP has developed 1455 ha agricultural land in Nyanza 23, Gatsibo 8, Kayonza 4, Karongi sites and Rwamagana 34 for hillside irrigation and is about to complete 1,100 ha of irrigable land in Muyanza, making the total irrigable area to 2,555 ha. The Project has also developed more than 1300 ha with land husbandry only. The developed areas have various crops that play an essential role in the national economy. These crops are usually grouped in two categories: subsistence and cash crops. Some of the food crops include beans, maize, wheat, irish potato, peas, sojabean, banana, various vegetables (chili, tomato, cabbage, carrot, etc) and fruits (passion fruits, watermelon, tree tomato, etc).

The importance of each crop varies according to regions. Some crops, like bananas, maize, potatoes, vegetables, fruits are subject to high commercial trade. Potatoes, beans, maize and banana are also present everywhere for the daily diet of the people.

b) Pastoral zones

In Rwanda, the essential part of animal husbandry is comprised of one family ownership with a small number of animals per household. As agriculture occupies the biggest portion of land, the cows graze in paddocks, on road sides, and in some parts of marginal lands. This obliges farmers to adopt the zero grazing or semi-permanent farming and grow fodder crops such as *Tripsacum laxum*, *Setaria spp*, *Desmodeum spp*, *Pennisetum purpureum*, *Mucuna pruriensis*, *Cajanus cajan*, *Calliandra calothyrsis*, *Leucaena diverifolia*, *Sesbania sesban*, etc. There are no developed pastures within the Project sites and zero grazing is adopted across all sites. The farmers harvest fodder from the terraces' embankments. These were planted with fodder grass and shrubs by the project.

c) Forestry and tree cultivation

The maintenance of existing forests in the selected sites, the plantation of new forests in unsuitable agricultural areas and planting of agroforestry trees on terraces' embankments have been the focus of SPIU RSSP-LWH. Most of the existing or rehabilitated forests are dominated with *Eucalyptus spp* while the agroforestry in terraced zones includes *Grevillea*, *Cedrella*, *Maesopsis*, *Calliandra*, *Leucena*, *Alnus*, etc.

3.3 Socio-Economic Environment

3.3.1 Population and demographic characteristics

Rwanda is classified among the densely populated countries of the world. The Fourth Rwanda Population and Housing Census of 2012 places Rwanda's population at 10,515,973 residents, of which 52% are women and 48% men. The population density in 2012 was 415 inhabitants per square kilometer. Compared to neighboring countries, Burundi (333), Uganda (173) or Kenya (73), Rwanda is the highest densely populated country in the region.

In general, urban districts have the highest population densities, particularly the districts of Nyarugenge with 2,124 inhabitants/km², Kicukiro with 1,911 inhabitants/km², Gasabo with 1,234 inhabitants/km² and Rubavu with 1,039 inhabitants/km². Low densities are recorded in rural districts; those with the lowest density are Bugesera (280 inhabitants/km²), Gatsibo (274 inhabitants/km²), Nyagatare (242 inhabitants/km²) and Kayonza (178 inhabitants/km²).

The population of Rwanda is still largely rural, with 70% living in rural areas. The majority of the population of Rwanda lives in private households with an average size of 4.3 persons. Households are a bit smaller in urban areas with 4.0 persons. The Rwandan population is young, with one in two persons being under 19 years old. People aged 65 and above account for only 3% of the resident population; this has consequences in that the demographic dependency ratio, measuring the number of potential dependent persons per 100 persons of productive age, is 93 at national level (NISR, 2012).

The paragraphs below describe the socio-economic patterns in the project areas:

a) Karongi District

The estimated total population of Karongi district as provided by EICV3 survey in 2010–2011 is 355,000, representing 14% of the total population of Western Province and 3% of the total population of Rwanda. Females comprise 54% of the population of Karongi district.

The average size of the household in Karongi district is below the national average household size. It is about five persons per household (4.6). Only about 38% of the population in Karongi district is identified as non-poor; 22% is poor (excluding extreme-poor) and 40% extreme-poor. Within Western Province, Karongi is the second poorest district after Nyamasheke district. Most of the population aged 16 and above have Agriculture as their main industry (86%), followed by Trade with 4%. All other industries are under 3%.

The mean size of land cultivated per household (in ha), by district. The mean size of land cultivated per household in Karongi district is 0.5 ha, which is slightly lower than the national average (0.59ha), 81% of all households in Karongi district raise some type of livestock.

b) Nyabihu District

Nyabihu district is located in the western province of Rwanda. The total population of Nyabihu district is 330,000. The average size of the household for Nyabihu district is similar to the national average (4.8). Nyabihu district is among the districts which have the lowest percentages of extremely poor and poor population categories. It has 28.6% of extremely poor and poor people.

In Nyabihu district, the overall employment rate is 82% of the resident population aged 16 years and above, and the economic inactivity rate is 17.9%. The household income is driven by agriculture (43%), followed by wage income (25.7%) and business income (12.4%). The smallest contributor to household income in Nyabihu district is rent (5.6%). For Nyabihu district, the mean size of land cultivated per household is 0.46 hectare. The mean size of land cultivated per household at national level is 0.5 ha.

c) Nyanza District

Nyanza district is located in the southern District of Rwanda and is divided into 10 sectors. Its population is 323,719. The population of Nyanza district is predominantly female; 166,069 are women corresponding to 51.3 % of the total population.

The average size of the household in Nyanza district is below the national average household size. It is about five persons per household (4.6). Around half (50%) of the population in Nyanza district is identified as non-poor, with the other 50% consisting of 22% who are poor and another 28% extremely poor. Compared with the other districts of Southern Province by levels of non-poor, Nyanza is in third place after Huye (53.4%) and Kamonyi (53.3%). It ranks 11th least poor among all districts.

The overall employment rate is 82% of the resident population aged 16 years and above in Nyanza district, the unemployment rate is 0.4% and the economic inactivity rate is 17.4%. Most people aged 16 years and above in Nyanza are independent farmers, with 71% having this as their main occupation; Household income is driven by agriculture income (53%). The mean size of land cultivated per household in Nyanza district is 0.52 ha.

d) Rulindo District

The EICV3 survey results show that the total population of Rulindo district in 2010–11 was 294,000. This represents 16% of the total population of Northern Province and 2.7% of the total population of Rwanda. Females comprise 52.7% of the population of Rulindo district.

The average household size is 4.7 for Rulindo district, which is slightly lower than the national average of 4.8. In Rulindo district, 57.1% of the population is identified as non-poor, 23.2% as poor and only 19.7% as extremely poor. Compared with other districts in Northern Province, Rulindo district has the highest percentage of extreme-poor. Agriculture is the main industry for 77% of the population aged 16 and above, followed by Trade (5.6%), Mining and Quarrying (5.3%), and Construction (4.1%).

The mean size of land cultivated per household is 0.7 ha, which is above the national average (0.59), rural average (0.6) and urban average (0.46). Rulindo district also has 84.1% of cultivating households that cultivate under 0.9 ha of land.

e) Gatsibo District

Gatsibo District is located in the Eastern province of the country. The estimated total population on of Gatsibo district as provided by EICV3 survey results in 2010–11 is 491,000. This represents 19% of the total population of Eastern Province and 5% of the total population of Rwanda.

Only about 57% of the population in Gatsibo district is identified as non-poor; 24% are poor (excluding extreme-poor) and 18% extreme-poor.

The overall employment rate is 84.3% of the resident population aged 16 years and above in Gatsibo district; the unemployment rate is 0.1% and the economic inactivity rate is 15.7%. The household income is driven by agriculture (60%), followed by wage income (16%) and business income (8%). The smallest contributor to household income in Gatsibo district is public transfers' income (2%).

The mean size of land cultivated per household in Gatsibo district is 0.76 ha and 68% of households of Gatsibo cultivate under 0.9 ha of land.

f) Kayonza District

The population of Kayonza district is 332,000; about 55% are aged 19 years or younger. People aged 65 years and above make up 3% of the population. About 52% of the population is female individuals and the majority of the population is young, with about 83% still under 40 years of age.

The average size of the household in Kayonza district (4.7) is below the national average household size. Kayonza comes eleven from bottom by average size of household. In terms of the other districts of Eastern Province, Kayonza and Kirehe have lower household sizes. Kayonza has 43% of its population identified as poor (including extreme poor).

Agriculture is the main economic activity and source of income for about 80% of households. However, more than three-quarters of adults aged 16 years and above are underemployed, Kayonza is ranked sixth for underemployment in the nation.

Nearly seven out of ten cultivating households cultivate under 0.9 ha of land (which is the average size that the Food and Agriculture Organization estimates that a Rwandan household requires to conduct sustainable agriculture), including 22% with under 0.3 ha of land. 64% of all households in Kayonza district raise some type of livestock; this figure is above rural and country-wide average.

g) Rwamagana District

The population of the district is 318,000 and about 53% are aged 19 years or younger. People aged 65 years and above make up 4%. The majority of the population is young, with about 82% still under 40 years of age.

The average size of the household in Rwamagana district (4.7) is slightly below the national average household size. It comes 12th bottom by mean household size country-wide. 70% of the population in Rwamagana district is identified as non-poor, 18% as poor (excluding extreme-poor) and 12% as extreme-poor. Compared with other districts of Eastern Province, Rwamagana district comes first for proportion of non-poor.

The household income is driven by agriculture (42%), followed by wage income (22%), business income (21%) and rents (10%). The smallest contributor to house-hold income in Rwamagana district is public transfer income, with 0.2%. The mean size of land cultivated per house-hold in Rwamagana district is 0.7 ha

3.3.2 Energy and transport

In Rwanda, Woody fuels, biomass wastes, methane gas of Lake Kivu representing 57 billion m³ and solar energy are the sources of energy used in households, industries and handcrafts. The transport sector is generally dominated by road transport. In the sub sector of air transport, the country has two international airports (Kigali and Kamembe) and aerodromes (Huye, Rubavu and Musanze) used in internal transport. Lake transport is used mainly on Lake Kivu for connecting districts of the Western Province. In the Project sites, woody fuels and biomass wastes are the main sources of energy in households. The road transport dominates the transport sector.

3.3.3 Industry and Mining

The industry sector of Rwanda is modest and recent. One of the major problems is related to the location of industrial units as some of them are installed near residence houses, others in valleys (wetlands). These installations are sometimes sources of pollution because of their wastes, liquid (waste waters) or gaseous (dust, smoke, smell), and noise. Tea factory in Nyabihu, patchouri processing unit in Kayonza 4 are the only processing units found in the project areas.

Mines and quarries are found on hills surrounding all project sites. Some are still operational while others are abandoned. The rehabilitation of abandoned mines and quarries has not yet done but it is currently a preoccupation of the Government of Rwanda.

3.3.4 Agriculture

Agriculture is the main socio-economic activity in the project areas. It is an important sector of the Rwandan economy with a contribution of 32% to the GDP. The agriculture production system is based on small family exploitations whose production is consumed by the owners. The systems of crops are complex, based on the diversification of productions and the association of crops.

The little use of chemical fertilizers and pesticides, the low level of equipment and the very limited use of research based technologies result in small yields which are also very vulnerable to climatic changes.

The extensive agriculture practiced by the Rwandan population contributes to the degradation of environment. The agriculture intensification at the level of projects was often realized without taking into account the adverse environmental impacts from inputs like fertilizers, pesticides, herbicides etc.

3.4 Summary of key environmental and social issues in proposed project sites

The project sites are not yet confirmed but they will be selected from highland, middle land and lowland, the main topographic features across the country. The key issues in terms of environment and social concerns and which are significant to the design, planning and implementation of SAIP are summarized below:

- Soil erosion
- Massive loss of vegetation covers during land husbandry activities.
- Labor influx in search of employment
- Loss of top soil and reduction of soil fertility leading to loss of fertile soils, sedimentation and siltation.
- Water quality deterioration
- Spread of communicable diseases,
- Loss of income due to missing one growing season by farmers due to land husbandry works
- Land ownership conflicts, etc.

CHAPTER FOUR: PUBLIC CONSULTATION AND PARTICIPATION

4.1 Introduction

Project stakeholders' consultation is a vital component of the ESMF process. The consultation process focuses on providing information on the proposed project in a manner that can be understood and interpreted by the relevant audience, seeking comment on key issues and concerns, sourcing accurate information, identifying potential impacts and offering the opportunity for alternatives or objections to be raised by the potentially affected people; nongovernmental organizations, members of the public and other stakeholders.

The stakeholder's consultation meetings help in highlighting the socio-economic and environment concerns and impacts that could arise from the project which was significant in coming up with appropriate mitigation measures. Consultation has also been found to develop a sense of stakeholder ownership of the project and the realization that their concerns are taken seriously, and that the issues they raise, if relevant, will be addressed in the ESMF and will be considered during project design refinement.

Out of 8 sites selected for SAIP implementation, the consultation meetings were arranged for 5 sites located in 4 Districts. The visited sites were randomly chosen on the basis of the landscapes where SAIP will be implemented, ie highland, middle land and lowland. Rwamagana 34 and Muyanza sites are located in low land and middle land regions respectively whereas Nyabihu and Karongi sites are located in the high land regions.

Districts leaders/ staff, cooperative leaders and local communities are among the stakeholders met during consultation meetings. These engaged among others affected people in the project sites, Cooperative leaders, and District authorities (Vice-Mayor or his representative in certain Districts, Agronomists, District Executive secretary, Environmental officer, etc).The PAPs representatives were invited from the local farmers' organizations, private sector, civil society and other community opinion leaders. Consultations with Districts and farmers' representatives were organized in the represented Districts and conducted in Kinyarwanda.

4.2 Public consultation findings

4.2.1 Consultations with District authorities

Various meetings with districts authorities have been conducted in project sites by the SPIU staff. The latter met with the Vice Mayor in charge of economic affairs, the Director of Agriculture and Natural Resources and the Environmental Officer in Rulindo, Nyabihu, Karongi and Rwamagana Districts to explain the project and get their views on the project for its smooth implementation. These meetings were organized on March 2nd, 2018 in Karongi District, March 13th, 2018 in Nyabihu and Rulindo Districts and on March 15th, 2018 in Rwamagana District. The authorities met appreciated the RSSP3 and LWH contribution to the development of their Districts and welcomed SAIP. They thank the Government of Rwanda and the World Bank for this support and promised their support for the smooth running of SAIP.

4.2.2 Consultation with cooperative leaders

The farmers from a developed scheme were organized in cooperatives. Before the meeting with the local communities, separate meetings with Cooperative leaders were also arranged by the SPIU team to explain the proposed project and get their views on the project.

Cooperatives in Muyanza, Nyabihu, Karongi 12 &13 and Rwamagana 34 sites were involved in the consultation. They appreciated the project and requested for support in the following domain:

- ✓ Capacity development of the cooperative members in the production of high value crops like vegetables and fruits in Rwamagana 34 and Muyanza sites;
- ✓ Providing or availing good quality seeds of irish potato as well as potato postharvest infrastructures in Nyabihu
- ✓ Technical support for the production of selected crops in each site through demonstration plots
- ✓ Strengthening farmers' capacity in assessing of crop diseases and adequate application of fertilizer and pesticides
- ✓ Conducting soil tests in the terraces of Karongi 12&13 sites
- ✓ Capacity building on nutrition and balanced diets etc

4.2.3 Consultation with local communities

The local communities, beneficiaries of LWH and RSSP projects, were also consulted and informed on the project under preparation. They were allowed to give their feedback and their suggestions were documented and will be considered during the project design and implementation. The meetings with the affected people were conducted in five sites out of 8 selected. These are Muyanza, Rwamagana 34, Nyabihu, Karongi 12 and Karongi sites.

In total, about *Four hundred and seventy eight (478) people disaggregated by gender as 278 Men and 200Women* in five sites were consulted between February and March 2018. In general, all the consulted categories are in favor of the project and perceive it as a possibility of increasing economic activity in the area through increased agricultural productivity and creation of jobs.

The overall benefits of the consultation meetings are:

- Clarity concerning roles and responsibilities for each stakeholder
- Early engagement of the community and the local administrative authorities
- Understanding of the different challenges encountered from similar projects and sustainable solutions
- Increased ownership from all the concerned parties
- Better strategies for effective communication among all the concerned parties

Below, are some photos from several consultation meetings



Figure 2. Public consultation meetings in SAIP sites

The table below highlights the key outcome of the meetings

Table 2: Key outcomes of the consultation meetings

| Outcomes of the consultation meetings in Muyanza site | |
|---|--|
| Issue raised | Response provided |
| Beneficiaries asked if SAIP will connect them to buyers for their produce. | <p>The project will connect the farmers to reliable market outletstargeting both domestic and regional markets especially for staples and horticulture.</p> <p>The project will also support farmers in accessing existing (and future) market information systems</p> |
| Beneficiaries asked if SAIP will facilitate them with post-harvest infrastructures for horticulture produce | <p>Post-harvest handling needs have been identified; This includes drying shelters, drying grounds and collection points, nearer to the fields, for immediate post-harvest handling. For the horticulture sector, cold rooms will be constructed to increase shelf life and preserve quality and nutrient content, and reduce post-harvest losses.</p> |

| | |
|---|--|
| Construction of additional terraces | There will not be any construction of terraces, however SAIP will facilitate farmers to add value to their produce grown on hillsides and connect farmers to markets for the selected value chains. |
| <p>Beneficiaries requested that the project will facilitate them to find other sources of income ie Tailoring, Small processing industries etc</p> <p>Beneficiaries further requested that the project will offer capacity building in good agriculture practices.</p> <p>Beneficiaries requested that SAIP will help them to fight malnutrition by providing small livestock at the household level.</p> | |
| Outcomes of the consultation meetings in Rwamagana 34 site | |
| The beneficiaries asked for the expected community benefits likely to occur from the project implementation. | <ul style="list-style-type: none"> - Employment opportunities during civil works where PAPs will be given priority - Overall increased agricultural productivity -Capacity building for farmers - Improved nutrition among the project beneficiaries at the household level -Gender equity and engagement of the youth and vulnerable |
| The beneficiaries further asked for clarity concerning the management of grievances and conflicts during expropriation and compensation procedures | <p>-Grievance redress mechanism strategies will be put in place, including grievance redress committees that will be elected by the local communities.</p> <p>These GRCs will be close to the PAPs and shall be trained on conflict redress mechanisms.</p> |
| <p>The beneficiaries requested for support in capacity building of post-harvest handling processes and operation and maintenance of the project facilities.</p> <p>Increased access to market for their produce</p> | |
| Outcomes of the consultation meetings in Nyabihu site | |

After explaining to the participants about the scope and objectives of SAIP, the beneficiaries requested for the following:

1. To facilitate the farmers to acquire Irish potato seeds that are pest resistant
2. Access to reliable markets with fair prices
3. Support the farmers to establish an agricultural inputs (seeds and fertilizers) fund
4. Capacity building/Trainings in regards to cooperative management
5. Establishing a centre for nutrition
6. Hiring nutrition agents per village who will assess nutrition issues and train households
7. Facilitate farmers to become seed multipliers by establishing at least one green house in the sector where the project will be implemented.

Outcomes of the consultation meetings in Karongi 12 and 13 sites

| | |
|---|---|
| <p>The beneficiaries asked the relationship between LWH with SAIP</p> | <p>SAIP will build on the results of LWH and RSSP sites and will continue capacity building activities of the farmers’ organizations (WUAs, SHGs, cooperatives) established under these projects, help them link better to the markets to create additional livelihood opportunities and expand activities to further scale up nutrition sensitive and climate resilient agriculture.</p> |
|---|---|

The cooperatives informed the meeting of the benefits obtained from LWH project that include among others: Soil conservation through terraces, Postharvest infrastructures, Good agricultural practices, Cropping throughout all the agriculture seasons, use of organic and inorganic fertilizers and access to markets and finance.

The beneficiaries requested that SAIP will facilitate them in:

1. Increased access to financial institutions and facilitation to bank services like credit etc
2. To connect them to buyers both locally and internationally
3. To hire support staff for the cooperative
4. To expand the command area
5. Provision of more irrigation equipment since the ones they have are insufficient
6. Capacity building in improved nutrition
7. Carrying out regular soil tests to check the for the quantity needed for fertilizers
8. Provision of small livestock that will help them in compost making
9. Construction of temporary dryers per zone (The existing one is far)
10. Capacity building in operation and maintenance of the irrigation systems

CHAPTER FIVE: POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND GUIDELINES FOR MITIGATIONS

5.1 Introduction

This chapter identifies potential impact that could arise from the activities of the project either during the construction phase or the operational phase. The identified impacts apply to the socio-economic environment as well as the bio-physical environment. These impacts can be positive or negative and direct or indirect.

5.2 Positive Impacts

The SAIP implementation across the country will bring about many impacts. The identified positive impacts for different phases of the project cycle are discussed in the following sections. The key positive impacts from SAIP are discussed below:

5.2.1 Impact during Planning and Design phase

a) Employment opportunities

During the planning and design period, new jobs will be created for the skilled and unskilled labour in the community to conduct topographical investigations. The unskilled labour will be sourced from the local residents. Indirect employment will be in the form of suppliers and other forms of sub-contracted works that will be required for planning and design of project components. Women and youth will also have an opportunity to secure employment.

b) Skills transfer

The international consultant will associate with local partners. In the process of planning and design, the local technical manpower will work with the international experts. This process of working together will transfer design and planning tools, computer design software and other useful guideline which are used in similar topographical conditions in the world.

5.2.2 Impacts during construction phase

a) Rural employment and income generation

The postharvest infrastructure constructions are labour intensive activities and for that reason, the labour needed in the project area will create much needed employment opportunity to the local community. The developer will commit to a policy that gives priority to the locals in the neighborhood at the time of employing casual or skilled labour.

It is also anticipated that indirect employment opportunities will be created within local communities through the provision of services to the construction teams, such as the sale of food and beverages. Truck and machine owners will earn money from renting out their vehicles for excavation and transportation of construction material and machines that will do various construction activities (excavations, clearing, and loading, among others). The irrigation equipment and agricultural inputs will be bought and supplied to the project sites.

b) Capacity building of farmers

During the supply of irrigation equipments, farmers will be sensitized and trained on irrigation practices/ technologies and operation and maintenance of equipments, appropriate application of fertilizer, IPM, etc., thus imparting skills to them for improved production as well as to access markets, which they will utilize even after the project's exit.

c) Increased public revenues

Revenues shall be collected by both the national and local authorities from the procurement of construction materials and irrigation equipments, employees' salaries, VAT on materials and services, among others.

d) Health insurance and education

From their pay, Employees (Local people) shall afford medical insurance (Mutuelle de santé) and even pay school fees for their children and improvement of food security.

5.2.3 Impacts during operation phase

a) Increased irrigated areas

The developed schemes for irrigation and selected under SAIP cover a total irrigable area of 1,455 ha. The implementation of SAIP targets an additional area of 2,500 ha making the total irrigated area to 3,955 ha.

b) Increased farm incomes from crop output;

An increase in farm incomes as a result of increased and improved agricultural inputs and increased marketed crop output is anticipated. This would additionally be due to better and reliable market access of high-value crop produce that would fetch a good selling price as well as increased volumes of marketable output of different crops. As a result of increased incomes, farmers will be able to access inputs which they will use to expand existing enterprises. The proceeds could also enable them purchase more pieces of land elsewhere where they could grow food crops that do not require irrigation, in order to utilize the irrigable land for commercial farming only.

c) Poverty reduction through increased agricultural production

The SAIP project will promote increased agricultural productivity, diversification of agricultural crops and commercialization of agriculture from subsistence. The improvement in crop productivity will raise the income for the rural poor above the poverty line of less than a dollar a day. This is an indirect impact that will take a long process that will be felt after many years.

d) Empowerment of beneficiaries in proper application of chemicals (fertilizers, pesticides) and farming practices

During SAIP implementation, beneficiaries will be capacitated on different topics like application of fertilizers and pesticides, IPM, postharvest handling, irrigation technologies, operation and maintenance of irrigation equipments, etc. The Project will build on and further strengthen the existing farmer organizations (self-help groups, cooperatives, water user association and farmer unions; youth and women groups) created under SPIU RSSP/LWH to help them transform into dynamic, successful and sustainable enterprises, which are not depending on public investments.

The capacity building will be done through training, workshops, study tours, demo plots, etc. and will impart skills and knowledge to beneficiaries required for sustainable crop productivity.

e) Improved Nutrition

The increased and diversified crop productivity is anticipated under SAIP. This implies that if the production is improved, there will be more food thus resulting in a decrease in prices hence making it affordable to all the members within the community to have access to food. In addition, the project plans to organize trainings of farmers on food nutritional aspects, healthy cooking menu /demo meals, promote nutrient-rich crops and animal proteins sources; kitchen garden demos with provision of bio-fortified seeds and promotion and distribution of poultry and small livestock, etc. This will lead to improved nutrition of project beneficiaries.

f) Environmental Protection

The project will promote intensification of agriculture as opposed to subsistence agriculture. It will reduce pressure of farmers to push onto more fragile lands or sensitive natural habitat or to rely on labour intensive gathering activities off-farm. SAIP will thus intensify farm production through the increased and adequate use of improved inputs that increase productivity. This is an indirect impact that will protect marginal areas and sensitive ecosystems from agricultural encroachment. The Project will also maintain irrigation infrastructure (terraces, canals, etc) in order to be efficient in controlling erosion.

Though the project will prioritize integrated pest management practices (IPM), it may also use pesticides for pest and diseases control. However, the increased use of pesticides on the fields may be a threat to the birdlife and beneficial insects (eg bees). The selection and adequately application of pesticide will be of great importance in fauna protection.

g) Efficient use of available water resources

SAIP will invest in provision of equipment for water harvesting and water distribution for irrigation purpose. This will minimize water losses and increase water availability to more areas and crops. It will also protect the hydrological systems from sedimentation, flooding and contamination. This will curb the rate of irrigation in the area and the country.

h) Market creation

The project will create market for farm inputs including seeds, fertilizers, compost and pesticides. It will also create opportunities for irrigation equipment.

i) Availability of post-harvest infrastructures

The existing post-harvest infrastructures in project sites will be maintained while new others will be constructed. The project will construct drying and collection facilities near farmer fields for immediate post-harvest handling. The project will also co-invest in simple, primary processing equipment and business training of cooperatives and/or individual entrepreneurs managing the business. This is expected to reduce post-harvest losses, improve quality, increase quantities, ensure value addition and allow farmers to find reliable market outlets, leading to significant increases in income.

5.3 Negative Impacts

The critical project activities that could potentially lead to adverse impacts mentioned below include;

1. Introduction or application of synthetic fertilizers and pesticides to boost overall productivity in treated areas;
2. Deterioration of soil and water quality due to inadequate chemicals use

3. Impact on biodiversity (insects, birds, etc).

5.3.1 Potential adverse impacts

a) Design and Planning and construction Phase

The design and planning phase of this project involves identification of sites and suitable areas for small scale irrigation and post-harvest infrastructure. The uncertainty on the population due to post-harvest infrastructure is the adverse impact anticipated during this stage. During the site identification, some people likely to be affected are doubting and raising a number of questions on the compensation of their affected assets, ownership and management of the postharvest infrastructures, etc.

Organizing public consultation meetings to explain planned activities, get people's feedback and provide clarification on issues raised will help to mitigate this impact.

The impacts expected during construction phase (Annex 1) include:

(i) Soil erosion

During the construction of post-harvest infrastructures and some irrigation infrastructures, excavated soil will be exposed to agents of erosion, mostly water. This impact is going to be low in significance in terms of magnitude. The erosion that will occur during the construction will be minimal and localized in the areas where excavation will take place only. The impact duration is only expected to be felt during the construction phase.

Soil erosion occurring during the construction phase of the project can be avoided through:

1. Only clear areas earmarked for construction
2. Dispose of the excavated soils immediately after excavation completion;
3. Construct retention ditches below the construction area to control erosion risks

(ii) Dust emission and noise pollution

During construction, there will be movement of construction equipment and labour force at the project site. Dust and exhaust fumes that may cause air pollution as well as noise, is expected from earth moving activities by excavators and trucks plus other machinery such as concrete mixers, dumpers, etc. Noise from workers is also anticipated.

This impact can be considered of low magnitude, duration and spatial extent as it is localized and occurs only during the construction phase.

To reduce the effects of such activities, it is proposed that the following measures are implemented:

- Activities that create lots of noise or irritations, such as; vibrations, heavy equipment moving earth, excavations, shall be restricted to normal working hours (7h00-17h00) to prevent noise for neighbours at night ;
- The contractor is required to use equipment and automobiles that have certification of good working conditions from "National Automobile inspection centre" to avoid noise or exhaust fumes since automobiles in good condition will pollute less.
- The Contractor will spray water regularly when clearing land to reduce the dust.

- Generators for use at the site shall have silencers to reduce on the noise emitted.

(iii) Loss of biodiversity

Some crops and trees established in the site selected for post-harvest infrastructure will have to be cleared before construction. The project affected people (PAPs) would lose all benefits they already expect from these enterprises including food for home consumption, produce for sale and fodder for livestock. The risks of introduction of invasive species into the area through construction machines or labour force is also anticipated.

The scope of impact will be localized and felt in the construction area. The impact will also be long term in terms of duration on construction sites because the crops and land will be lost for as long as the project is implemented.

This impact is unavoidable and will be mitigated through compensation measures which will include compensation of land, crops and trees on construction sites. The tree or grass clearing should only be limited to construction site and the introduction of invasive species in the area should be avoided. The tree or grass planting should also be planned for to replace lost plant species. It is also important to avoid construction in sites of importance within the broader region or landscape.

(iv) Water pollution

Civil works at the project site could be a risk of contaminating the clear river water with cement and muddy waters or soil movement. This impact is of low in significance in terms of magnitude and spatial extent. It could occur only during construction phase and rainy period. However, it is a pre-cautionary and avoidable impact.

The impact can be mitigated through:

- Construction of retention ditches downstream the construction area to control water pollution by surplus soil;
- Prevent adding solid wastes in runoffs
- Suitable storm water treatment systems should be availed at sites
- Empty/drain all areas that may hold standing water

(v) Loss of properties

The loss of land and assets on land (crops, trees and structures) due to construction works is anticipated during SAIP implementation; hence resulting in people's displacement and assets loss. The preparation of a resettlement action plan (RAP) according to the RPF to fully compensate for lost/damaged property and resettle the displaced persons is compulsory to mitigate this impact.

(vi) Increased occupational accidents

The project will employ labour force for its timely completion. Communicable diseases like tuberculosis, malaria, diarrhoea, etc. are therefore likely to be disseminated especially during peak demand for manpower. Different types of accidents at the site (injuries caused by handling of construction equipments, spills and leakage of hazardous materials, injuries from stepping on or using sharp objects, fires, accidents by vehicles, motorcycles and bicycles, etc) are likely to increase due to rise in manpower and traffic.

Child labour, prostitutions or sexual offences, gender imbalance are also predicted due to increased employment opportunities. The impact will be of short duration and reversible, but can be of a high magnitude if not well managed.

Management measures including proper sanitation, waste disposal facilities, awareness campaigns for the prevention of AIDS/HIV, sexually transmitted diseases and other communicable diseases, sensitization for health insurance will be needed at the project site. The provision of protective equipment to workers (helmets, boots, masks, etc) will also compulsory. The reinforcement of laws on child labour, sexual harassment/ prostitutions and gender equity should be done. The integrity of workplace structures, workspace and exit, fire precautions, potable water supply, clean eating area, lighting, safe access, lavatories and showers, first aid, etc. should be incorporated in the designs. Promoting collaboration with local authorities to enhance access of workers families and the community to public health services and promote immunization is also important.

b) Operation Phase

(i) Water and soil quality degradation

During SAIP implementation, the support to agricultural inputs including improved/bio-fortified seeds, fertilizers, pesticides, etc will be provided. The supplied fertilizer and pesticide will be applied in the fields. These agrochemicals, if applied in large amounts and at inappropriate time, will pollute water resources in the streams and have cumulative effects in the basin and groundwater. Pesticides applied will bio-accumulate in the soaked soils of the command area, upset the natural ecological balance and biodiversity of the wetlands downstream.

The infiltration of irrigation water in excess of available root zone storage will penetrate beyond the reach of roots and eventually recharge groundwater. Nitrates, salts, and other chemicals used in crop cultivation that dissolves in the soil water will move with the water. Crops with high water and N requirements (like vegetables) will increase the potential risk of nitrate pollution to groundwater. Because they do not evaporate, nitrates/nitrites are likely to remain in water until consumed by plants or other organisms.

The pesticide infiltrating in the soil can contaminate the soil by accentuating soil acidity or salinity depending on the type of pesticide used.

The impact can be high in terms of magnitude and depending on the quantities of agrochemicals used. The scope of the impact will be felt throughout the drainage system and beyond hence cumulative and will be long term for as long as the chemical runoff continue ending up in the drainage network causing nutrient load effect. However, taking into consideration the national consumption of fertilizers per hectare (less than 4 kg/ha/year) (MINAGRI, 2007) and pesticides (0.1 kg/ha/year), the impact of fertilizer and pesticide is not going to be severe.

The SAIP has prepared a Pest Management Plan (PMP) for the entire project which will provide guidance on the judicious use of pesticides in the cultivation and production of crops. This ESMF and site ESIA/ESMP will also provide guidance on the proper management of fertilizers. Farmers will also be

trained in techniques of agrochemical applications (handling, labeling and application of agro-chemicals under field conditions).

The training should be incorporated in a farmer's field school curriculum. Extension workers should also be able to deliver awareness program on the amounts and conditions for applying fertilizers and pesticides to prevent water pollution. Preventive measures will also include practicing IPM and use of organic manure and reduced use of fertilizer.

(vii) *Reduction of water flow downstream;*

The small scale irrigation involves blocking and deviation of the flow of water in the canal to the identified area for irrigation. Due to this, the downstream water users might experience temporary shortfall in the amount of water available therefore disrupting activities and sources of livelihood that depend on the water. This is a short term impact that only happens when the water will be diverted small scale irrigation.

The impact will be minimum in terms of magnitude, severity and scale. This is because the initial design for irrigation overestimated the quantity of water to use and the required amount is too little. This impact is short term and only expected to occur during the irrigation period.

Mitigation Measure(s)

- ❖ Regulate water abstraction for irrigation and other uses.
- ❖ Adopt a water distribution saving approach for each site

(viii) *Air pollution due to inappropriate pesticides application*

During pesticides application, some residues are released into the air and can settle to the ground, be broken down by sun light and water in the atmosphere or dissipate into the surrounding air. The pesticides in the air become a health risk depending on toxicity level and quantity of the pesticides in the air as well as the quantity that a person breathes or gets exposed to.

In a bid to mitigate the negative impacts of pesticides, the following is proposed:

- ✓ Use IPM practices to control pests
- ✓ Monitor the weather when applying pesticides and avoid very hot or windy days
- ✓ Follow label directions when using pesticides
- ✓ Consider staying inside with doors and windows closed when pesticides are being applied near houses/ settlements;
- ✓ Wear adequate personal protective equipments when applying pesticides or nearby application zones of pesticides.

(ix) *Loss of biodiversity due to pesticides use*

There exists different species of birds, beneficial insects like bees in the project areas. In all instances where high input-dependent crop/pest practices are adopted, pesticide misuse is known to be common and can result in the following impacts:

- ✚ Destruction of crop pollinators leading to poor crop yields;

- ✦ Elimination of the natural enemies of crop pests and consequent loss of natural pest control that keeps the populations of crop pests very low;
- ✦ Development of pest resistance to pesticides, encouraging further increases in the use of chemical pesticides;
- ✦ Contamination of the soil and water bodies;
- ✦ Toxicity to fish and birds;
- ✦ Proliferation of aquatic weeds;
- ✦ Pesticide poisoning of farmers and deleterious effects on human health;
- ✦ Unacceptable levels of pesticide residues in harvested produce and in the food chain; and
- ✦ Loss of biodiversity in the environment, particularly of the aquatic non-target species.

The proposed mitigation measures include:

- ✓ Avoidance of introduction of invasive/Exotic species and degradation of habitat : Care should be taken not to introduce invasive species during re-vegetation of the area. The water hyacinth *Eichornia crassipes*, responsible for much disruption of aquatic systems, must not be introduced in wetlands ecosystem.
- ✓ Use IPM practices to control pests
- ✓ Adequately select and apply pesticides and monitor the weather when applying pesticides and avoid very hot or windy days

(x) *Increased pest and disease resistance and dissemination of crop diseases;*

The increased acreage of irrigated land will create a more humid environment that may result in an increase of agricultural pests and plant diseases. Change to a more uniform environment on the subproject areas will favour vigorous species adapted to a wide variety of conditions. Diseases and weeds will spread quickly via the re-use of waste-water and drainage water.

Increase pests and plant diseases will affect farm harvest and lead to food insecurity and malnutrition in areas of Southern part of the country. Increased pests and crop diseases will trigger increased use of pesticides leading to water contamination.

To mitigate against emergence of pests and diseases, an incorporation of IPM approaches are proposed. These measures should involve rotational cropping practices which preserve greater diversity in habitat thus reducing impact of pest and diseases. Crop varieties used in this project should carefully be selected and tested in order to avoid new diseases and pests.

(xi) *Increased Spread of Water Borne Diseases*

There exist some households fearing that there would be an increase in the incidences of malaria and other water borne diseases because the water infrastructures like canals would serve as a breeding ground for mosquitoes.

The impact of disease spread will be long term for as long as the reservoir, irrigation and drainage canals are habitats for disease vectors and the scale and severity is moderately high and can be severe especially for children under 5 years and pregnant mothers who are vulnerable to malaria.

The SAIP should develop a program in collaboration with the Ministry of Health (MINISANTE) and the local communities which undertakes bi-annual survey of health records in Health Care Facilities (HCFs) to ascertain the spread of malaria and other water borne diseases (WBDs). These data should then be used to develop a WBD within SAIP that could include use of Insecticide Treated Nets, Indoor Residual Spraying among others.

(xii) *Spread of pesticides' use related diseases*

In addition to environmental risks, there is overwhelming evidence that some of the pesticides are potentially hazardous to human health. Deaths and chronic diseases (like throat irritation, sneezing, coughing, cancer, etc), reproductive toxicity, etc. due to pesticide poisoning are reported in various sources.

In order to avoid the health impacts of pesticides use, the following is proposed:

- ✓ Give preference to the application method with the lowest EHS risk and ensure non target organisms are not affected;
- ✓ Ensure that all equipment is in good condition and properly calibrated to apply the correct dosage.
- ✓ Carry out surveys to assess impacts of pesticides' use related diseases within project areas.

5.3.2 Localized Impacts

Most of the developments or subprojects planned under the SAIP will vary from medium to small in scale. Consequently the significance of the direct negative environmental and social impacts is likely to be low to moderate except where they accumulate in single watersheds.

5.3.3 Cumulative Impacts

Many of the subprojects may result in cumulative impacts on natural resources. Cumulative impacts are those that may result from individually small-scale activities with minimal impacts but which over time can combine to have a significant impact. Cumulative impacts can also be defined as impacts that potentially develop from the combined impacts of more than one subproject. Examples include:

- Increased use of chemical fertilizer which may have downstream impacts; and
- Attraction of immigrant populations to communities that have improved production systems and social infrastructure.
- Increased sedimentation of the natural water bodies and valley

The stakeholders will be provided with an opportunity to learn how to avoid or mitigate localized impacts from initial subprojects so that measures can be integrated in subsequent activities.

5.3.4 Strategic Impacts

The main objective of the SAIP is to increase agricultural production, market access and food security in targeted project sites in an environmentally sustainable manner. This will be achieved by assisting rural households to expand and intensify sustainable crop production systems and to increase their participation in agricultural markets.

5.3.5 Ecological Impacts and Land Degradation

A number of the proposed activities in the subprojects can lead to both localized and cumulative impacts on biodiversity, wetlands, soils and water quality. Land degradation may arise due to subprojects that involve intensification of agriculture.

The environmental and social screening tools identified in this ESMF will be used to identify and mitigate the potential impacts (Annex 1, 2) as they relate to certain types of community investments.

Considerable attention must, therefore, be paid to the environmental consequences of current pest management practices in Rwanda.

Table 3: General Environmental management for SAIP

| Project Component | Specific activities | Receptor | Negative impact | Mitigation measure |
|--------------------------------------|--|----------|--|---|
| Construction Phase | | | | |
| Market and processing infrastructure | Construction of postharvest, marketing and processing infrastructures including drying shelters and grounds, collection points, cold rooms, agro-dealership shops, processing and storage facilities | Human | <ul style="list-style-type: none"> • Loss of land and assets on land (crops, trees and structures) due to construction works, hence resulting in people's displacement and assets loss • Noise and dust pollution from movements of heavy vehicles and from employed labor • Increased occupational accidents • Safety hazards | <ul style="list-style-type: none"> • Preparation of a resettlement action plan (RAP) according to the RPF to fully compensate for lost/damaged property and resettle the displaced persons. • Use noise and dust mitigation measure to minimize impacts eg PPEs, watering of construction sites to reduce dust, maintaining construction activities to normal working hours (7h00 to 17h00) • Ensuring use of protective equipments for manpower |

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|--|--|------|--|---|
| | | | | <ul style="list-style-type: none"> • Integrity of workplace structures, workspace and exit, fire precautions, potable water supply, clean eating area, lighting, safe access, lavatories and showers, first aid, etc. should be incorporated in the designs • Promoting collaboration with local authorities to enhance access of workers families and the community to public health services and promote immunization • Awareness campaigns for the prevention of communicable diseases. |
| | | Air | Air pollution from exhaust fumes and dust emission from activities of construction and movement of equipments | <ul style="list-style-type: none"> • Use dust mitigation measure to minimize impacts eg PPEs, watering of construction sites to reduce dust |
| | | Soil | <ul style="list-style-type: none"> • Soil erosion from exposed land surfaces caused by vegetation clearing • Cutting of slopes which | <ul style="list-style-type: none"> • Minimize as much as possible, clearing of vegetation • Undertake soil control measures ie |

| | | | | |
|-------------------------------------|------------------------|--------------|--|---|
| | | | <p>leads to land sliding</p> <ul style="list-style-type: none"> • Increased waste and storm water to low lying areas causing floods of water • Dumping surplus soil and construction wastes on productive land | <p>planting of grasses to stabilize embankments</p> <ul style="list-style-type: none"> • Management of both the source and destination of waste water and storm water. • Dispose of surplus soil and construction wastes in approved dumping sites |
| | | Water | <p>Water pollution by sediments from exposed areas mainly from vegetation clearing or dumping of wastes/ surplus into water body</p> <p>Increase of stagnant water and water borne diseases</p> | <ul style="list-style-type: none"> • Construction of retention ditches downstream the construction area to control water pollution by surplus soil; • Prevent adding solid wastes in runoffs • Suitable storm water treatment systems should be availed at sites • Empty/drain all areas that may hold standing water |
| | | Biodiversity | <p>Loss of biodiversity due to removal of vegetation</p> | <p>Grasses and Tree species will be replanted after construction activities to replace the ones lost;</p> <p>Avoid construction in sites of importance within the broader region or landscape</p> |
| Operational phase | | | | |
| Irrigation and water use efficiency | Small scale irrigation | Human health | Water logging increases the spread of waterborne diseases | Awareness and sensitization on waterborne diseases and |

| | | | | |
|--------------------------|---|--------------|---|--|
| | | | | <p>spraying of nearby homes with insecticides.</p> <p>Provide communities with good sanitation and alternatives to the irrigation canals for domestic supply (e.g., boreholes).</p> <p>Involving the health centers in the vicinity of areas to be irrigated at the planning stage</p> |
| | | Soil | Soil contamination due to use of non adequate irrigation water (polluted water) | <p>Conduct regular irrigation water quality assessment</p> <p>Conduct regular soil tests to regulate salinity or acidity or nutrient levels</p> |
| | | Water | Water wastage and conflict for water | <p>Develop an appropriate irrigation plan and schedule, and monitor consumption and compare regularly with these targets which should be based on available supplies of water</p> <p>Adopt water-efficient irrigation systems, such as drippers, sprinklers, etc. where possible</p> <p>Ensure regular maintenance of the irrigation system, as well as that of its associated channels and infrastructure.</p> <p>Reduce seepage losses in supply channels by lining them or using closed pipes</p> |
| | | | Irrigation increases the risk of contamination of ground and surface water. | Adopt the integrated pest management plan |
| Agriculture productivity | Enhancement of agriculture productivity | Human health | Exposure to pesticides and to toxic agrochemicals | Contamination can be reduced using Personal protective equipment, |

| | | | | |
|--------------------------------------|--|--------------|--|--|
| | | | | selecting adequate pesticides to use (avoid Pesticides WHO Class 1&2), and preferably use selective pesticides with low environmental impact quotient (EIQ), following the recommended practices for the storage, transport, handling application and disposal of each agrochemical; |
| | | Soil | Soil contamination by pesticides and fertilizers | Adopt the integrated pest management plan Increased use of organic manure Regular soil testing to determine the right fertilizer to use and adequate application time |
| | | Water | Pesticides contaminated water | Adopt the integrated pest management plan/create buffer zone before contaminated water joins rivers and streams |
| | | Biodiversity | Population decline and mortality in reptiles caused by agrochemicals Pesticides can eliminate some animals' essential food sources, causing the animals to relocate, change their diet or starve. | <ul style="list-style-type: none"> ✓ Avoidance of introduction of invasive/Exotic species and degradation of habitat; ✓ Use IPM practices to control pests ✓ Adequately select and apply pesticides and monitor the weather when applying pesticides and avoid very hot or windy days |
| Market and processing infrastructure | Conservation of the produce by cold rooms and storages | Human health | Deaths and chronic diseases due to air pollution by cold rooms' emissions, fire hazards or increased traffic. | <ul style="list-style-type: none"> ✓ Inspect regularly cold rooms, processing units, storages to ensure its proper functioning; |

| | | | | |
|--|--|--|---|--|
| | | | | <ul style="list-style-type: none"> ✓ Avoid to construct these infrastructures within near houses/settlements; ✓ Follow directions/safety instructions when using infrastructures; ✓ Provide adequate personal protective equipments to workers and farmers nearby. ✓ Restrict working hours between 7h00 and 17h00 ✓ implement the manufacturer recommended engine maintenance programs |
| | | | Noise pollution by electric motors (compressor, generators, etc) of the cold rooms or processing units, movements of heavy vehicles and from employed labor | <ul style="list-style-type: none"> a) Select equipments with lower sound power levels b) improving acoustic performances of constructed buildings and apply sound insulation c) limiting hours of operations for specific pieces of equipments or operations |
| | | | Unpleasant odor caused by generated wastes | Proper disposal and management of generated wastes |

| | | | | |
|--|--|-------|---|--|
| | | Soil | Land pollution due to spillage risks or accumulation of putrefied and damaged foodstuffs and other solid wastes | <p>Disposing of solid wastes, including damaged foodstuffs, in approved dumping site</p> <p>Increased Flies / pests/ rodents due to inadequate management of waste. It is important to treat adequately the dumping area.</p> |
| | | Water | Water pollution by waste water generated during washing of cold room, floors and equipments | <p>(i) Identify opportunities to prevent or reduce wastewater pollution through such measures as recycle/reuse within their facility, input substitution, or process modification (e.g. change of technology or operating conditions/modes)</p> <p>(ii) Application of wastewater treatment techniques to further reduce the load of contaminants, prior to discharge, taking into consideration of cross-media transfer of contaminants during treatment.</p> <p>(iii) Avoid to discharge wastewater to surface water and interfere, directly or indirectly with the operation and maintenance of the collection and treatment systems or pose a risk to worker health and safety or adversely impact characteristics of residuals from wastewater treatment operations.</p> <p>(iv) Testing for residual biocides and other pollutants of concern should be conducted to determine the need for dose</p> |

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|--|--|--------------|---|---|
| | | | | adjustments or treatment of cooling water prior to discharge |
| | | Biodiversity | Vegetation degradation due to contamination by wastes (solid & wastewater) | Have a suitable wastewater treatment systems and dump all wastes in approved dumping site |
| | | Air | Deterioration of air quality and atmosphere (ozone depletion) due to emissions by cold rooms & processing units | Application of emissions control techniques; Avoid open burning of solid wastes |

CHAPTER SIX: ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCESS

6.1 Introduction

This chapter of the ESMF describes the process for ensuring that environmental and social concerns are adequately addressed through mitigation measures, institutional arrangements and procedures used by the Project for managing the identification, preparation, approval and implementation of subprojects. It sets out the reporting systems and responsibilities of the institutions in implementing the ESMF including the details to be addressed by the ESMF and the specific steps to be undertaken to ensure adherence to the ESMF.

Based on the project implementation approach adopted by the project, the project and subproject preparation and reporting will be through the RAB/SPIU SAIP as the focal point for environmental compliance.

6.2 Environment and social screening process

The Project specific activities include (i) strengthening farmers organizations, youth and women as successful enterprises through skills enhancement, vocational training, exposure visits, farmer field schools (FFS); (ii) improve farmers organizations' access to financial services through financial literacy and improved financial services and products; (iii) sustain and further increase productivity and profitability of selected agriculture crops and horticulture; (iv) analyze and develop select value chains to help farmers to transition from subsistence farming to commercial farming, strengthening market linkages and value addition; (v) build capacity of youth and women for self-employment, jobs, improved nutrition, off-farm activities, small livestock and fish farming; and (vi) enhance availability of water for agriculture through efficient use of water and rehabilitation and scale up of existing irrigation schemes.

The activities associated with environmental and social concerns comprise of small scale irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructures.

The screening process (Annex 2) intends to:

- Determine the potential of selected subprojects as to whether they are likely to cause negative environmental and social impacts
- Determine appropriate mitigation measures for activities with adverse impacts
- Incorporate mitigation measures into project design
- Review and approve project proposals
- Monitor environmental and social parameters during project implementation

The classification of each subproject under the appropriate environmental category will be based on the provisions of the World Bank operational policy on Environment assessment (OP 4.01). The environmental and social screening of each proposed subproject will result in its classification in one of the three categories A, B or C depending on the type, location, sensitivity, and scale of the sub project and the nature and the magnitude of its potential environmental and social impact. The SAIP was assigned Category B.

The screening and review process (Annex 2) for subproject identification will help determine which World Bank safeguard policies are triggered for each subproject, what similar requirements REMA and RDB may have, and what measures will need to be taken to address the potential adverse impacts.

Activities that fall under Subcomponent 1.2, Subcomponent 2.2, Subcomponent 2.3 and Component 3 will need to be reviewed for potential environmental and social impacts.

Before the screening process is started, the review of plans, designs and technical and financial prefeasibility or feasibility reports is to be undertaken for every subproject considered to mainstream environmental and social concerns in the subproject review process. Though there is no feasibility study that has started, discussions on activities proposed for each site have already taken place and environmental and social concerns considered.

Based on the screening findings and depending on the extent/ magnitude of the impacts, a full Environmental and Social Impact Assessments (ESIA) or an Environmental and Social Management Plans (ESMPs) would be prepared for each SAIP subproject. The ESMP should provide substantial guidance on how each subproject should be planned, designed and implemented to avoid or minimize adverse environmental impacts.

Before the ESIA/ESMP preparation is conducted, the following are to be done:

❖ **Project brief preparation and submission**

The project brief (Annex 11) provides information on the intended project and the basis for the screening to the Authority designing or approving the ESIA Terms of Reference (ToRs), ie RDB. In preparing the project brief, it is important to identify, analyze and include the structure and interests of the key actors in land development/management depending on the scale i.e. the Ministry responsible for natural resources (Ministry of land and Forestry, Ministry of Environment); the Agencies (RLMUA, RWFA, RDB and REMA) and concerned Local Governments (where the site is located). It is also important to include the donors and development partners.

The SAIP should endeavor to simplify technical and engineering information to levels easily comprehensible by non-technical managers and decision makers. The project brief should indeed be brief, no more than 10 pages for the most sophisticated project including any attachments except technical drawings.

❖ **ESIA/ESMP requirements**

SAIP involves among other activities small scale irrigation, application of chemicals and construction of post-harvest infrastructures. Significant adverse impacts that may arise include water pollution, erosion, soil and air contamination, loss of biodiversity, etc. This activity requires conducting an ESIA before the start of civil works. The ESIA will be undertaken by SAIP on subproject (or site) basis and should cover all activities proposed for the site. The ESMP preparation (Annex 3) or updating existing ESIA should be carried out whenever found necessary.

❖ **Scoping**

The next stage, after screening and determining that a proposed subproject activities should be subject to the ESIA process, is to decide on the scope and content of the EIS. The land legislations, Law on Environment and associated regulations determine a core of key topics that must be covered as the minimum information to be contained in an EIS. The key points to be covered are determined by RDB.

❖ **Terms of References for ESIA/ ESMP**

Based on the project brief information submitted by RAB/SAIP to RDB (Annex 11), the latter should develop terms of reference (ToRs) and submit them back to RAB/SAIP and World Bank for approval before the ESIA process commences. The project brief submitted and any follow-up discussions may be the main basis for modification, approval or rejection of the ToRs. The ToR sample is presented in Annex 6.

❖ **ESIA/ ESMP preparation**

The main issues to be assessed and described in the ESIA of a typical land development project include water pollution, wastes management, erosion, soil and air contamination, loss of biodiversity. The type of expertise needed in the ESIA/ESMP will vary with the location and magnitude of the project but should in any case include:

- ✦ *Environmental Specialist*, with extensive experience in agricultural development activities;
- ✦ *Soil Scientist*, with vast experience in soil and land management
- ✦ *Ecologist or Natural Resource Management Specialist* with vast experience in ecosystems management (aquatic ecosystems, land ecosystem, protected areas, etc)
- ✦ *Water resource management Specialist* with experience in small scale irrigation and water use efficiency, water pollution management, wastewater management, etc
- ✦ *Socio-economy Specialist* with a vast experience agro-economy or related fields.

The Consultant will prepare a Scoping Report specifying the project's area of influence, the thematic scope and depth of assessments required, the composition of the required ESIA team, activity plan, and the probable budget required to mount the ESIA/ESMP study. The public consultation meeting will also be held and findings from the consultation will be included in the report.

Upon review and approval of the Scoping Report by the Client (RAB/SAIP), the consultant will start the ESIA study. The Study will entail a systematic investigation of all impact areas as identified in the scoping report, taking care to document the current baseline environment, resource exploitation patterns and ecological pressure points. It is mandatory for the ESIA study to undertake public consultation with all stakeholders in the project's area of influence. The ESIA team should note and understand all stakeholders' interests so as to cater for them in the ESMP. All accruing information will be written into a Draft ESIA Report.

In addition to policies and legal framework, environmental baseline and public consultation findings, the report will also include the environmental management plans and environmental monitoring plans as well as estimated cost.

❖ **Review of the ESIA or ESMP Report**

The Consultant will prepare the ESIA or ESMP report which will be submitted to the Client (RAB/SPIU SAIP) for review and approval. The project will organize a validation workshop involving all stakeholders including public agencies (participating District, REMA, RDB, MINILAF, MoE, RLMUA, RWFA), private sector, local farmers' organizations and farmers' representatives. The reviewed and corrected report will be submitted to RDB and World Bank for review and approval of the report. The content of an ESIA and ESMP report is presented in Annex 5 and 4 respectively. The Project shall obtain clearance and completion Certificate from World Bank and RDB respectively before implementation.

6.3 Mitigation and Management plan

Mitigation measures will be considered starting with the Environmental Assessment process (Annex 2). Impacts identified as severe in consequence category and/or likelihood category will be further analyzed to identify additional mitigation measures that are potentially available to eliminate or reduce the predicted level of impact. Potential mitigation measures will include vegetation restoration plan, engineering design solutions, stakeholder's participation in finalizing mitigation measures, etc. The ESMP should be developed so as to counter the impacts assessed and also the likely impacts during the implementation of the works and operational phase.

6.3.1 Guidelines for mitigation measures

All significant adverse impacts related to irrigation and water use efficiency, agricultural productivity enhancement and market and processing infrastructure are considered for mitigation. The mitigation options considered include project modification, provision of alternatives, and pollution control. In case where the effectiveness of the mitigation is uncertain, monitoring programmes will be introduced. The mitigation measures are applied to significant impacts arising from construction, operation and maintenance aspects of the various subproject projects.

The contractor is responsible for determining the cost of mitigation and to include such cost as part of its total cost for executing the works. SAIP is therefore required to include the mitigation measures as part of the Request for Proposal (RFP) or tender documents for contractors to enable them quote appropriately.

This ESMF will make reference to the General EHS, World Bank industry Sector Guidelines for Agribusiness and guidelines for pesticide manufacturing, formulation and packaging to address potential impacts.

6.4 Compliance with ESMP Implementation

Monitoring the compliance of subproject implementation with the mitigation measures set out in its ESMP and/or RAP will be required. The SAIP Environmental Specialist (ES) and District Environmental Officer (DEO) will have responsibility for carrying out this monitoring by visiting the subprojects, and pursuing the following corrective measures as required.

- (i) If a violation of the ESMP or RAP is detected during a site visit, the Contractor will be notified of the violation, and the means of rectification, verbally. The ES and DEO will discuss with the Contractor/ Operator a realistic deadline for rectifying the violation.
- (ii) If a violation is reported to the ES and DEO by some other entity, they will conduct a site visit and, similarly, issue the verbal warning and deadline for rectification.
- (iii) The verbal warning will be confirmed in writing to the Contractor/ Operator within five working days.
- (iv) The ES and DEO will return to the site on the deadline, and if the violation is still occurring, he will notify the contractor / operator in writing of the continuing violation, informing him of actions/measures to be taken by the Project.

CHAPTER SEVEN: MONITORING PLAN OF THE ESMF

The objective of monitoring is twofold;

- 1) To alert project authorities by providing timely information about the success or otherwise of the environmental management process outlined in this ESMF in such a manner that changes can be made as required to ensure continuous improvement to SAIP environmental management process (even beyond the project's life).
- 2) to make a final evaluation in order to determine whether the mitigation measures incorporated in the technical designs and the EMP have been successful in such a way that the pre-project environmental and social condition has been restored, improved upon or is worse than before and to determine what further mitigation measures may be required.

This section sets out requirements for the monitoring of the environmental and social impacts of the SAIP projects. Monitoring of environmental and social indicators will be mainstreamed into the overall monitoring and evaluation system for the project. In addition, monitoring of the implementation of this ESMF will be carried out the key implementing institutions of SAIP.

7.1 Monitoring and reporting of Environmental and Social Indicators

Two opportunities will be taken to build a simple system for the monitoring and evaluation of environmental and social impacts:

- a) The Environmental Specialist should consider the environmental and social criteria that require measurement (i.e. groundwater levels, levels of income etc); a list of initial proposals is given below;
- b) Using that list of criteria, a set of indicators can be integrated into the screening forms used in the project approval process in each district. This will ensure flexibility at the subproject design stage, integration of monitoring considerations throughout the subproject cycle, as well as a participatory approach to environmental and social monitoring.

Initial proposals

The key parameters to be considered under SAIP subprojects include monitoring of water quality, soil fertility, agricultural production, income generation, and health risks. The goals of monitoring are to measure the success rate of the project, determine whether interventions have resulted in dealing with negative impacts, whether further interventions are needed or monitoring is to be extended in some areas. Monitoring indicators will be very much dependent on specific project contexts.

Monitoring and surveillance of subprojects will take place on a "spot check" basis as it would be impossible to monitor all the subprojects to be financed under the project. The spot checks consist of controlling the establishment of mitigation measures. It is not recommended to collect large amounts of data, but rather to base monitoring on observations by project technicians and stakeholders to determine the trends in indicators.

Monitoring of Participation Process

The following are indicators for monitoring of the participation process involved in the project activities. Number and percentage of affected households consulted during the planning stage:

- ✚ Level of decision making of affected people;
- ✚ Level of understanding of project impacts and mitigation;
- ✚ Effectiveness of local authorities to make decisions;
- ✚ Frequency and quality of public meetings;
- ✚ Degree of involvement of women or disadvantaged groups in discussions.

The main components of the monitoring plan include: environmental issue to be monitored and the means of verification; specific areas and locations; parameters to be monitored; frequency; and institutional responsibilities for monitoring and supervision. Sites specific monitoring checklists will be prepared by the designers for the each subproject, and be included as an integral part of site specific ESMP. Monitoring checklist should be prepared using the generic monitoring plan presented within this ESMF document and respecting significant site specific impacts and proposed mitigation measures elaborated in site specific ESMP document.

The contractors will have a dedicated public liaison officer (or safeguards staff), who will establish communication with the local residents that may be affected by the project and be responsible to inform them about all of the project related activities, especially those related to environmental impacts of the project and planned mitigation measures.

The contractors will prepare their compliance reports in respect to ESMP, which document the implementation of environmental mitigation and protection measures (together with prescribed monitoring activities carried out during the reporting period) on quarterly basis and submit them to Project Coordinator who will, in turn, share the report with the Bank and REMA. However, in case of any kind of accident or endangerment of protected environments, reporting to project Management, participating District and World Bank will be immediate.

SAIP will have the authority for immediate suspension of works if Contractor's performance is found to be in serious contravention of the environmental standards and regulations. Monitoring and compliance in accordance with ESMF and site specific ESMPs, including monitoring of implementation of site specific measures on each sub project/section during project implementation will be undertaken by ES and reported in writing to the MINAGRI and the Bank. Annual Environmental Health and Safety (AEHS) reports, including monitoring indicators and reporting on the implementation of the requirements set forth in the ESMPs will be prepared by ES and submitted for the Bank's review. In case of fatalities or major incidents on sites, the Project will immediately report to WB.

In addition to the Project reports required by the World Bank and under the Organic Law on Environment, an Audit on ESMF implementation will be prepared by the Project at Mid Term Review and at the project end, and shared with REMA and the World Bank. The table below indicates project indicators to be monitored and reported against.

Table 4: Monitoring indicators for SAIP

| Project Activities | Negative Impacts | Indicators | Methods of Monitoring | Responsibility | Frequency |
|---|---|---|---|--|------------------|
| Small Scale irrigation and water use efficiency | Potential absence of compliance to the ESMP, and RDB conditions of approval | Environmental records (PPEs, sanitation (water & toilets), waste management, signposts, etc.) | Routine inspections of the site | SAIP, District and Contractor, Supervising firm, Cooperative | Daily |
| | Reduced water flow downstream | Flow rate per second; | canal gauging | SAIP, Cooperative/WUA, District | Seasonally |
| | Water wastage | Water saving irrigation Calendar | Install water meters in the intake point | SAIP, Cooperative/WUA | Continuous |
| | Spread of water borne diseases | Increased cases of malaria and bilharzias among other waterborne diseases | Review of health records at near health centres in the project area | SAIP, Cooperative, District | Seasonally |
| | Safety of livestock and humans | Reported cases of incidences and accidents | Review and evaluation of incidents and accidents Register | SAIP, District | Regularly |

| | | | | | |
|---|---|--|--------------------------------------|--|-----------------|
| | Ecosystems damages | Change in ecosystem composition | Site observation | SAIP and RAB | During works LH |
| | Child labour | List of workers, origin (within or outside the project area) and age (records on workers above 18 years old) | Routine inspections of the site | SAIP, District and Contractor | Biweekly |
| Promoting pesticides use and access the required inputs (chemicals and high quality seed) | Potential absence of compliance to the ESMP, and RDB conditions of approval | Environmental records (PPEs, sanitation (water & toilets), waste management, signposts, etc.) | Routine inspections of the site | SAIP, District and Contractor, Supervising firm, Cooperative | Daily |
| | Surface water pollution by chemicals | Water and soil quality | Soil and water Sampling and analyses | SAIP, REMA | Annually |
| | Soil degradation | Soil quality | Soil sampling and analysis | SAIP, REMA | Annually |
| | Change in the production | Change in exploitation levels of land | Yield measurement | SAIP, District | Seasonally |
| Construction of postharvest infrastructure (including drying | Potential absence of compliance to the ESMP, and RDB conditions of approval | Environmental records (PPEs, sanitation (water & toilets), waste management, signposts, etc.) | Routine inspections of the site | SAIP, District and Contractor, Supervising firm, Cooperative | Daily |

| | | | | | |
|--|--------------|-----------------------------|---------------------------------|--|---------------------------------|
| shelters, drying grounds and collection facilities, processing units, etc) | Loss of land | Number of PAPs expropriated | Review the list of PAPs payment | SAIP, District and Contractor, Supervising firm, Cooperative | Before the start of civil works |
|--|--------------|-----------------------------|---------------------------------|--|---------------------------------|

7.2 Monitoring Roles and Responsibilities

a) Rwanda Environment Management Authority (REMA)

REMA will inspect the compliance with environmental safeguards by the Project. It will carry out this role by ensuring that the environmental and social management plans (ESMPs) contained in the cleared design package is being implemented as specified therein. REMA will monitor the reports on a regular basis, perhaps quarterly. They will rely on a bottom up feedback system from the ground by going through the monitoring reports and making regular site visits to inspect and verify for themselves the nature and extent of the impacts and the success or lack off, of the mitigation measures.

b) RAB/SPIU

The SPIU/RAB Monitoring and Evaluation staff, jointly with the SPIU Safeguards staff will be primarily responsible for ensuring compliance to the monitoring framework; they will undertake review of the monitoring reports emanating from the implementing agencies and will then upon approval submit these monitoring reports to REMA and the World Bank. The SPIU will also provide overall coordination in monitoring including training coordinating of training in collection and analysis of monitoring data for data collectors.

Critical role of the SPIU will include data analysis, as well as maintenance of management information systems and all baseline data. Lately other than preparation of periodic reports, the SPIU will implement all the necessary modifications in the monitoring framework.

c) SAIP Implementing Partner Institutions

All the SAIP implementing institutions identified under this project, will monitor the specific components of project that they are targeted to execute. They include Ministry of Environment (MoE) and its agency (REMA), Ministry of Land and Forestry (MINILAF) and its agencies (RLMUA, Rwanda Forestry Authority), MINALOC, Ministry of health (MINISANTE) and Private Sector Federation (PSF).

The MoE and MINILAF and their Agencies will support the project in water quality and ecosystem monitoring, land use and acquisition as well as in soil erosion control. The Ministry of local administration (MINALOC) through participating Districts will assist in mobilizing local communities in the project intervention areas for the adoption and ownership of the infrastructures and in resettlement process. Through the district environmental officer, and social protection officer, the district will monitor on daily basis the implementation of safeguards measures reflected in the safeguards documents. The Ministry of health (MINISANTE) will be responsible for campaigning and fighting against communicable diseases and monitoring their prevalence.

With regard to the Ministry of Commerce and Industry (MINICOM) and its agencies, especially Rwanda Cooperative Agency (RCA) will play a role in the formation, organization and capacity building of Cooperatives assisted by RSSP. The Private Sector Federation (PSF) will be involved in providing services, supplying agricultural inputs and transformation of agricultural produces. All implementing partners will be required to prepare periodic monitoring reports for submission to SAIP Project Management and specifically to the Environment Specialist and the M&E Specialist.

c) Local Communities

Local communities will be useful agents in collection of data that will be vital in monitoring and as such they will play a role in the monitoring framework. Local communities in the project intervention areas will receive training and capacity building skills in data collection to be done by the implementing agencies so as to equip them with the ability to collect data. District Councils will, as part of the planning process, communities who will play a key role in identifying community infrastructure investments, prioritizing project interventions.

Community consultation protocols will also ensure representation of potentially vulnerable and under-represented groups.

e) Specific Community Groups

Land husbandry self-help groups, youth groups will be formed by farmers within the developed area. They will oversee the maintenance of LH infrastructures and their exploitation.

7.3 Evaluation of Results

The evaluation of results of environmental and social mitigation can be carried out by comparing baseline data collected in the planning phases with targets and post-project situations. A number of indicators would be used in order to determine the status of affected people and their environment (land being used compared to before, how many clean water sources than before, etc). In order to assess whether these goals are met, the SAIP Environmental Specialist with technical support of the Advisor will indicate in the EMP, parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities.

The following are some pertinent parameters and verifiable indicators/questions to be used to measure the ESMF process, mitigation plans and performance;

- ✓ Has the Environment consultants trained a local social and environmental specialist?
- ✓ Has the EMP's and Final Designs been cleared by the REMA?
- ✓ Have the Civil Works Contractors got considerable legal muscle to enforce the EMP?
- ✓ At what rate are the civil works been monitored by SAIP and by the REMA?
- ✓ How many violations of the contractors/transporters have been recorded and at what rate are they occurring.
- ✓ How many RAPs have been fully executed before PAPs are physically displaced?
- ✓ How many recorded grievance cases have been settled within one year?

CHAPTER EIGHT: INSTITUTIONAL ASSESSMENT, CAPACITY BUILDING AND TECHNICAL ASSISTANCE

8.1 Introduction

The effective implementation of this ESMF will require technical capacity in the human resource base of implementing institutions as well as logistical facilitation. Implementers need to understand inherent social and environmental issues and values to be able to clearly identify their indicators.

While preparing this ESMF, an institutional assessment was inbuilt to identify strengthening needs on social and environmental evaluation, screening, mitigation and monitoring.

8.2 Institutional Assessment and Capacity building

The overall SAIP management will be the responsibility of Rwanda Agriculture Board(RAB) under the Ministry of Agriculture and Animal Resources (MINAGRI). RAB does not have social and environmental staff to manage safeguards matter. MINAGRI has been managing many projects with same activities as SAIP, including RSSP and LWH projects which are WB funded (LWH and RSSP) through Single Project Implementation Unit (SPIU). The latter has a Safeguards Team familiar with Rwanda and WB safeguards policies. With the new institutional arrangement, the WB funded SPIU will move together with its experienced safeguards team to Rwanda Agriculture Board (RAB) to undertake the SAIP Project since the SAIP components are very similar to those of LWH and RSSP.

The existing Safeguards team under WB funded SPIU working on LWH/RSSP projects will need to be strengthened through capacity building to be able to manage the tasks mentioned above for the implementation of SAIP.

8.3 Human Resource Capacity Requirements

The safeguards team at the SPIU is made of 3staff (2 Social safeguards specialists and 1 Environment specialist) who have been overseeing the overall issues related to safeguards in the LWH and RSSP project sites. As mentioned above, the existing SPIU safeguards team will be repositioned to RAB under the new institutional arrangement. There is no doubt they will still execute the same responsibilities for the implementation of SAIP.

SAIP will be implemented in close collaboration with participating Districts. Each District has one land officer, social protection officer and environmental officer among other staff who are responsible for the social and environment safeguard aspects of the development projects in the District. The staff at the sector level that are responsible for the implementation of SAIP include; Agronomist, Social protection officer and land manager whereas the responsible staff at the cell level consist of the Cell Executive secretary and the Social and economic development officer. Due to limited budget, workload and capacity limitation, the engagement of the staff mentioned above is specifically restricted to minor community level development actions.

Social and environment safeguards management aspects are daily cared for by the Cells and Sectors staff. However, their level of training and technical capacity on safeguards is not sufficient and will need to be enhanced.

The SPIU will emphasize on capacity building through trainings and workshops of the relevant district staff (land officers, social protection officers, environmental officers; Agronomists, Executive Secretaries, Grievance redress committees (GRC) and Self Help Groups (SHGs) on safeguards implementation and monitoring aspects (ie monitoring compensation, valuation, Grievance Redress Mechanisms, gender equity and GBV, child labor prevention, follow up of displaced PAPs, reporting, etc.). Such trainings and workshops shall be provided by the project management to ensure proper safeguards management under SAIP.

8.4 Technical Capacity Enhancement

Mobilization meetings, awareness campaigns and trainings on social and environment safeguards will be required for the following institutions and personnel:

1. RAB/ SPIU staff,
2. Local Government Authorities(District environment officer, District Social protection officer, Executive Secretary of Sector & Cells, Agronomist, land officer) through Districts covered by ECCATP activities.
3. Subproject Grievance resettlement and compensation committees (GRCs);
4. Contractors who will be contracted to undertake the construction works;
5. Farmers organizations (Cooperatives and Associations);
6. Financial institutions (banking & non-banking institutions)
7. Community opinion leaders/ lead farmers.

The Capacity building will cover the following topics:

- Overview on SAIP and Safeguards policies & compliance;
- Stakeholder engagement, consultation and partnerships
- Implementation and monitoring the compliance of safeguards during both the construction and operation phase of the SAIP activities.
- Implementation and Compliance with ESMF
- Organization and management of resettlement and compensation committees
- Grievance Redress Mechanism
- Reporting, monitoring and follow up

CHAPTER NINE: ESMF IMPLEMENTATION ARRANGEMENTS AND BUDGET

The Environmental and Social Management framework implementation and budgeting process presented under this section considers institutional arrangements required to implement the environmental actions and an estimated cost for its implementation. It is worth to note that the real cost of the mitigation measures will be determined during the preparation of Environmental Management Plan (EMPs) and Resettlement Action Plans (RAPs) for each sub-projects/district.

9.1 ESMF Implementation

The Project will be implemented by Rwanda Agriculture Board (RAB) under the Ministry of Agriculture and Animal Resources (MINAGRI). The SAIP will be administered through the existing Single Project Implementation Unit (SPIU) for Marshland and Hillside Irrigation (RSSP-LWH) which has experienced staff.

The implementation arrangement builds on responsibilities already in place to ensure that the requirements of this ESMF are met.

Table 5: Role and responsibilities in the ESMF implementation

| No | Activity | Responsible institutions |
|----|--|---|
| 1 | Sub-project brief preparation | RAB/WB SPIU |
| 2 | Sub-project Screening and screening Checklist | Rwanda Development Board |
| 3 | Preparation of terms of Reference | RAB/WB SPIU, World Bank and RDB |
| 4 | Approval of terms of Reference | RDB and the World Bank |
| 5 | ESIA study | Consultant hired by RAB/SPIU |
| 6 | Review of ESIA report | - RAB/SPIU - Participating Districts - Rwanda Development Board - World Bank |
| 7 | Approval of ESIA and Issuing ESIA completion Certificate | - World Bank - Rwanda Development Board |
| 8 | Implementation of the ESMF | - RAB/SPIU |
| 9 | Review and Update the ESMPs before civil works | - Contractor Contractors and Supervising Firms |
| 10 | Implementation of ESMPs | - Contractors and Supervising Firms hired by MINAGRI/RAB - RAB/SPIU |

| | | |
|----|---|---|
| | | - Participating Districts |
| 11 | Monitoring of safeguards implementation | - Supervising firm hired by RAB/SPIU - RAB/SPIU - Participating Districts - REMA - World Bank |

9.2 Disclosure of ESMF

Following its preparation by the Ministry of Agriculture and Animal Resource (MINAGRI) and clearance by the World Bank, the SAIP ESMF will be disclosed by making copies available at the RAB/SPIU head office, Project website and to the local government agencies and other stakeholders. The site ESIA/ESMP reports will also be disclosed by making copies available at its head office, Project website, District headquarters, District websites and local government's agencies, REMA and other stakeholders of the SAIP. The Government of Rwanda will also authorize the World Bank to disclose this ESMF and ESIA's to be prepared under SAIP electronically through its external website.

9.3 ESMF Implementation budget

The Budget for the implementation of this ESMF will be provided by the Government of Rwanda and will mainly consist on preparation of safeguards tools. The cost for mitigation measures will be included in the EIs, ESMPs and RAPs. The table below show the estimated cost for the implementation of the ESMF for the proposed project.

Table 6: Estimated budget for the implementation ESMF for SAIP

| Component | Broad Activities | Activities | Cost (US\$) | Remarks |
|-------------------------------------|--|---|-------------|--|
| Irrigation and Water use efficiency | Small Scale Irrigation | Updating Environmental and Social Impact Assessment Study (ESIA study) or preparation of ESMP | 138,000 | Depending upon activities to be undertaken per site, there will be sites with full ESIA updating and others with ESMP. |
| Market Processing & Infrastructure | Construction of postharvest, marketing and processing infrastructure | Monitoring of ESMPs | 60,000 | Routine monitoring of ESMPs during the project period |
| | | Capacity building | 30,000 | Trainings, workshops on safeguards implementation and IPM approaches with project staff, relevant district staff, |

| | | | | |
|---------------------------------------|---------------------------------------|--|----------------|---|
| Agricultural Productivity Enhancement | Agricultural Productivity Enhancement | | | Contractors and supervisors and Community representatives |
| Total | | | 228,000 | |
| Contingency (10%) | | | 22,800 | |
| Grand Total | | | 250,800 | |

CHAPTER TEN. GRIEVANCE REDRESS MECHANISM

Grievances procedures will be required to ensure that project affected people are able to lodge complaints or concerns, without cost, and with the assurance of a timely and satisfactory resolution of the issue. The procedures also ensure that the entitlements are effectively transferred to the intended beneficiaries. Grievances may arise from members of communities who are dissatisfied with eligibility criteria use, community planning and resettlement measures, actual implementation or compensation.

10.1 Established procedures and time frame for Grievance redress mechanism

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 subprojects to be implemented under SAIP are minor in nature; Addressing complaints through Contractor, Supervising firms, Project liaison personnel, Grievance redress committees, local authority, and community gatherings are simple means that should be used.

The creation of a Grievance Redress Committee (GRC) will be given priority in each subproject.

The members of the GRC for SAIP shall include the Executive secretaries as Chair, District Environmental and social protection Officers as Vice-Chairs, and Representatives of the sectors crossed by the project site, the Subproject Environmental and Social safeguards officer as Secretary, the representatives of the Contractor, supervising firm and community representatives.

GRCs should be established at the cell/sector level to assure accessibility for affected people and the committee can be chaired by the Sector representative (mainly the In charge of environment or social protection) in the absence of the DEO. The GRC meetings are held at the respective Sector/cell's office at least once two weeks from the date of receiving complaints.

10.2 Grievance resolution approach

The channels of receiving complaints include presentation of complaints via face-to-face meetings, written complaints, telephones, email communication, third party (e.g., farmers' organizations, Church, private sector, etc).

If the aggrieved person does not receive a response or is not satisfied with the outcome within the agreed time, s/he may lodge his/her grievance to the relevant Municipal Administration such as the Sector Executive Secretary or District Mayor, also mandated to help resolve such matters. If requested, or deemed necessary by the subproject Committee, the District Project Coordination officer will assist the aggrieved person in this matter.

The relevant Local Administration will then attempt to resolve the problem (through dialogue and negotiation) within 30 days of the complaint being lodged. If no agreement is reached at this stage, then the complaint is dealt with through the local courts (Abunzi) where possible. Where matters cannot be resolved through local routes, the grievance will be referred to higher authorities at the national level. The subproject Resettlement and Compensation Committee will provide assistance at all stages to the aggrieved person to facilitate resolution of their complaint and ensure that the matter is addressed in the optimal way possible.

10.3 Grievance Log

The District project Coordinator (DPC) will ensure that each complaint is appropriately tracked and recorded. The log will contain record of the persons responsible for an individual complaint, and records of dates for the following events:

- ✓ Date the complaint was reported;
- ✓ Date the Grievance Log was added onto the project database;
- ✓ Date information on proposed corrective action sent to complainant (if appropriate);
- ✓ The date the complaint was closed out; and
- ✓ Date response was sent to complainant.

10.4 Monitoring Complaints

The District Project Coordinator will be responsible for:

- ✓ Providing the sub-project GRC reports on a bi-weekly basis detailing the number and status of complaints;
- ✓ Any outstanding issues to be addressed; and
- ✓ Monthly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action.

CHAPTER ELEVEN: CONCLUSION AND RECOMMENDATIONS

The Government of Rwanda (GoR), through MINAGRI, prepared the ESMF for SAIP that will provide guidance on the management of environmental and social impacts and risks. The ESMF will also provide institutional arrangements as well as environmental and social safeguards instruments to be prepared as part of the implementation of SAIP activities in full compliance with Rwanda and World Bank environmental and social safeguards policies.

The policy, legal and institutional frameworks for this ESMF and the socio-economic baseline project were developed; public consultation and participation meetings conducted; the report provides potential environmental and social impacts and guidelines for mitigation. It also provides the SAIP environmental and social management process as well as the implementation and monitoring procedures.

This ESMF has an inbuilt grievance procedure that will be used to address grievances that arise during the ESMF implementation. The estimated budget for the ESMF is US \$ 250,800.

Given the nature of the project, the potential adverse impacts are minimal and can be controlled through proposed mitigation measures. The proposed subproject Environmental and social Impact Assessment (ESIA) if properly implemented will be prepared and propose site specific measures to mitigate adverse impacts.

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 Management Plans.

This ESMF should be regularly updated to respond to changing local conditions. It should be reviewed and approved through the national approval process and by the World Bank prior to project negotiations. It should also incorporate lessons learned from implementing various Components of the project activities. This framework will apply to any project activity within the SAIP.

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ANNEXES

Annex 1: Potential adverse Environment and Social impacts and mitigation measures

| <i>Potential Impact</i> | <i>Description</i> | <i>Environmental Significance</i> |
|--|---|-----------------------------------|
| Construction/Rehabilitation phase | | |
| Air pollution | Exhaust fumes and dust emission from movement of construction equipment and construction activities like digging etc | Minor |
| Solid waste | Waste from bush/vegetation clearing, and removal of trees, camp sites. etc | Moderate |
| Water pollution | Sediment laden runoff from exposed areas mainly due to vegetation clearing during construction; | Moderate |
| | Improper use of waste oils from construction equipment; | Minor |
| | Improper disposal of sanitary waste from work camps | Moderate |
| | Drainage discharging their sediments into water bodies | Moderate |
| Noise pollution | Movement of heavy vehicles | Minor |
| | Noise from employed labor force and their equipment | Moderate |
| Soil erosion | Exposed land surfaces from cleared vegetation may induce erosion from rain events (soil/mass movement) Embankment slopes are prone to land sliding | Moderate |
| Loss of biodiversity | Due to the removal of vegetation during land clearing for construction, waste dumping area, protected areas, etc | Moderate |
| Public safety | Badly managed work activity/ site within community | Moderate |
| | Poor housekeeping leading to stagnant water as breeding grounds for insect vectors (causing malaria etc) | Moderate |
| | Movement of heavy trucks and equipment and road safety | Minor |
| Land use | Conflicts with incompatible activities and land uses. | Moderate |
| Land take | The post-harvest infrastructures will mostly be established on private land, hence requiring land acquisition & compensation | Minor |
| Spread of Communicable diseases | Impact on health due to increased labor influx | moderate |

| | | |
|---|---|----------|
| Occupational health and safety | Hazards from handling heavy equipment, including noise, ergonomic stress, lifting heavy materials etc | Minor |
| Use and Maintenance phase | | |
| Air pollution | Dust emission from movement of heavy trucks and other vehicles | Minor |
| Water quality and pollution | Sediment laden storm runoff | Moderate |
| Noise pollution | From the movement of heavy vehicles | Minor |
| Soil erosion | Erosion may be induced or enhanced by vegetation clearing | Moderate |
| Water pollution | Inadequate provision and inappropriate method of storm water disposal | Moderate |
| Public safety | From road accidents due to poor traffic management | Minor |
| Public nuisance and health risks | Pot holes and ponding to breed insect vectors of disease eg. Mosquitoes; | Minor |
| Continued use of facility | Availability of, and accessibility to maintenance funds | Major |
| Controlled pesticide use and management | Loss of biodiversity | Moderate |
| | Unacceptable levels of pesticide residues in harvested produce and in the food chain | Moderate |
| | Contamination of soil and water bodies | Moderate |

Potential adverse Social impacts from SAIP

| Type of impact | Description of Potential Impact/ Issue | Social Significance |
|--|--|--|
| Loss of employment and livelihood | Some farmers may lose some assets (trees, crops, structures) within the project site. | Minor |
| Deprivation of use of land | SAIP may take up individual or community land | Minor |
| Loss of crops/ properties | Project activities may result in individual or community farm lands and affect crops. | Minor |
| 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. | Negligible |
| 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. | Major |
| Impact on Cultural Heritage/ Archaeological interest | There are some potential sites of significant cultural/religious heritage or archaeological interest in the vicinity of the projects. The risks to cultural heritage would be on graveyards encountered or sacred sites or touristic sites during excavation on land. | Minor |
| Impacts on Human Health/ Safety and sanitation | <ul style="list-style-type: none"> (a) Human health and safety could be compromised through accidents involving rehabilitation works (b) Occupational injury associated with construction activities will be limited to the work force only. (c) Indiscriminate disposal of human waste or free-range defecation by project workers could create environmental health problems for local communities (d) Indiscriminate disposal of litter at the project sites and work camps will create unsightly conditions and pose safety and health risks | <p>Minor</p> <p>Moderate</p> <p>Moderate</p> <p>Moderate</p> |
| Child labour | Some minors might quit school to come and look for employment | Moderate |

Mitigation measures for Environmental impacts from SAIP

| Type of impact | Description of mitigation measures |
|--|---|
| Construction phase | |
| Water quality and pollution | <ul style="list-style-type: none"> • Temporary storage of sanitary and cleaning wastes in containers. Disposal should occur at waste dumps. • Where works take place adjacent to a watercourse, temporary sediment barriers should be installed on slopes to prevent silt from entering the watercourse. |
| Soil erosion and landslide | <ul style="list-style-type: none"> • Integrating land stability into the project designs to address the landslide risks. The planting of grasses on embankments slopes with low landslide risks, tree planting along embankments and other critical areas should be considered. • Application of appropriate erosion-protection measures, in particular where it concerns works on slopes. • Laboratory rehabilitation works should not be executed under aggressive weather conditions (rains, strong winds). |
| Public health problems | <ul style="list-style-type: none"> • Adequate sanitary facilities should be available for workers and open range defecation should not be countenanced. • Contractors should use local labour as much as possible and where available. Imported workers should be provided with proper housing, including sanitary facilities. • Labourers should adhere to basic rules with regards to protection of public health, including most importantly hygiene and disease (HIV) prevention. • All land depressions and disturbed areas at work sites should be filled to avoid water pond which could breed mosquitoes. |
| Safety of the public | <ul style="list-style-type: none"> • Contractors will inform local communities early about the construction programme. • Contractors will provide security barriers to ward off inquisitive persons and animals from active work sites. |
| Loss of biodiversity | <ul style="list-style-type: none"> • The project will consider forest rehabilitation where necessary, shrubs and grasses will be planted in other places to compensate the lost forest. |
| Visual intrusion | <ul style="list-style-type: none"> • Adequate organisation and maintenance of construction sites through good housekeeping. • Restoration of construction sites directly upon completion of works. |
| Disturbance and interruption of commercial and social activities | <ul style="list-style-type: none"> • Contractors to inform the affected communities early of the construction programme. • Limit any temporary interference with private property (e.g. farms) • Relocation (even temporarily) to be avoided as much as possible. • Where private land or other property is affected, or where there is loss of income as a result of project activities, agree on compensation measures with affected persons prior to start of construction. Compensation will occur in accordance with the defined Resettlement Policy Framework. |
| Land take | <ul style="list-style-type: none"> • Avoidance, as much as possible, the need for resettlement by considering other options • Where resettlement is unavoidable, develop and implement appropriate plans in accordance with the Resettlement Policy Framework developed for the Project. |

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| Occupational health and safety | <ul style="list-style-type: none"> The Contractor should protect his workers by ensuring the use of protective equipment |
| Use and Maintenance | |
| Air pollution | <ul style="list-style-type: none"> Daily sprinkling of water to avoid dust emissions |
| Water quality and pollution | <ul style="list-style-type: none"> Regular maintenance of sediment management structure to ensure sediment capture without transport to water courses Use of check dams to control water sediments |
| Soil erosion | <ul style="list-style-type: none"> Integrating soil stability into the designs to address the landslide risks. The planting of grasses on embankments slopes with low landslide risks; tree planting along embankments and other critical areas should be considered. Application of appropriate erosion-protection measures, in particular where it concerns works on slopes and in stream beddings. |
| Public safety and nuisance | <ul style="list-style-type: none"> Provide speed ramps when close to community with visible road signs |
| Uncontrolled use of pesticides | <ul style="list-style-type: none"> Trainings and capacity building on IPM approaches |

Mitigation measures for Social impacts from SAIP

| Type of impact | Description of mitigation measures |
|--|---|
| Employment and loss of livelihood | <p>Any affected farmer will be provided with livelihood assistance based on crops to be affected. It should be done in accordance with the Resettlement Policy Framework (RPF)</p> <p>It is expected that the project will further offer opportunities for the youth, women food vendors and income for community members who will supply the contractor with sands and stones</p> |
| Deprivation of use of land | <p>Land compensation should be based upon current market value of land in the area and in accordance with the resettlement policy framework (RPF).</p> |
| Loss of crops/ properties | <p>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.</p> |
| Impacts on Human Health/ Safety and sanitation | <ul style="list-style-type: none"> Except for areas secured by fencing, all active construction areas will be marked with high-visibility tape to reduce the risk accidents involving pedestrians and vehicles. All open trenches and excavated areas will be backfilled as soon as possible after construction has been completed. Access to open trenches and excavated areas will be secured to prevent pedestrians or vehicles from falling in. Adequate sanitary facilities will be available for workers and open range defecation will not be countenanced. |

| | |
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| | <ul style="list-style-type: none"> • Manpower and construction workers will be provided with and educated to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, earplugs, gloves etc. • Construction workers should be educated to adhere to basic rules with regard to protection of public health, including most importantly hygiene and disease (HIV) prevention and will be required to adhere to a code of Conduct regulating their interaction with the public and in particular women and children. • No child labour will be tolerated. |
|--|--|

Annex 2: Project Screening Criteria Form (PSCF)

Subproject Name:

Name of District/Sector:

Date:

| | | Yes | No |
|--|--|-----|----|
| A Type of Activity - Will the SAIP subproject: | | | |
| 1 | Support animal husbandry or processing? | | |
| 2 | Support irrigation schemes? | | |
| 3 | Support rural water supply and sanitation schemes? | | |
| 4 | Involve community forestry? | | |
| 5 | Involve small-scale aquaculture? | | |
| 6 | Involve leather processing? | | |

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| 7 | Involve food processing? | | |
| 8 | Involve community healthcare facilities and the management of healthcare waste? | | |
| 9 | Build or rehabilitate any structures or buildings? | | |
| 10 | Support agricultural activities? | | |
| 11 | Be located in or near an area where there is an important historical, archaeological or cultural heritage site? | | |
| 12 | Be located within or adjacent to any areas that are or may be protected by government (e.g. national park, national reserve, world heritage site) or local tradition, or that might be a natural habitat? | | |
| 13 | Depend on water supply from an existing dam, weir, or other water diversion structure? | | |
| If the answer to any of questions 1-13 is “Yes”, please use the indicated Resource Sheets or sections(s) of the ESMF for guidance on how to avoid or minimize typical impacts and risks | | | |

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| B- Environment-will the SAIP Subproject: | | | |
| 14 | Risk causing the contamination of drinking water? | | |
| 15 | Cause poor water drainage and increase the risk of water-related diseases such as malaria or bil17harzia? | | |
| 16 | Harvest or exploit a significant amount of natural resources such as trees, fuel wood or water? | | |
| 17 | Be located within or nearby environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species? | | |
| 18 | Create a risk of increased soil degradation or erosion? | | |
| 19 | Create a risk of increasing soil salinity? | | |
| 20 | Affect the quantity or quality of surface waters (e.g. rivers, streams, wetlands), or groundwater (e.g. wells)? | | |
| 21 | Result in the production of solid or liquid waste, | | |

| | | | |
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| | or result in an increase in waste production, during construction or operation? | | |
| 22 | Result in the production of solid or liquid waste, or result in an increase in waste production, during construction or operation? | | |
| 23 | Will the project affect sensitive areas such as (a) National parks, (b) Wetlands, (c) Productive agricultural land, (d) Important archaeological, historical and cultural sites, (e) Areas protected under legislation, (f) Areas containing rare or endangered flora or fauna, (g) Areas containing unique or outstanding scenery, (h) Mountains or developments on or near steep hill slopes, (i) Forests, (j) Lakes or their shores, (k) Areas important for vulnerable groups such as fishing | | |

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| | communities, (l) Areas near high population concentrations or industrial activities where further development could create significant cumulative environmental problems. | | |
| 24 | Reliable means exist for ensuring that impact management measures can and will be adequately planned and implemented | | |
| If the answer to any of questions 15-24 is “Yes”, please include an Environmental Management Plan (EMP) with the subproject application. | | | |
| C - Land acquisition and access to resources – Will the subproject: | | | |
| 25 | Require that land (public or private) be acquired (temporarily or permanently) for its development? | | |
| 26 | Use land that is currently occupied or regularly used for productive | | |

| | | | |
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| | purposes (e.g. gardening, farming, pasture, fishing locations, forests) | | |
| 27 | Displace individuals, families or businesses? | | |
| 28 | Result in the temporary or permanent loss of crops, fruit trees or household infrastructure such as granaries, outside toilets and kitchens? | | |
| If the answer to any of the questions 25-28 is “Yes”, please consult the ESMF and, if needed, prepare a Resettlement Action Plan (RAP) | | | |
| D – Indigenous people – Are there: | | | |
| 29 | Any indigenous groups living within the boundaries of, or nearby, the project? | | |
| 30 | Members of these indigenous groups in the area who could benefit from the project? | | |
| If the answer to questions 29 or 30 is “Yes”, please consult the ESMF and, if needed, prepare an Indigenous Peoples Plan (IPP). | | | |
| Site related issues | | | |
| S No | Zoning and Land Use Planning | NO /YES | |
| 1. | Will the sub-project affect land use zoning and planning or conflict with prevalent land use patterns? | | |

| | | |
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| 2. | Will the sub-project involve significant land disturbance or site clearance? | |
| 3. | Will the sub-project land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development? | |
| 4. | Is the sub-project located in an area susceptible to landslides or erosion? | |
| 5. | Is the sub-project located on prime agricultural land? | |
| B. | Utilities and Facilities | |
| 6. | Will the sub-project require the setting up of ancillary production facilities? | |
| 7. | Will the sub-project require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)? | |
| C | Water and Soil Contamination | |
| 8. | Will the sub-project require large amounts of raw materials or construction materials? | |
| 9. | Will the sub-project generate large amounts of residual wastes, construction material waste or cause soil erosion? | |
| 10. | Will the sub-project result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)? | |
| 11. | Will the sub-project lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control? | |
| 12. | Will the sub-project lead to an increase in suspended sediments in streams affected by erosion, decline in water quality and increased sedimentation downstream? | |
| 13. | Will the sub-project involve the use of chemicals or solvents? | |
| 14. | Will the sub-project lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards? | |
| 15. | Will the sub-project lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors? | |
| 16. | Is the sub-project located in a polluted or contaminated area? | |

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| D. | Noise and Air Pollution Hazardous Substances | |
| 17. | Will the sub-project increase the levels of harmful air emissions? | |
| 18. | Will the sub-project increase ambient noise levels? | |
| 19. | Will the sub-project involve the storage, handling or transport of hazardous substances? | |
| E. | Fauna and Flora | |
| 20. | Will the sub-project involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)? | |
| 21. | Will the sub-project lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development? | |
| 22. | Will the sub-project lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems? | |
| F. | Destruction/Disruption of Land and Vegetation | |
| 23. | Will the sub-project lead to unplanned use of the infrastructure being developed? | |
| 24. | Will the sub-project lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture? | |
| 25. | Will the sub-project lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)? | |
| 26. | Will the sub-project lead to landslides, slumps, slips and other mass movements in terraces? | |
| 27. | Will the sub-project lead to erosion of lands in the valley receiving concentrated outflow carried by covered or open drains? | |
| 28. | Will the sub-project lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture? | |
| 29. | Will the sub-project lead to health hazards and interference of plant growth adjacent to project areas by dust raised and blown by vehicles? | |
| G. | Cultural Property | |
| 30. | Will the sub-project have an impact on archaeological or historical sites, including historic urban areas? | |

| | | |
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| 31. | Will the sub-project have an impact on religious monuments, structures and/or cemeteries? | |
| 32. | Have Chance Finds procedures been prepared for use in the sub-project? | |
| 33. | Is the sub-project located in an area with designated physical cultural resources, such as archaeological, historical and/or religious sites? | |
| H. | Expropriation and Social Disturbance | |
| 34. | Will the sub-project involve land expropriation or demolition of existing structures? | |
| 35. | Will the sub-project lead to induced settlements by workers and others causing social and economic disruption? | |
| 36. | Will the sub-project lead to environmental and social disturbance by construction camps? | |
| 37. | Is the sub-project located in an area from which people have been displaced? | |
| 38. | Is the sub-project located in an area where PAPs are temporarily relocated? | |
| 39. | Is the sub-project located in a densely populated area? | |
| I. | Games, reserves and Natural Habitat | |
| 40. | Does the sub-project require land acquisition? [Note: If YES, fill in the land acquisition form] | |
| 41. | Will the sub-project negatively impact livelihoods? [Note: Describe separately if YES] | |
| 42. | Is the sub-project located in an area with designated natural reserves or protected areas? | |
| 43. | Is the sub-project located in an area with unique natural features? | |
| 44. | Is the sub-project located in an area with endangered or conservation-worthy ecosystems, fauna or flora? | |
| 45. | Is the sub-project located in an area falling within 500 m of natural forests, protected areas, wilderness areas, wetland, biodiversity, critical habitats, or sites of historical or cultural importance? | |
| 46. | Is the sub-project located in an area which would create a barrier for the movement of conservation-worthy wildlife? | |

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| 47. | Is the sub-project located close to groundwater sources, surface water bodies, watercourses or wetlands | |
|-----|---|--|

Annex 3: GUIDELINES FOR PREPARATION OF ESMPs

1. The EA process involves the identification and development of measures aimed at eliminating, offsetting and/or reducing environmental and social impacts to levels that are acceptable during implementation and operation of the projects. As an integral part of EA, ESMP provides an essential link between the impacts predicted and mitigation measures specified within the EA and implementation and operation activities. The World Bank guidelines state that detailed ESMPs are essential elements for Category „A“ projects, but for many Category „B“ projects, a simple ESMP will suffice.

The minimum requirements for ESMP were set out in OP4.01 Annex C of the World Bank and the following are important elements constituting an ESMP:

a. Description of Mitigation Measure

2. Feasible and cost-effective measures to minimize adverse impacts to acceptable levels should be specified with reference to each impact identified. Further, the ESMP should provide details on the conditions under which the mitigation measure should be implemented. The ESMP should also distinguish between the type of solution proposed (structural and non-structural) and the phase in which it should become operable (design, construction and/or operation). Efforts should also be made to mainstream environmental and social aspects wherever possible.

b. Monitoring program

3. In order to ensure that the proposed mitigation measures have the intended results and comply with national standards and World Bank requirements, an environmental performance monitoring program should be included in the ESMP. The monitoring program should give details of the following:

- Monitoring indicators to be measured for evaluating the performance of each mitigation measure (for example: national standards, engineering structures, extent of area replanted, etc).

- Monitoring mechanisms and methodologies
- Monitoring frequency
- Monitoring locations

c. Institutional arrangements

4. Institutions/parties responsible for implementing mitigation measures and for monitoring their performance should be clearly identified. Where necessary, mechanisms for institutional coordination should be identified, as often, monitoring tends to involve more than one institution.

d. Capacity Development and Training

5. To support timely and effective implementation of environmental project components and mitigation measures, the ESMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level. If necessary, the ESMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the ESMP provides a specific description of institutional arrangements--who is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most ESMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

e. Implementing schedules

6. Timing, frequency and duration of mitigation measures with links to the overall implementation schedule of the project should be specified.

f. Reporting procedures

7. Feedback mechanisms to inform the relevant parties on the progress and effectiveness of the mitigation measures and monitoring itself should be specified. Guidelines on the type of information wanted and the presentation of feedback information should also be highlighted.

g. Cost estimates and sources of funds

8. Implementation of mitigation measures mentioned in the EMP will involve an initial investment cost as well as recurrent costs. The EMP should include cost estimates f into the sub-project design, bidding and contract documents to ensure that the contractors will comply with the mitigation measures. The costs for implementing the EMP will be included in the sub-project design, as well as in the bidding and contract documents.

Annex 4: Environmental Guidelines for Contractors Undertaking

Construction Work under SAIP General Environmental Management Conditions

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP.

If the Contractor fails to implement the approved ESMP after written instruction by the Supervising expert to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance Requirements specified in an ESMP.

In general these measures shall include but not be limited to:

- (a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, vibrating equipment, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
- (b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
- (c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
- (d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water

bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

(e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

(f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, the chance find procedures will be used as follows:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities take over.
- Notify the supervisory Engineer who in turn will notify Project. The latter will notify the responsible local authority (District authority) when the discovered cultural property is of local significance or the Institute of National Museums of Rwanda (INMR) if discovered site is of national significance immediately and District or the Ministry in charge of culture for the case of Genocide memorial site.
- Contact the responsible local authorities or the INMR who would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. In case of Genocide Memorial Sites, the notification should be addressed to District with copy to Commission Nationale de Lutte Contre le Genocide (CNLG) or the Ministry of Sports and Culture with copy to CNLG and District depending upon the memorial site is at the District or National level respectively.
- Ensure that decisions on how to handle the finding be taken by the responsible authorities. This could include changes in the layout (such as when the finding is an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the competent authority; and
- Construction work will resume only after authorization is given by the responsible authorities concerning the safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, Safeguards Procedures for Inclusion in the Technical Specifications for Contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

Relevant findings will be recorded in the IPAC Construction Monitoring Report and the World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

(g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.

(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

(j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan/strategy to ensure effective feedback of monitoring information to project management so that Impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5. Besides the regular inspection of the sites by the Supervising Energy expert for adherence to the Contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the Supervising Energy Expert, the Contractor shall comply with directives from such inspectors to

implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Work site/Campsite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the project site, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the Supervising Energy Expert, of low land use value and where they will not result in material being easily washed into drainage channels.

Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14. New extraction sites:

a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.

e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the Supervising Energy expert.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the Supervising Energy expert and appropriate local and/or national authorities before the commencement of work.

Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22. Revegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.

24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29. Minimize erosion by wind and water both during and after the process of reinstatement.

30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses

38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Health and Safety

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the Watershed Management Officer. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Annex 5: Content of an EIA Report

An EIA report has the following objectives:

- a) To enable the developer to better plan, design and implement specific investment while avoiding, minimizing, mitigating or compensating adverse environmental and social impacts, and also maximizing environmental and social benefits from the proposed investment or activity.
- b) For the decision-makers to objectively evaluate the proposed project.
- c) To provide information on environmental and social impacts, and respective mitigation measures, for local communities and any other stakeholders to be able to contribute their opinions.

The EIA report should entail;

i) **Executive summary** of the EIA report which should be brief and focus on following matters:

- Name and location of the project;
- Name of the developer
- Name of the agency preparing EIA report;
- Main impacts identified;
- Mitigation recommendations;
- Environmental monitoring plan.

ii) **Objectives of the project**, including ideas, intentions and particular objectives.

iii) **Description of the proposal and its alternatives.** In this part, it is necessary to describe in detail the proposed project and its alternatives including those not subjected to pre-feasibility study or feasibility study.

Attention should be concentrated to the comparison of different alternatives. Following are the required contents of the section "*Description of the proposal and its alternatives*": The stage of the project cycle where the project is being implemented (pre-feasibility study, feasibility study or design);

- Outlines of the plan for impact prediction and mitigation measures;
- Raw materials, supplies, energy, water and equipment to be used for implementing the project and its alternatives;
- Operational parameters such as capacity and product output;
- Tables, photographs, diagrams and maps;
- Comparison of characteristics of alternatives (extent, location, technology, products, energy and raw materials demands) in the present socio-economic, technical and environmental situation;
- A summary of project technical, economic and environmental characteristics.

iv) Discussion on the proposal and its relation to relevant policies laws **and programs**(sectorial and regional). In this section, the proposal must be shown to be in line with policies, laws, institutional framework and development strategy of Rwanda.

v) Description of present (baseline) environmental state (analysis of initial **state**). In this section, the environment in the project area should be appropriately described. The following aspects should be presented:

- Environmental baseline conditions (natural and socio-economic);
- Sensitivity and values (cultural, aesthetic) of environment in the project area.

v) **Impact assessment.** In this section, the spatial and temporal scope of the impacts and characteristics of different impacts (whether positive or negative, direct or indirect, their intensity, extent and significance) should be presented for the project and also for all alternatives considered. The following aspects should be presented:

Assessment of all impacts to the local population;

- Environmental data base, study methods and assumptions;
- Limitations and reliability of the data and study results;
- Compliance with the environmental standards and license issuing procedures;

Significance of impacts, criteria and standards used for assessment of impact significance;

- Measures to avoid and mitigate impacts. In this section, methods of data collection, methods and criteria used for assessing degree of danger and significance of impacts must be indicated.

Cumulative impacts must be emphasized. A summary table of impacts for each alternative should be provided.

vi) Evaluation and comparison of alternatives and selection of one that is environmentally suitable. The main content of this section is the comparison of the main positive and negative impacts, impact mitigation and monitoring measures of alternatives. The environmentally suitable alternative is determined based on the following aspects:

- Impacts with largest effects, measures for avoiding, mitigating and managing them;
- Impacts for which the developer has committed to take prevention measures and unavoidable impacts;
- Allocation of cost and benefit between the levels, partners and population of the project area;
- Information on protection measures or resettlement, acquiring opinions of the public;
- Environmental improvement opportunities.

vii) Impact management and environmental monitoring plan (EMP). In this section, tasks to ensure the implementation of mitigation measures and monitoring of impacts should be presented. This is a plan for monitoring and management of impacts during the implementation and operation of the project, where the responsibilities between the state and investor are differentiated. This plan includes the following contents:

- Description of mitigation measures;
- Implementation schedule including indicators, costs, etc;
- Assignment of responsibility for implementation;
- Monitoring of implementation and Report on evaluation of implementing such the plan.

Annex 6: Sample Terms of Reference for EIA Studies

Following is a guide for RDB to develop ToRs for an EIA study.

1. INTRODUCTION

(Name of developer) has applied to Rwanda Environment Management Authority (REMA) to carry out an environment impact assessment (EIA) for the proposed *(name of project)* in accordance with requirements of EIA Regulations of the Republic of Rwanda. *(Name of developer)* intends that the proposed project will incorporate all practical and cost-effective measures for avoiding or minimizing negative environmental impacts, for capturing environmental benefits and for ensuring sound environmental management. Thus, the purpose of the EIA study is twofold:

- To provide *(developer's name)* with advice on how project design can avoid or mitigate negative impacts and to enhance anticipated environmental benefits,
- To prepare for review by REMA, an EIA report and Environment Environmental Management Plan (EMP) according to national EIA Guidelines and Regulations, 2006.

The following are specific issues to address in the EIA study;

2. PROJECT DESCRIPTION

The EIA Expert should provide a description of proposed project and any alternatives being considered in sufficient detail to benefit stakeholders and decision-makers. Policies, legislation, regulations directly relevant to the proposed project should be discussed in the EIA report.

3. ENVIRONMENTAL CONCERNS TO BE ADDRESSED IN THE EIA

The following are the key biophysical, resource use and socioeconomic issues to be addressed by the EIA study;

(List the issues here.)

While the impact study is to be focused on the above issues, the EIA Experts may, in the course of the impact study, identify further concerns which should be investigated. Any such other issues should be brought to the attention of REMA and *(developer's name)*.

4. ENVIRONMENTAL MANAGEMENT

The expert should pay particular attention to identifying and recommending measures or practices for avoiding, mitigating or managing negative impacts of the project and for enhancing potential

environmental and socio-economic benefits. Any potential measures or practices identified by the EIA Expert should be brought to the attention of *(developer's name)* for possible inclusion in project design and planning.

In particular, the expert should prepare an Environmental Management Plan (EMP) for construction, operation and decommissioning of the project. The EIA Expert should estimate the costs of implementing this plan, including all capital, operating and training costs.

5. RELATIONSHIP OF EIA TO PROJECT PLANNING AND DESIGN

To maximize opportunity for good environmental planning and design of the project, EIA Experts should work closely with *(developer's name)* to offer feasible options to enhance the project's environmental performance.

6. PUBLIC CONSULTATION

(Developer's name) is obliged to ensure that all concerned public and private stakeholders in the project have adequate input during the EIA study. The EIA Expert should therefore undertake comprehensive consultation with the local community, relevant lead agencies such as *(provide examples of agencies REMA identified or that took part in formulating ToR)* in addition to any relevant stakeholders identified when conducting the impact study.

7. CONTENT OF THE EIA REPORT

At minimum, the EIA report produced by EIA Experts should contain information outlined in the Appendix 3 of Environmental Impact Assessment Guidelines (2006).

8. REPORTING REQUIREMENTS

The expert should submit a final EIA report including Environmental Management Plan (EMP) to *(developer's name)*. Who after reviewing appending an EIA Report Addendum to it, if necessary, will submit *(number)* copies of the final draft report to REMA/RDB.

The EIA Expert and developer should be available for discussions about the EIA report with REMA and participate in any public hearings organised by the Authority.

9. EIA TEAM MEMBERS

EIA experts recognized and authorized by REMA to undertake this study are listed below;
(List EIA Experts here).

Annex 7: MINUTES OF CONSULTATION MEETINGS AND ATTENDANCE LISTS IN NYABIHU SITE

INYANDIKOMVUGO Y' INAMA YAHUJE ABATURAGE B'UMURENGE WA RAMBURA NA MULINGA N'ABAKOZI B'UMUSHINGA LWH MU RWEGO RWO GUSOBANURIRWA GAHUNDA Y'UMUSHINGA MUSHYA(SAIP) UGIYE GUFATANYA NABO MU BIKORWA BY'UBUHINZI.

Inama yabereye ku biro by'Akagari ka Kibisabo yayobowe n'UmunyamabangaNshingwabikorwa w'Umurengwa wa Rambura Bwana Rusingiza Esron, yari yitabiriwe n'abaturage b'Umurengwa wa Rambura na Mulinga hari kandi n'abakozi b'umushinga LWH bakorera mu Karere ka Nyabihu.

Atangiza inama, UmunyamabangaNshingwa bikorwa w'Umurengwa yahaye ikaze abakozi b'Umushinga LWH baturutse I Kigali ndetse n'abakozi bakorera Nyabihu, yashimiye kandi abaturage bitabiriye inama bo mu Mirengwa ya Rambura na Mulinga, yabashimiye uburyo bari gushyira mu bikorwa igihembwe cy'ihinga cya 2018B, abasaba kwishutisha ihinga muri iki gihe imvura irimo igwa.

UmunyamabangaNshingwabikorwa yahaye ikaze umukozi w'umushinga LWH waturutse I Kigali ushinzwe gukurikirana ishyirwamubikorwa by'Umushinga(M&EO) Bwana **BIZIMANA Jean Claude** ngo asobanurire abaturage bitabiriye inama, gahunda y'Umushinga mushya ugiye kuza gufatanywa n'abaturage guteza imbere ubuhinzi.

Umukozi w'umushinga wa LWH waturutse I Kigali Bwana Jean Claude Bizimana yasuhije abaturage maze ababaza niba amaterasi bakorewe hari icyo abamariye , abaturage bamusubije ko amaterasi abafitiye akamaro kanini kuko uretse guhagarika isuri yatwaraga ubutaka bwabo n'umugaruro wariyongereye, Umugaruro witwa Barakengera wabajijwe iki kibazo yasubije ko isuri yatwaraga ubutaka bwabo yarahagaze , umugaruro nawo icyo umuntu yakoresheje inyongeramusaruro (imboreza n'imvanaganda) wikuba inshuro kuva kuri eshatu (3) kugeza ku nshuro eshanu(5).

Umukozi w'Umushinga LWH yashimiye abaturage ba Nyabihu ubwitange n'umurava bashyira mu kazi kabo ka buri muni n'imbaraga bashyira mugutegura igihembwe cy'ihinga cya 2018B.

Kuri gahunda y'umushinga mushyashya, uyu mukozi (M&EO) yabasobanuriye ko umushinga igiye kuza gufatanywa nabo guteza imbere ubuhinzi witwa SAIP (Sustainable Agriculture for intensification Project), yakomeje abasobanurira ko uyu mushinga uzabanda ku bikorwa bikurikira:

1. **Kongerera ubushobozi inzego z'abuhinzi** (amatsinda, zone na Koperative) hakorwa amahugurwa n'ingendashuri hamwe no gukorana n'ibigo by'imari.
2. **Iyamamazabuhinzi:** Guteza imbere igihingwa cy'ibirayi no kwigisha abaturage teknikiki zose zijyanye n'ubuhinzi kuva mu gutegura ubutaka, gutera gukurikirana ibihingwa kugeza bisaruwe ndetse no gufata neza umugaruro.
3. **Guteza imbere imirire:** Hazatangwa amahugurwa ku mirire mu rwego rwo guteza imbere imirire myiza (hakorwa amahugurwa mu gutegura indyo ibonye ndetse no kubishyira mu bikorwa mu ngo zacu) hagamijwe kurwanya indwara ziterwa n'imirire mibi (Bwaki.)
4. **Ibikorwa remezo byo kongera agaciro umugaruro:** gufatanyiriza hamwe n'abagenyabikorwa mu kongera umugaruro agaciro no kuwugeza ku masoko.

Umukozi ushinzwe gukurikirana ibikorwa by'Umushinga LWH yasobanuriye abaturage ko umushinga mu Karere ka Nyabihu uzabanda mu guteza imbere igihingwa cy'ibirayi.

Nyuma yo kuganiza abaturage kuri gahunda z'umushinga mushyashya (SAIP) ugiye gutangira, Umukozi ushinze gukurikirana ibikorwa by'umushinga yahaye abaturage ijamba ngo batange ibyizuzo byabo mu byo umushinga ugiye gutangira wazabafasha gukemura; maze abaturage batanga ibyifuzo bikurikira:

- A) Gufasha abaturage kubona imbuto y'ibirayi itanga umusaruro kandi yihanagnira uburwayi
- B) Kubonera abahinzi b'ibirayi nkunganire ku mbuto y'ibirayi kuko imbuto ihenda no kubafasha kubona isoko ritabahombya ku musaruro haba bejeje.
- C) Gufasha abahinzi gushyiraho ikigega cy'imbuto n'izindi nyongeramusaruro
- D) Guha amahugurwa abanyamuryango ba Koperative zashizweho ku micungire y'amakoperative
- E) Gushyiraho ikigo mbonezimirire (Centre de formation nutritionnelle)
- F) Gushyiraho ihuriro ry'abahinzi b'ibirayi (potatoes platform).
- G) Gushyiraho abajyanama mu mirire muri buri mudugudu bakaba bashingwa kureba ingo zifite ibibazo mu mirire no kubafasha uko bagerwaho ndetse no gutegura indyo nziza.
- H) Gufasha abaturage uburyo bwo gutubura imbuto y'ibirayi hafi yabo hubakwa Greenhouse byibuze imwe mu murenge aho umushinga uzakorerera.

Umukozi ushinze gukurikirana ibikorwa by'Umushinga LWH yasabye abaturage kwita ku materasi yakozwe na LWH abasaba ko igihe hagize iterasi risenyuka komite zasizweho zishinze kubungabunga ibikorwaremezo ndetse na ba nyirimurima bagomba guhita barisana mu rwego rwo kwirinda ko byateza isuri no ku materasi ari muni yiryo ryacitse.



Photo 1,2 &3: Umukozi w'umushinga aganiza abaturage kuri gahunda y'umushinga mushya.

Mu gusoza Inama umunyamabanga Nshingwabikorwa yashimiye byimazeyo Umushinga LWH ku bikorwa byinshi wateyemo inkunga abaturage b'Akarere ka Nyabihu ariko cyane cyane abaturage b'Umurenge wa Rambura na Mulinga kuko aribo bazi ibyiza by'umushinga LWH.

Umunyamabanga Nshingwabikorwa w'umurenge kandi yahaye ikaze umufatanyabikorwa mushya ariwo SAIP ko biteguye gufatanya mu bikorwa byose bifuzwa gukorera mu Karere ka Nyabihu by'umwihariko mu Murenge ya Rambura na Mulinga.

Umunyamabanga Nshingwabikorwa kandi yasabye abaturage b'Akagari ka Kibisabo by'umwihariko nkuko bari babyiyemeje kuremera mugenzi wabo wahuye n'ikiza inkuba igahitana inka ze eshatu gushyira mu bikorwa bakamugurira inka y'inzungu bamwemeraye.

Uyu muyobozi kandi yasabye abaturage gushyira ingafu mu kwihutisha igihembwe cy'ihinga cya 2018B cyane cyane ku baturage bahinga ingano, amashaza n'ibirayi kuko abahinze ibigori bo barimo kumenera yabasabye ko batarenza tariki ya 25/3/2018 bazaba barangije

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gutera imbuto birinda ko nyuma yiriya tariki imyaka bazatera yazahura n'izuba ntitange umusaruro.

Inama yasojwe saa kumi n'igice(16h30')

Umwanditsi w'Inama

SEBAZUNGU Modeste
M&EOLWH/RSPP/Gishwati Coordination



Umuyobozi w'Inama

RUSINGIZA Esron
Executive Secretary of Rambura Sector



REPUBLIKA YU RWANDA
 INTARA YIUBURUNGERAZUBA
 AKARERE KANYABITHU

URUTONDE RWABITABIRIYE INAMA Y'ABAGENERWABIKORWA B'UKUSHINGA
 "SAIP" MURI SITE YA NYABITHU - ITARIKI 18/3/2015

| No | AMAZINA YAMBI | No YIRANGAMUNDO | UMUGUGU | AKAGARI | UKURURANGA | UMU |
|-----|--------------------------|------------------|---------------|----------|------------|-----|
| 1. | Nyigye ma Bonatha | 1198970080503075 | NYAMBUKUMBA | Mwigamba | Mulinga | |
| 2. | KWAMBA ZEMUNGU Pascal | 1197480044358007 | KABEZA | KIBISABO | RAMBULA | |
| 3. | NYAWUNGO BASHIWA | | NYAMPURU | KIBISABO | RAMBULA | |
| 4. | NYIRABAZERA Apollinaire | 1195970033708074 | Myanguruzumwe | GURURU | RAMBURA | |
| 5. | ALIBI Emmanuel | 1197080031527033 | RABO | GURURU | RAMBURA | |
| 6. | SIMBA Jean Luc | 1195680023525080 | KABURU | RUGARUKA | RAMBURA | |
| 7. | NTAHOMBI Felicien | 1196480031909025 | NTANDU | RWANTORO | Mulinga | |
| 8. | SELIKEYE Anastase | | Rwandakeye | RWANTORO | Mulinga | |
| 9. | GASANA Jean Damascene | 1196280034728091 | KARAMBA | RWANTORO | Mulinga | |
| 10. | HAYUMANEZA Saphir | 1196680029652008 | KYUKURU | RWANTORO | Mulinga | |
| 11. | MUKASHIYE Gualana | | | MUYAHIRE | RAMBURA | |
| 12. | UMUNDA Jeanette | | BUGONDE | KIBISABO | RAMBURA | |
| 13. | NYIRASHYI RAMBEKE Rachel | 11962700223042 | RATARE | KIBISABO | RAMBURA | |
| 14. | | | NYAMPURU | " | " | |
| 15. | BWEGAMIRO | | GATARE | KIBISABO | " | |
| 16. | ZAHINKA Jeanette | | | " | " | |
| 17. | DUSABEMARIYA Cristina | | BUGONDE | " | " | |
| 18. | MANISHIMWE Devotia | | BUGONDE | " | " | |
| 19. | MANIRAKIZA Immacule | | NYAMPURU | " | " | |
| 20. | MUJAWAMARIYA Claudine | | " | " | " | |
| 21. | AMUKAMIRIYE Comitea | | BUGONDE | " | " | |

REPUBLIKA Y'URWANDA
INTARAYI UBURENGERAZUBA
AKARERE KANYABITU

URWONDE RW'ABITABIRIYE INAMI Y'ABAGENERWABIKORWA B'UMUSHINGA SAHA
MURUSITE YA NYABITU - ITARIKI 13/03/2018

| NO | AMAZINA YAMBI | NO Y'IRANGAMUNTU | UMUSIBUWU | AKABARI | UMURUKE | UMUKORWA |
|----|------------------------|------------------|-------------------|----------------------|--------------------|----------|
| 1 | Nzadaka Emanoel | 1192080084580191 | Beyondo Gatere | Kibisabo Kibitabo | Rambura Rambura | |
| 2 | Nzobiyumwa Elie | 1198080073211050 | KINIHIA | Kibisabo | Rambura | |
| 3 | Ayitepetse Samwel | 119788006009066 | KARAMBA | KIBISABO | KAMBURA | |
| 4 | MURUBITO Celestin | 119737004146015 | KINIHIA | KIBISABO | KAMBURA | |
| 5 | MURAMUSONI Zephire | 1195670023466036 | NYAMURUHE | | | |
| 6 | MURAMUKUNDE Zephire | | | | | |
| 7 | Mukazine Claudine | 1197880060165068 | Nyungu LWA | Nyungu | Rambura | |
| 8 | MURAMUKUNDE Jean Régis | 1197380042075074 | KABEZA | KIBISABO | RAMBURA | |
| 9 | MURAMUKUNDE Jean Régis | 1198670044506483 | KABEZA | KIBISABO | RAMBURA | |
| 10 | MURAMUKUNDE Zephire | 1198270087775066 | KABEZA | KIBISABO | RAMBURA | |
| 11 | MURAMUKUNDE Zephire | | | | | |
| 12 | MURAMUKUNDE Zephire | 1198580094513038 | KABEZA | KIBISABO | RAMBURA | |
| 13 | MURAMUKUNDE Zephire | 1197080034008073 | KABEZA | KIBISABO | RAMBURA | |
| 14 | MURAMUKUNDE Zephire | 1198390171986 | KABEZA | KIBISABO | RAMBURA | |
| 15 | MURAMUKUNDE Zephire | | | | | |
| 16 | MURAMUKUNDE Zephire | | | | | |
| 17 | MURAMUKUNDE Zephire | 1199280166817063 | Bugonde | MULINGA | MULINGA | |
| 18 | MURAMUKUNDE Zephire | 1198770072710025 | Bugonde | KIBISABO | RAMBURA | |
| 19 | MURAMUKUNDE Zephire | 1198490084566053 | Bugonde | KIBISABO | RAMBURA | |
| 20 | MURAMUKUNDE Zephire | | | | | |
| 21 | MURAMUKUNDE Zephire | | | | | |

REPUBLIKA YU RWANDA
 INTARA Y'IBURENGERAZUBA
 AKARERE KA NYABIHU

* SAIP' MURU SITE YA NYABIHU - ITARIKI 13/01/2018
 URUTONDE RW'ABITABIRIYE INAMA Y'AMAGENERWA BY'IKORWA

| N° | AMAZINA YOMBI | N° Y'IRANGAMUNTU | UMUGU | AKAGARI | UMU |
|----|---------------------------|------------------|--------------|------------|-----|
| 1 | Kalimuturweye Patricia | N° | Njankubwama | Muriganika | M |
| 2 | HATEGEKIMANA | | Nyampunwe | Kibisabo | Ra |
| 3 | SEBUKUKA Felix | 1198980025687079 | Dugande | Kibisabo | Ra |
| 4 | UBAYISABA | M: | Dugande | Kibisabo | Ra |
| 5 | BAMUKENSIRAJ de hie | | Dugande | Kibisabo | Ra |
| 6 | Senziyange J. Dumukema | 1196580028078064 | Nyampunwe | Kibisabo | Ra |
| 7 | Musaburuki Theomeste | | Rwenzoro | Kibisabo | Ra |
| 8 | MURAKABA Thame | 1196580031322063 | KIRIKIRI | Kibisabo | Ra |
| 9 | NDABAJIMANA | | Nyampunwe | Kibisabo | Ra |
| 10 | Udegamye | | URWENZORO | Kibisabo | Ra |
| 11 | BAGIRISHA | | Nyampunwe | Kibisabo | Ra |
| 12 | NTAFISAMIRAMA | | Nyampunwe | Kibisabo | Ra |
| 13 | Ntababuzimana Samson | | Bugande | Kibisabo | Ra |
| 14 | Tumukamukama Idejose | | Nyampunwe | Kibisabo | Ra |
| 15 | Zwizigye Matho palestin | | Nyampunwe | Kibisabo | Ra |
| 16 | Nyungujurwe Jean Lucien | 0795001748 | FIRAMBA | Kibisabo | Ra |
| 17 | DUSENGIMANA JOHNSON | | Bugande | Kibisabo | Ra |
| 18 | NZAMUKAMUKAMA Jean Claude | 1199480088437043 | BUGONDE | Kibisabo | Ra |
| 19 | Mubashira M. Louis | | KIRIKIRI | Kibisabo | Ra |
| 20 | Kayira Benjamine | | Rwenzoro | Kibisabo | Ra |
| 21 | Habuzimana Jean Louis | 1197780048149067 | ntango | Kibisabo | Ra |
| | | | Rwandakuzeli | Kibisabo | Ra |

REPUBLIKA YU RWANDA
 INTARA Y'UBURUNGERA ZUBA
 AKARERE KANYABIHU.

URUTONGE RW'ABATABURIRYE INTARA Y'ABAGENERWA BIKORWA B'UMUSHINGA SA
 MURI GITE YA NYABIHU - ITARIKI 13/03/2018

| NO. | AMAZINA YAMBA | NO YIRANGAMUNTU | UMWUBUWU | AKAGARI | UMWENGE | UMUKONO. |
|-----|--|------------------|----------------------|----------------------|--------------------|----------|
| 1. | Ndagijimana J. de Dieu | 1191480044377050 | Nyampingu Buzande | Kibisabo Kibisabo | Rambura Rambura | |
| 2. | Mukamukana Riphomir | - | Rurimbo | Kibisabo | Rambura | |
| 3. | Nyungu F. Uhoana | - | Kimihina | Kibisabo | Rambura | |
| 4. | Hakuzi mwanza Sallukur Nyungu Eugène Emmanuel | 1198880081445011 | Buzande | Kibisabo | Rambura | |
| 5. | Nyirabana Kimizi Immanuel | 1197270042717054 | Kimihina | Kibisabo | Rambura | |
| 6. | Nyirabana Emmanuel Nyirabana Immanuel | 1198400084552052 | Buzande Kimihina | Kibisabo Kibisabo | Rambura Rambura | |
| 7. | Turayimana y. Sallukur | - | Kanambi | Kibisabo | Rambura | |
| 8. | Ndamirama | - | Kanambi | Kibisabo | Rambura | |
| 9. | Nyirabana | - | Kanambi | Kibisabo | Rambura | |
| 10. | Nyirabana | - | Biramba | Biramba | Korambo | |
| 11. | Banyegembe | - | Nyamukama | Muramba | Muramba | |
| 12. | Nyirabana | - | Kanambi | Ruramba | Ruramba | |
| 13. | Hakuzi mwanza Immanuel | - | Kimihina | Kibisabo | Rambura | |
| 14. | HABAYIMANA J. Christin | 1192480044315076 | NTAMPANA | KIRYARU | Rambura | |
| 15. | BUTUKANA Petero | - | NYANKUMA | MWISANIKE | MUZINGA | |
| 16. | MUTIZI Verente | - | NYANKUMA | MWISANIKE | MUZINGA | |
| 17. | TWAGIRAMARISA M. clon | - | NYANKUMA | MWISANIKE | MUZINGA | |
| 18. | NSEKANGAFITE Godaule | - | NYANKUMA | MWISANIKE | MUZINGA | |
| 19. | Komuramba Philip. | - | Buzande | Kibisabo | Rambura | |
| 20. | Zikamwamba Kocobira | - | Rambura | Kibisabo | Rambura | |

REPUBLIKA Y'U RWANDA
INTARA Y'IBURENGERAZURU
AKAZEZE KA NYARIHU

UBUTONDE BW'ABITABIRIJE INAMA Y'ABAGENERWABUKOMA B'UHUKU
" SAIP " MURI SITE YA NYARIHU - ITARIKI 13/05/2019

| N° | AMAZINA YOMBWA | N° Y'IRANGAMUNTU | UHUKURU | AKAZI | UHURANGA | UHUKU |
|----|---------------------------|------------------|------------------|-----------|----------|-------|
| 1 | Tungashimana Franck | | Rwandamba | Rwandamba | Murungu | |
| 2 | Rwigyema Antoine Clément | +192020042783026 | Mugamba | Kibisabo | Rumbura | |
| 3 | Rwizyamba | | Ruganda | Kibisabo | Rumbura | |
| 4 | Zami uba Louise | +196970036520098 | Ruganda | Kibisabo | Rumbura | |
| 5 | Hamukunda Eugene | | Ruganda | Kibisabo | Rumbura | |
| 6 | Duganire Baptiste | +197070033030034 | Ruganda | Kibisabo | Rumbura | |
| 7 | Nyirakwenda Beldville | | Karuzi | Kibisabo | Rumbura | |
| 8 | Hagumuniro J. Bwukuru | 119980075453089 | Itorero | Rumbura | Murungu | |
| 9 | ESASOLE J. PIERRE | 119990075661029 | | | Murungu | |
| 10 | Habyarimana J. Claude | | | | Murungu | |
| 11 | MURKATU Josephine | 1197680045333046 | Ruganda | Kibisabo | Rumbura | |
| 12 | NTIMONYA Josephine Theres | | Ruganda | Kibisabo | Rumbura | |
| 13 | Nyiragikwa Ranswira | | Gatare | Kibisabo | Rumbura | |
| 14 | Mumamba Zabwoni | | Gatare | Kibisabo | Rumbura | |
| 15 | MURAHIMUHIKE Tawana | +196280084450000 | Ruganda | Kibisabo | Rumbura | |
| 16 | Mukaza Angelique | +198770075663053 | Ruganda | Kibisabo | Rumbura | |
| 17 | Hitimana Joseph | 1195720029257021 | Kinshira | Kibisabo | Rumbura | |
| 18 | SAGAHITU Joseph | 119758004444049 | Ruganda | Kibisabo | Rumbura | |
| 19 | Baptiste | | Ruganda | Kibisabo | Rumbura | |
| 20 | NYIRASHATI | | Ruganda | Kibisabo | Rumbura | |
| 21 | NTIZIMANA | 119312007184036 | Kibisabo | " | " | |
| 22 | TURKINZIMANA Pierre | 119708008978026 | Ruganda | " | " | |
| 23 | SEMPAKUWA Noé | 119778009770800 | Leo 4 - RUMURUMU | | | |

Annex 8: Minutes of consultation meetings and attendance lists in Muyanza site

INYANDIKO MVUGO Y'INAMA ZO GUSOBAURA UMUSHINGA MUSHYA W'UBUHINZI URI GUTEGURWA

Nyuma y'imyaka igera kuri itanu (5) umushinga wo gutunganya ubutaka, gufata amazi no kuhira imusozo (LWH) ukorera kandi ukorana n'abaturage bo mu Mirenge yo mu Karere ka RUTINDO, abaturage bagaragaje ubufatanye no kugira uruhare mu migendekere myiza y'umushinga, igihe kikaba cyigeze ngo usoze igihe wari uteganijwe kumara.

Murwego rwo kubunganga ibyo LWII yagezeho, Leta y'u Rwanda, iri gutegura umushinga witwa SAIP uzafasha abagenerwabikorwa kubyaza umusaruro ibyo LWH yakoze.

Mu rwego rwo kwitegura gukorana n'umushinga mushya, abakozi b'umushinga LWH kuri site ya site ya MUYANZA gukorana ibiganiro n'abagenerwabikorwa hagamijwe kubasobanurira umushinga mushya no kumva ibitekerezo byabo.

Inama zabereye aha hakurikira: Akagali ka TABA na KARENTERI, Umurenge wa BUREGA, Akagali ka NDARAGE, GAHORORO Umurenge wa BUYOGA, zikaba zarabaye taliki ya 13/03/2018 mu nteko rusange z'abaturage.

Ibiganiro byibanze kuri izi ngingo zikurikira:

1. Gusobanura mu magambo make umushinga mushya;
2. Kumva icyo abagenerwabikorwa batekereza kumushinga mushya;
3. Kubaka ubushobozi bw'abahinzi binyuze mu matsinda no muri cooperatives;
4. Kongera umusaruro;
5. Kurwanya imirire mibi;
6. Kubegereza ibikoresho byo kuhira mu gice cyitazajya cyuhirwa n'amazi ya dam.

Abakozi b'umushinga mu nama zabereye mu tugari dutandukanye batangiye basobanura mu nama umushinga mushya ariwo SAIP ukaba ari umushinga wo gukomeza ibyagezweho, kongera umusaruro no kurwanya imirire mibi. Bashimira uburyo abagenerwa bikorwa bitabiriye kwibumbira mu matsinda no kubungabunga ibikorwa byabakorewe birimo amaterasi, ibiti bivangwa n'imyaka, imirwanyasuri hamwe na hamwe ndetse n'urugomero rw'amazi azakoreshwa mu kuhira imirima.

Basabwe kuzakorana neza n'umushinga mushya cyane cyane mu gukomeza kwongera umusaruro w'ibikomoka k'ubuhinzi cyane cyane batekereza ku kwihaza mu biribwa no gusagurira isoko.

Kuri icyo ngingo yo kwihaza mu biribwa, abagenerwabikorwa basabwe kuzafatanya n'umushinga SAIP kwita ku mirire cyane cyane bategura indyo yuzuye mu mirire yabo ya buri muni. Bakaba bateguzwa gutangira kuvugurura no gutekereza ku turima tw'igikoni.

Babwiwe kandi ko umushinga SAIP muri gahunda zawo harimo gufasha abahinzi batazagerwaho n'amazi y'urugomero rwa Muyanza kubona ibikoresho bitandukanye byo kuhira kugirango umusaruro w'ibikomoka k'ubuhinzi ukomeze kwiyoungera.

T d

Haganiriwe kandi ingingo yo kubungabunga ibikorwaromezo cyane cyane amatiyo yo kuhira, imihanda inyura mu cyanya cyuhirwa, ibiti bivangwa n'inyaka n'ibindi. Basabwa kubyitaho kuko ari ibyabo kandi buri wese akaba ijisho rya mugenzi we.

Ibibazo byabajijwe n'ibisubizo byatanze.

| No | Ibibazo cyabajijwe | Igisubizo cyatanze |
|----|---|--|
| 1. | Abagenerwabikorwa babajije niba umushinga uzabafasha kubona umuguzi kumugaruro w'ibigori n'ubutunguru. | Basubijwe ko umushinga uzabafasha kubahaza n'amasoko ajoye n'umugaruro bazaba bejeje hakurikijwe kandi uburyo bawufashe neza. |
| 2. | Abagenerwabikorwa babajije niba umushinga uzabafasha kwimuka bakava mu cyanya cyuhirwa murwego rwo kubatunganya aho bari batuye hagakorerwa ubuhinzi. | Basubijwe ko umushinga udatite gahunda yo kubakira amazu abaturya muri command area ahubwo bagomba kujya bagenda bava mu cyanya kizuhirwa buhoro buhoro. |
| 3. | Abagenerwabikorwa babajije niba umushinga mushya uzaza ukora amaterasi mubice byagiye bisigara no mugice kitari icyerekeranye n'umugezi wa MUYANZA | Abagenerwabikorwa basobanuriwe ko umushinga SAP utazakora amaterasi ahubwo uzajya ufasha abaturage kubaka ubushobozi mubijyanye n'ubuhinzi bunoze no kurwanya imirire mibi, gufasha mukubona ibikoresho byo kuhira inyaka. |
| 4. | Abagenerwabikorwa babajije ikibazo cy'uko bazubakirwa ubwanikiro cyane cyane abahinga ubutunguru mu gice kitazuhirwa | Basobanuriwe ko ubwanikiro ari muri bimwe umushinga uzaba ukara ariko hamaze kugaragazwa umugaruro ufatika uturuka mu materasi y'indinganire yakozwe na I.W.H. |

Ibyifuzo abagenerwabikorwa bagaragaje byakongerwa mu mushinga mushya:

- Abagenerwabikorwa bifuje ko hazatekerezwa kubindi bikorwa byazajya byunganira ubuhinzi: (Ubudozi bw'inyenda, ububaji, gukora amasabune n'ibindi,...)
- Abagenerwabikorwa bifuje ko umushinga mushya wazabafasha mu kurwanya imirire mibi bahabwa amatungo (amagufi n'amaremara hakurikijwe ubushobozi bwa buri mugenerwabikorwa) urugero: inka, ihene, inkoko n'ibindi,...
- Bifuje kandi ko umushinga mushya wazafasha abahinzi kubegera hafi inyongeramusaruro n'imiti yo kurwanya ibyonnyi (fertilizers and pesticides);

Handwritten initials or signature

- Abagenerwabikorwa kandi bifuje ko bakongererwa ubushobozi mu bijyanye n'imihingire myiza yazatuma amaterasi bakorewe yazabyanwa umusaruro kandi akamara igihe kirekire;
- Bifuje ko mu mushinga mushya bafashwa mu gukoresha no kubungabunga ibikorwa byo kuhira imyaka (Operation and maintenance of the irrigation infrastructure in CA).

Inama yashojwe abaturage bagaragaje ko bashimira Leta y'u Rwanda ko ikomeza kubatekereza ibagera ibyahindura ubuzima bwabo bukarushaho kuba bwiza. Bijeje imikoranye myiza no gukomeza gufatanya mu bikorwa byose by'umushinga mushya.

Ku mugereka w'iyi nyandiko mvugo haragaragara urutonde rw'abitabiriye inama mu tugari dutandukanye two mu Mirenge itandukanye umushinga uzakomerezamo ibikorwa byakorwaga na LW11.



Abeganyije ibitekerezo n'ibyifuzo by'abagenerwabikorwa:

- UWIZEYE Willy, CDO

Umuyobozi wa LWH Site ya MUYANZA

- MUKAMUGENGA Angeliq, TL



AKARERE KA RULINDO
 UMURENGE WA.....*Bitaraga*.....
 AKAGALI KA.....*Taba*.....
 UMUDUGUDU WA.....*Ayambata*.....

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|-------------------------|----------|----------|--------------------|
| 1 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 2 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 3 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 4 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 5 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 6 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 7 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 8 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 9 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 10 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 11 | <i>Muganyana Ndesha</i> | M | | <i>[Signature]</i> |
| 12 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 13 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 14 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 15 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 16 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 17 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 18 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 19 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |
| 20 | <i>Muganyana Ndesha</i> | F | | <i>[Signature]</i> |

AKARERE KA RULINDO
 UMURANGE WA.....
 AKAGALI KA.....
 UMUDUGU WA.....

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|-------------------|----------|----------|-------------|
| 1 | MURAGIJEZE J Paul | M | - | [Signature] |
| 2 | MURAGIJEZE J Paul | M | - | [Signature] |
| 3 | MURAGIJEZE J Paul | F | - | [Signature] |
| 4 | MURAGIJEZE J Paul | F | - | [Signature] |
| 5 | KIMANA Amandine | M | - | [Signature] |
| 6 | KARIMURUKA Yvonne | M | - | [Signature] |
| 7 | MURAGIJEZE J Paul | M | - | [Signature] |
| 8 | KIMANA Amandine | M | - | [Signature] |
| 9 | KARIMURUKA Yvonne | M | - | [Signature] |
| 10 | MURAGIJEZE J Paul | M | - | [Signature] |
| 11 | MURAGIJEZE J Paul | M | - | [Signature] |
| 12 | MURAGIJEZE J Paul | F | - | [Signature] |
| 13 | MURAGIJEZE J Paul | M | - | [Signature] |
| 14 | MURAGIJEZE J Paul | M | - | [Signature] |
| 15 | MURAGIJEZE J Paul | M | - | [Signature] |
| 16 | MURAGIJEZE J Paul | F | - | [Signature] |
| 17 | MURAGIJEZE J Paul | F | - | [Signature] |
| 18 | MURAGIJEZE J Paul | M | - | [Signature] |
| 19 | MURAGIJEZE J Paul | M | - | [Signature] |
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AKARERE KA RULINDO

UMURENGE WA Buhigwe

AKAGALI KA KARUGWEZI

UMUDUGU DU WA KARUGWEZI

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA WUBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|-------------------------|----------|----------|---------|
| 1 | MUNIRE Justin | M | | |
| 2 | MUPARASI SHU | M | | |
| 3 | KAMUPAZI Fereuzani | M | | |
| 4 | Mwizigimana Silas | M | | |
| 5 | Munyabagwiza Gashyamba | M | | |
| 6 | Mukirama Mwanirwacu | M | | |
| 7 | Kalaza ALPHONSE | M | | |
| 8 | MUSABYIMANA Jean Pierre | M | | |
| 9 | MUKANDAYSONGA Daniel | F | | |
| 10 | MUKARORINDA Enalene | F | | |
| 11 | Mukabungira Xaviera | F | | |
| 12 | Mukamukesi Josephine | F | | |
| 13 | Mwizigimana Enata | F | | |
| 14 | Mukabagwiza Bwambaga | F | | |
| 15 | Mwizigimana Jean Pierre | F | | |
| 16 | Mwizigimana Jean Pierre | F | | |
| 17 | Mwizigimana Jean Pierre | F | | |
| 18 | MUKIRWA RUCY | F | | |
| 19 | MURANDIGIYA Chantal | F | | |
| 20 | Mwizigimana Enalene | M | | |

AKARERE KA RULINDO
 UMURENGE WA... *RULINDO*
 AKAGALI KA... *RULINDO*
 UMUDUGUDU WA... *RULINDO*

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA WUBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONGO |
|-----|---------------------------------|----------|----------|--------------------|
| 1 | <i>IZIYIMUNGU Jean Pierre</i> | <i>M</i> | - | <i>[Signature]</i> |
| 2 | <i>ALIBABAGANDE Jean Pierre</i> | <i>F</i> | - | <i>[Signature]</i> |
| 3 | <i>MUKAGISHIMANA Claudine</i> | <i>F</i> | - | <i>[Signature]</i> |
| 4 | <i>MURAHIMANA Amos</i> | <i>F</i> | - | <i>[Signature]</i> |
| 5 | <i>A. Bwiza Jean Pierre</i> | <i>M</i> | - | <i>[Signature]</i> |
| 6 | <i>UKURIMUNGU Jean Pierre</i> | <i>F</i> | - | <i>[Signature]</i> |
| 7 | <i>MURAHIMANA Amos</i> | <i>M</i> | - | <i>[Signature]</i> |
| 8 | <i>MURAHIMANA Amos</i> | <i>M</i> | - | <i>[Signature]</i> |
| 9 | <i>Zemirika Sarah</i> | <i>F</i> | - | <i>[Signature]</i> |
| 10 | <i>MURAHIMANA Amos</i> | <i>F</i> | - | <i>[Signature]</i> |
| 11 | | | | |
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AKARERE KA RULINDO
 UMURENGE WA...
 AKAGALI KA...
 UMUDUGUDU WA...

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|--------------------------|----------|----------|---------|
| 1 | Karamuka Justin | M | | |
| 2 | Habiyimana Jean Baptiste | M | | |
| 3 | Kimwiza Charles | M | | |
| 4 | Mukiza Pauline | F | | |
| 5 | Kurugabo Pascal | M | | |
| 6 | Mukamana Pascal | M | | |
| 7 | Habiyimana Gabriel | M | | |
| 8 | Mukamana Pauline | F | | |
| 9 | Kurugabo Charles | M | | |
| 10 | Mukamana Pascal | M | | |
| 11 | Mukamana Pascal | M | | |
| 12 | Mukamana Pascal | M | | |
| 13 | Mukamana Pascal | M | | |
| 14 | Mukamana Pascal | M | | |
| 15 | Mukamana Pascal | M | | |
| 16 | Mukamana Pascal | F | | |
| 17 | Mukamana Pascal | F | | |
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AKARERE KA RULINDO
 UMURENGE WA *BU BESA*
 AKAGALI KA *F.R.P*
 UMUDUGUDU WA *AMAZIYEMBU*

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|---------------|----------|----------|--------------------|
| 1 | <i>MURUYI</i> | <i>M</i> | | <i>[Signature]</i> |
| 2 | <i>MURUYI</i> | <i>F</i> | | <i>[Signature]</i> |
| 3 | <i>MURUYI</i> | | | <i>[Signature]</i> |
| 4 | <i>MURUYI</i> | <i>M</i> | | <i>[Signature]</i> |
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AKARERE KA RULINDO

UMURENGE WA *Bu. ...*

AKAGALI KA *T. ...*

UMUDUCUDU WA *Bu. ...*

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA WUBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|-----------------------|----------|----------|--------------------|
| 1 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 2 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 3 | <i>Tuyizhuzwe ...</i> | F. | - | <i>[Signature]</i> |
| 4 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 5 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 6 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 7 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 8 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 9 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 10 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 11 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 12 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 13 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 14 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 15 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
| 16 | <i>Muhammedu ...</i> | M. | - | <i>[Signature]</i> |
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AKARERE KA RULINDO
 UMURENGE WA BURUNDI.....
 AKAGALI KA HARUKURU.....
 UMUDUCUDU WA MATARA.....

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONGO |
|-----|----------------------|----------|----------|----------|
| 1 | TUYISHIMIRE | M | | |
| 2 | IRA BEREWA DUFARASHA | M | | |
| 3 | MUNYEMURUVA VIKIRNT | M | | |
| 4 | Muhimbura | M | | |
| 5 | Muhimbura | M | | |
| 6 | Muhimbura | M | | |
| 7 | Muhimbura | M | | |
| 8 | Muhimbura | M | | |
| 9 | Muhimbura | M | | |
| 10 | Muhimbura | M | | |
| 11 | Muhimbura | M | | |
| 12 | Muhimbura | M | | |
| 13 | Muhimbura | M | | |
| 14 | Muhimbura | M | | |
| 15 | Muhimbura | M | | |
| 16 | Muhimbura | M | | |
| 17 | Muhimbura | M | | |
| 18 | Muhimbura | M | | |
| 19 | Muhimbura | M | | |
| 20 | Muhimbura | M | | |

AKARERE KA RULINDO
 UMURENGE WA.....BUYOGA
 AKAGALI KA.....N.B. ABAGE
 UMUDUGUDU WA.....K. SRAMBI, GIKINGO

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA W'UBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEPHONE | UMUKONO |
|-----|----------------------|----------|-----------|----------------|
| 1 | MPOGAzi pascoe | M | ?? | CSA |
| 2 | Nalohimana | BT | 5 | CSA |
| 3 | Uwagirimana - Claude | M | 39 | CSA |
| 4 | Uwagirimana Mathias | M | - | CSA |
| 5 | Uwagirimana Philippe | BT | - | CSA |
| 6 | Nyirakwizimana | BT | - | CSA |
| 7 | Uwagirimana Ben | M | - | CSA |
| 8 | BIZIMUNGU Janvier | M | - | CSA |
| 9 | Uwagirimana Jean | M | - | CSA |
| 10 | Ahimbizimana calixte | M | - | CSA |
| 11 | Uwagirimana Jean | M | - | CSA |
| 12 | NDUBUYE Charles | M | - | CSA |
| 13 | F. Umuhoza Jean | M | - | CSA |
| 14 | Uwagirimana Jean | M | - | CSA |
| 15 | Uwagirimana Jean | F | - | CSA |
| 16 | Uwagirimana Jean | F | - | CSA |
| 17 | Uwagirimana Jean | F | - | CSA |
| 18 | Uwagirimana Jean | M | - | CSA |
| 19 | Uwagirimana Jean | F | - | CSA |
| 20 | Uwagirimana Jean | M | - | CSA |

AKARERE KA RULINDO

UMURENGE WA BUUYOGA

AKAGALI KA NABASE

UMUDUGU WA KARAMBI na GIKINGO

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA WUBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONGI |
|-----|-----------------------|----------|----------|----------|
| 1 | KAMOTEZI Laurent | M | | |
| 2 | Muhammeda Ismail | F | | |
| 3 | Mukabana Jean Paul | F | | |
| 4 | Musamukunda Théodore | F | | |
| 5 | Bugingo Sébastien | M | | |
| 6 | Mukabana Ismail | F | | |
| 7 | Nyirakaba Théodore | F | | |
| 8 | Munyanga Théodore | F | | |
| 9 | Munyanga | F | | |
| 10 | Kawabana Théodore | M | | |
| 11 | Munyanga MARI Chantal | F | | |
| 12 | Mukabana Jean Paul | F | | |
| 13 | Munyanga MARI Chantal | F | | |
| 14 | Munyanga | F | | |
| 15 | MUKABANA | F | | |
| 16 | Munyanga | M | | |
| 17 | Silviano Jean Paul | M | | |
| 18 | Munyanga MARI Chantal | F | | |
| 19 | Munyanga MARI Chantal | F | | |
| 20 | Munyanga MARI Chantal | M | | |

AKARERE KA RULINDO

UMURENGE WA.....BUYAGA

AKAGALI KA.....N.B.A.BAGE

UMUDUGUDU WA.....K.A.R.A.MBI na GIKINGO

ABITABIRIYE INAMA YO KUNGURANA IBITEKEREZO KUMUSHINGA MUSHYA URI GUTEGURWA WUBUHINZI

| S/N | AMAZINA YOMBI | IGITSINA | TELEFONE | UMUKONO |
|-----|----------------------------|----------|----------|--------------------|
| 1 | <u>Guramuhira A. A. A.</u> | F | | <u>[Signature]</u> |
| 2 | <u>Habimana J. M.</u> | M | | <u>[Signature]</u> |
| 3 | <u>Mukamugali J. M.</u> | F | | <u>[Signature]</u> |
| 4 | <u>Mukamugali J. M.</u> | F | | <u>[Signature]</u> |
| 5 | <u>Mukamugali J. M.</u> | F | | <u>[Signature]</u> |
| 6 | <u>Mukamugali J. M.</u> | F | | <u>[Signature]</u> |
| 7 | <u>Mukamugali J. M.</u> | M | | <u>[Signature]</u> |
| 8 | <u>Mukamugali J. M.</u> | M | | <u>[Signature]</u> |
| 9 | | | | |
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..... ITINDA YO KUNGUWANA IOTIKEREREZO KU MUSHI NGA
 MUSHYA W'IBUHINZI URI GUTAGURWA (BUYOGA-GAHO LOTO)

Awarang

Amakuru

1. NSEKAMBA Claudien
2. UKUTWAISHYAKA Blacien
3. Kabwika Paolal
4. Kihagaritse Jean
5. Mamyentwari Jean
6. Kasakaj Demascine
7. Ujenezu Uigitaliya
8. Mukayiramba Samu
9. Mukaniyambama Yozajimant
10. Mukamwazi denatira
11. TWIRINSHYIMANA J. Demascine
12. Mukamana Mudiote
13. MUSA BYIMANA Alphonse
14. Mukakwanya Christine
15. MUTUYI MANA
16. MUCYESHIMANA
17. MUKANDUTIYE
18. MUKANTA HUBALI
19. MUKAKUTURAZA
20. MUKALUGOMBA
21. MUKAKABEKA
22. NYIRA BAGEMU
23. MINEGA Ouciphale
24. MUKA BAKISA
25. NIMUBIRE waitha
26. VUGUZIGIRE
27. MUKA NKUSI Immaculee
- 28.
- 29.
- 30.

(Handwritten signatures and initials next to the list items)

MUSHYAWILIBUHI NZI LIRI GUTEQUEWA (BUYOGA - GATHOLLO)

Amaziny

Uyukano

1. Pangamwabo Flociyani
2. Ryumufabo samweli
3. Mwandayanga
4. Musubymariya
5. Muryanguzo
6. Kumbasi
7. Akinojo ma
8. Nkubiri
9. Nsabimana
10. Njirinkwajor
11. Bwalya guzo
12. Ntabonyanyi ma
13. Muri nda habi
14. Nzamurambaho
15. Bwalya Kuresa
16. Nyiramanyu
17. Mukaraba
18. Kankundiya
19. Mukamurivurumie
20. Muryami
21. Muryanguzo
22. Byukunye
23. Bwalya ma
24. Bwalya ma

~~Uyukano~~
~~Uyukano~~
~~Uyukano~~


Annex 9: Minutes of consultation meetings and attendance lists in Rwamagana site

INYANDIKOMUKO Y'INAMA YO GUSOBANUKA UMUSHINGA MUSHYA SAIP
 No kumva ibitekerezo by'abaturage kuri uwo
 kuwa 20/03/2018

Inama yatangijye isaa cyenda na makumyabiri (15h20'),
 iyobowe na ISSA NOUNGUTSE uhagarariye umushinga mu karere
 ka Rwamagana ahatangijye na ubuyobozi burinzwe z'ibanze
 zo mu gace kabereyeho inama aribo umunyamabanga nshingira-
 bikorwa w'akagari ka kagzi ndetse n'abayobozi b'imidugudu
 yitabiriyeho inama ariyo Ruvuguzi, banatari na Kabonero.
 yatangijye ashimira ababashije kuitabira ubutumire burinama
 ndetse akomeza abibutsa ibikorwa byakozwe n'umushinga UWH,
 abagaragariza ko akamara kabwo muri rusange byari kongera
 umusaruro no kuzamura imibereho y'abagenerwabikorwa.
 yakomeje ababwirako hari undi mushinga mushya utapanywa
 gutangira ukaba utwaza SAIP (Sustainable Agriculture intensification
 project) ukaba bishatse kurwanya umushinga ugamije gutomeza
 gutwaza imbere ubukungu buruvuye; ukaba uza fasha mu
 gufata neza ibikorwa nemezo byubatswe ndetse no kongera
 ubumenyi n'ubushobozi burubakira mu kongera no gufata neza
 umusaruro wabo.
 yashishikariye abaturage kuzitabira gukorana neza n'uwu
 mushinga ndetse abasaba no gutanga ibitekerezo kubyo
 bifuzako umushinga mushya uzabafasha kugera nko barushaho
 kuzamura imibereho yabo.
 Abaturage bagaragaye ko bashimira leta y'u Rwanda ikomeza
 kubatekerereza ibitekerezo imishinga ibakaza imbere bagaragaye
 ibyifuzo byakurikira:







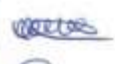




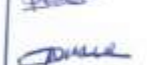



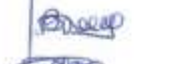




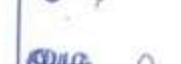
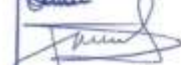
- * Gutomeza guhabwa amatungurwa yo gufata neza umusaruro no
 kubungabunga ibikorwa nemezo bakorewe.
- * Kubona imashini zibafasha kongerera apace umusaruro wabo
 no kubona amashuri meza kurushaho.
- * Kubona imashini zo kubera kuba babonye amezi hafi yabo
- * Kubona inkunga mu gukomeza kurwana n'imirire mibi yabwo
 bato bitabwaga cyane ku gikoni cy'imidugudu.

Inama yasojwe abaturage bigeneye kuzafatanyira n'uwu mushinga
 mu gukomeza kurwanya ubutekere no kugera ku iterambere
 rirambye.

 Chantal UWAMBAZA, CEO
 Umwambaza w'Inama.

URUTONBE RWABITABIRIYE INAMA YO GUSOBANURA UMUSIBINGA
 MUSHYA SAIP YO KUWA 20/03/2018

| AMAZINA | UMUSIBINGA | UMUKONO |
|-------------------------|------------|---------|
| 1 Bamukundiye Amantase | Rwarugaju | |
| 2 Niyitanga Demys | Rwarugaju | |
| 3 Rukunob prence | Rwarugaju | |
| 4 BITOYIKI Mathew | Rwarugaju | |
| 5 Nyohaga Maweri | Rwarugaju | |
| 6 MM Kamana Spetansije | Rwarugaju | |
| 7 MUKESHIMANA Vestin | Rwarugaju | |
| 8 Bi Prayiki Niwonsiya | Rwarugaju | |
| 9 MUGABUKAZI Emmanuel | Rwarugaju | |
| 10 NTAWIZERA | Rwarugaju | |
| 11 MUKANTAMAZA Valens | Rwarugaju | |
| 12 MUKARUKA Clotilde | Rwarugaju | |
| 13 KAZAKORA Jean Claude | Rwarugaju | |
| 14 AFASHIMANA Valens | Rwarugaju | |
| 15. MABUTSISI Augustin | Rwarugaju | |
| 16. Hatabyirukana | Rwarugaju | |
| 17. Bamukundiye | Rwarugaju | |
| 18. Cuvionse Alex | Rwarugaju | |
| 19. Mupfasi Patric | Rwarugaju | |
| 20. Karampira Innocent | Rwarugaju | |

| AMAZINA | UMUBUQUBU | UMUKONO |
|--------------------------|-----------|---|
| 1. Dusabimana Lawrence | Kabonero |  |
| 2. Nyiramuhanda Yozafina | Kabonero |  |
| 3. Bihoiyiki Vestina | Kabonero |  |
| 4. Kanyankye M. Goretzi | Kabonero |  |
| 5. Uwimbatangi Gratia | Kabonero |  |
| 6. Nyiraburuka Marie | Kabonero |  |
| 7. Ntakabonyi Liberata | Kabonero |  |
| 8. Mukanyiza Tanyana | Kabonero |  |
| 9. Lidivina Mukanyagozi | Kabonero |  |
| 10. Morekatete byenya | Kabonero |  |
| 12. Nizyimana Alex | Kabonero |  |
| 13. Ikarukunda Mand | Kabonero |  |
| 14. Habarukema Francis | Kabonero |  |
| 15. Kankindi Narcisa | Kabonero |  |
| 16. Mukanyizi Fabrice | Kabonero |  |
| 17. Bayingana Firibar | Kabonero |  |
| 18. Bizige Jean Claude | Samatare |  |
| 19. Ntizimira Francois | Samatare |  |
| 20. Mukendanzano Jean | Kabonero |  |
| 21. Nyirampirima | Samatare |  |
| 22. Mukanyerigira | Samatare |  |
| 23. Nyiraburakozi | Samatare |  |
| 24. Mukandori | Samatare |  |
| 25. Kibibi Eustache | Kabonero |  |

| Amazima | umunyigali | umukano |
|-------------------------|------------|------------------|
| 1. UWAMURERA Queen | Kabonero | Umuho |
| 2. MUYIMANA | Kabonero | Umuho |
| 3. NTAMBARA | Kabonero | Umuho |
| 4. MUKAMUHIZI | Samatare | Umuho |
| 5. NYANDU | Samatare | Umuho |
| 6. KARAMAHANGA | Kabonero | Umuho |
| 7. HATEGEKA Paul | Ruvungu | Umuho |
| 8. UWI BIZIMANA Special | Ruvungu | Umuho |
| 9. NKIBAZIRIKANA J.B | Kabonero | Umuho |
| 10. MURIGYIGI J.M | Kabonero | Umuho |
| 11. MBARUSHIMANA | Kabonero | Umuho |
| 12. MURARA Casien | Samatare | Umuho |
| 13. MUNYAMBINDA Claude | Samatare | Umuho |
| 14. NISHIMWE Elik | Samatare | Umuho |

Annex 10: MINUTES OF CONSULTATION MEETINGS AND ATTENDANCE LISTS IN KARONGI 12 AND 13 SITES

WYANDIKOMUGO Y'INAMA ITEGURA UMUSHINGA SAIP
HANWE N'ABAFATANYABIKORWA NA KOOPERATIVE.

Inama yatangijye saa saba n'imunota irindwi (13h07), yitabirwye n'ababikoreye bashyamba abandi (Abayobozi ba kooperatike Komeyuru (Komite nyobozi), abayoboz' amashyamba n'abayoboz' b'amatsinda.

Uhoze umushinga muri iyi nama, MBABAZI FIRM, yatangijye ashyamba ababikoreye inama imiterere y'umushinga SAIP ndetse ashyamba ko umushinga muri kugira ngo bashyamba abandi icyaha n'ibindi bishya byiza ko byashyirwamo imbaraga kugira ngo bashyamba gukora ubushya buvumwaga ndetse bashyamba koko.

Ibyifuzo by'ababikoreye bashyamba

→ Gukomeza kubafasha kubona imyunguzamushyamba (imbuto nyiza, ishushyamba,

→ Gutunganya imihanda ifasha muri site

→ Kubatere inkunga mu gutubwira imbuto y'ibirayi muri green house,

→ Ubuworozi buvumwaga magufi kugira ngo ababikoreye babone ifashiriza zo gukomeza compost.

→ Gufasha ababikoreye kubona ishushyamba kuko hari amatsinda/amashyamba menshi i Karongi zuzemwo mu gite amashyamba yakorwaga

→ Ikiyegera cyibaziriza cy'ibirayi

→ Gukomeza gutegura amashyamba n'ingendo shuri buvumwaga

①



na kwibwira imbuta zose bakenera (Ibireye, ibigari,
ibishyamba; ...)

→ Amashyamba agera kuri beneho (FSP, famirira, i amashyamba mu-
tunga n'ibavuye muri, na gusobanurira abagore iko
indye guze icyo ari cyo.

Umwanditsi w' inama
Rurangwa Emile



Umuyobozi w' inama

Ishyamba Despard
President / Komiserari



Inyamba umushyamba y'inama yo gusobanura iby'umushyamba SAIP

Inama yatangije saa munani n' igice (14h30)
yatabirwa n' abahinzi n' abahagarariye abandi
(abayobozi ba Koperative KOABIBIKA (Komite
nyobazi), abayobozi b' amazone n' abayobozi b'
amatsinda.

uhagarariye umushyamba muri icyi nama, MBABAZI
Fiona, yatangije asobanura abitabiriye inama imutere
y' umushyamba SAIP ndetse anabwiriza ko umushyamba
munini ugira ngo bagaragaze ahari, cyaho n' ibindi
bishya bifuza ko byashyirwamo imbaraga kugira
ngo barushaho gukora ubuhinzi bw' umushyamba
ndetse bagahingira isoko.

Ibyifuza by' abahagarariye abahinzi
IBYO UMUSHYAMBA LWT WAFASHIJE ABAHINZI

- Umushyamba wafashije abahinzi kurwanya
isuri hakorwa amaterasi y' indinganire.
- Abahinzi bashima ko umushyamba wafashije
kubakubwira ubwambere bw' imyaka.
- Umushyamba watumye abahinzi bunguka ubumenyi
ku byiza n' imibungire izezweho.
- Umushyamba LWT wafashije abahinzi bitabira
gukoroha imbuta y' indobanure n' amafumbire
(imvurunganda + imbarura).
- Umushyamba LWT wafashije abahinzi guhinga
muri seza (season) zose bitewe n' ubuho wafashije
abahinzi kubira imyaka mu gihe cy' imishyamba
- Umushyamba LWT wakunguriye abahinzi gukoroha
inyongeramusarura kuri imunganire (Voucher)

IBYIFUZO BY'ABAHINZI KUGIRANGO UMUSARURO
WIYONGEZE MU BWINSHANO MU BWIZA


- Abahinzi bifuza ko bahuzwa na za banki bakaba babaroherezwa mu gufata inguzanyo.
- Abahinzi bifuza ko amazi yubizwa yasubukurwa.
- Gufasha abahinzi kubabonera isoko ndetse no kubahura n' abagufi yaba mu gihugu ndetse no hanze y' ugihugu.
- kubaka ubushobozi bwa koperative (gushakira koperative abakazi, ...).
- Abahinzi bifuza ko ubushobozi bukabongerwa.
- Guhungura abahinzi ko zibabwirako abandi mu byiciro bitandukanye.
- Guhungura abaturage ku mirire myiza.
- kongera ibikorwa byifashishwa mu kubira imyaka (imipira yubizwa).
- Abahinzi bifuza ko ubutaka bukabongerwamo ishura ndetse n' imborera gahaye kongerera ubutaka ubushobozi bwa gutanga umusoro.
- kubafasha kubaka agasoko n' ibusanyirizo kugirango biteze imbere kandi bahabire hafi.
- kubafasha kubaka umuhanda urambye (ubonye).
- kubafasha kubaha amatunga abafasha yo kugera ngo babashe kubona imborera nyishi (ibagije).
- kubaka ubwanikira muri buri zone.

- kongerera koperative ubushobozi buwa gukuruzo. ingongera umusaruro
- Gufasha amahinzi kumenga imitwe y'ubutaka burako n'icyakurwa kugira ngo ubutaka butange umusaruro muvunshi ushoboka. (Conducting soil test)
- kongerera abahanzigubushobozi buwa gufata neza ibikorwa remezo byifashishwa mu bushinzi.

Umwanditsi :

BATUMANYETTO Gilbert 

Umuyobozi w'INAMA:

GASHYEKERO Pascal 
President / KOABIBIKA



URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA | UMUKONO |
|----|-------------------------|--------------------------------|----------|---------|
| 1 | SIOTZASAKUWIRA Innocent | RUBENGERA | M | |
| 2 | HARUGABARUKO Cyrille | RUBENGERA | M | |
| 3 | Sibomane Théogene | Rubengera | M | |
| 4 | Ntamungu Valens | Rubengera | M | |
| 5 | NAWABIJE Damien | Rubengera | M | |
| 6 | KACINA Porokis | Rubengera | M | |
| 7 | KACHRE Bonaventur | Rubengera | M | |
| 8 | Muhamuhirwa Donatila | Rubengera | F | |
| 9 | MUKA fideli yasefa | RUBABANO Rubengera, mukinza | F | |
| 10 | NKABIRIMYE Jean | RUBENGERA | M | |
| 11 | KARINGARIRE JAPPO | GASEKE RUBENGERA | M | |
| 12 | Simdikobubwabo | MURAMBA RUBENGERA | M | |
| 13 | KAVUZE XAVIO | Rubengera | M | |
| 14 | MURAMUNDA Michel | RUBENGERA | M | |
| 15 | Kabanyana Cyporance | RUBABANO | F | |
| 16 | MUKANSONERA Herena | Rubengera | F | |

URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA, <i>i tsinda</i> | UMUKONO |
|----|----------------------|-----------|---------------------------|------------------|
| 1 | BWIRIKA Anastase | RUGABANO | ICYUZUZO (M) | _____ |
| 2 | UWAYISABA. NALISSA. | RUGABANO. | IDUFATANYE (M) | _____ |
| 3 | URIRWAZO. Patricia. | RUGABANO. | Twita Birumukira (F) | _____ |
| 4 | Ukoba ANASTASE' | RUGABANO | NGUIMUJEBE (M) | _____ |
| 5 | YUMUHOBA Emili | RUGABANO. | Kurumunyenzira (M) | _____ |
| 6 | HAKIZIMANA Eric | RUBENGERA | Manababiru (M) | _____ |
| 7 | SENZENZI APPOIMBIJE | RUGABANO | TWITABIRUMURIMO (M) | _____ |
| 8 | USABIMANA Eliane | RUBENGERA | KANA ZABIZU (F) | _____ |
| 9 | NYIRAHUGUJE Odeta | RUBENGERA | '' '' (F) | _____ |
| 10 | MUKAKARISA Perajiza | RUBENGERA | KANA ZABIZU (F) | _____ |
| 11 | Rwabisotheaphis | Rubengera | Zukingwa (M) | _____ |
| 12 | YAKUJIJEMARIZO | Rubengera | MANABABIRU (F) | _____ |
| 13 | MUKANSONERA Herena | Rubengera | MANABABIRU (F) | _____ |
| 14 | Kubanyana Siferansi' | Rugabano | NGUIMUREBU (F) | _____ |
| 15 | AROBAMPZE E.M.V | RUGABANO | ICYUZUZO GABO | _____ |
| 16 | SIMZIBIRAMUKA olivie | RUGABANO | M | _____ |

URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA | UMUKONO |
|----|--------------------------|---------------------|----------|----------------------------------|
| 1 | Hakizimana Amositesi | RUBENGERA | G | Handwritten signature |
| 2 | MUKAMUGEMA Rufsim | RUBENGERA | P | Handwritten signature |
| 3 | MUKESHIMANA Juvén | RUBENGERA | P | Handwritten signature |
| 4 | Vidurmana Eriosi | RUBENGERA | G | Handwritten signature |
| 5 | BAVUGUYUMVA Fredet. | RUBENGERA | G | Handwritten signature |
| 6 | NTAMWEMEZI KARISISI | RUGABANO | G | Handwritten signature |
| 7 | MUSHIMWAGA SIPENASI | RUBENGERA | F | Handwritten signature |
| 8 | MUKAKABERA ARIVERA | RUGABANO | F | Handwritten signature |
| 9 | NYIRABUTOKAGURWA Kallime | RUBENGERA | F | Handwritten signature |
| 10 | MUNYAMAHAZI Japira | RUBENGERA | M | Handwritten signature |
| 11 | Simuhobukwabo | MURAMBA/RUBENGERA | M | Handwritten signature |
| 12 | Karimamiye Japira | Gashyamba/RUBENGERA | M | Handwritten signature |
| 13 | | | G | Handwritten signature |
| 14 | HAKIZIMANA Claude | RUBENGERA | G | Handwritten signature |
| 15 | Rwasibhothophile | RUBENGERA | M | Handwritten signature |
| 16 | yakujijemarirota | RUBENGERA | F | Handwritten signature |

URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA, Ibinda | UMUKONO |
|----|-------------------------|-----------|------------------|--------------------|
| 1 | Ushimye monobele wajeme | Rubengero | (Dubarere) G | Ushimye |
| 2 | Nyiraneze Polinario | Rubengero | (Intego) F | Ushimye |
| 3 | Mukakwera veritina | Rubengero | (Intego) F | Ushimye |
| 4 | Mukashubana zipesiyaza | Rubengero | (Intego) F | Ushimye |
| 5 | Muzolimana sarafina | Rubengero | (Intego) F | Ushimye |
| 6 | Nyirabucyeje Dan Cillei | Rugabano | tumanyinjira | Ushimye |
| 7 | USHIMANA Felicien | Rubengero | Kwanyanga | Ushimye |
| 8 | Gashyehero pascale | Rugabano | tumanyinjira | Ushimye |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |

URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

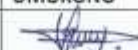




Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA | UMUKONO |
|----|----------------------------|-----------|----------|---------|
| 1 | NYAKABEMBE Wenzilian | MUKURU | M | |
| 2 | YOBIMANA DANIEL | MUKURU | M | |
| 3 | HABINEZA G. DAMUR | MUKURU | M | |
| 4 | NGERAAHO Evariste | Rubengera | M | |
| 5 | GAKWEREZE Andre | MUKURU | M | |
| 6 | NYABYENDA THEODOR | MUKURU | M | |
| 7 | NTIBIZINDERWA Sinicengwa | MUKURU | F | |
| 8 | MBATHUNGIREHE Mani Senigwa | MUKURU | F | |
| 9 | NTUYEMUKAGA Theogene | MUKURU | M | |
| 10 | ISANDEGEYE Isamirinda | MUKURU | F | |
| 11 | IZARONIMPA Celestin | MUKURU | M | |
| 12 | Sibabufingo ANOSIYA TA | MUKURU | F | |
| 13 | Ruribose Pascalie | Mukuru | F | |
| 14 | BANDIRIJE Jean | MUKURU | M | |
| 15 | UWINYIZA Appeline | Rubengera | F | |
| 16 | SEBURYAUNAI- THEOGENE | MUKURU | M | |

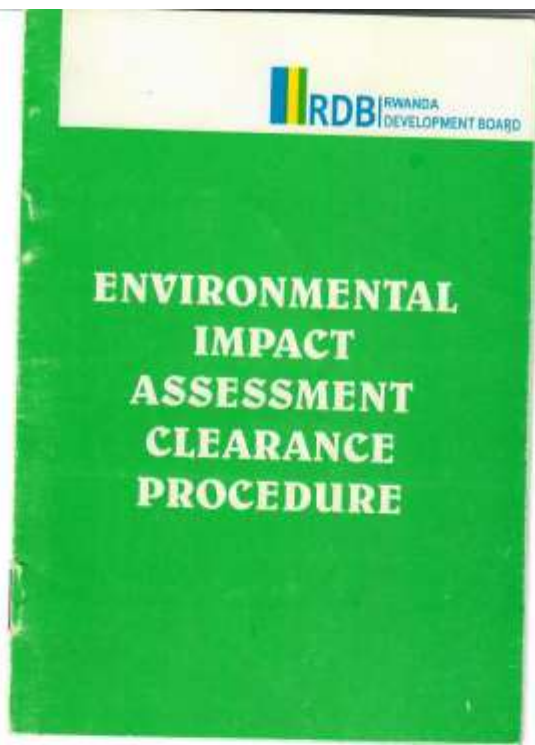
URUTONDE RW'ABITABIRIYE INAMA KU KUNGURANA IBITEKEREZO KU MUSHINGA WA SAIP

SITE: KARONGI-12 & KARONGI-13

Date: 2/3/2018

| Nº | AMAZINA | UMURENGE | IGITSINA | UMUKONO |
|----|---------------------|----------|----------|---|
| 1 | ISHYAKA Isépond | MUKURA | M. |  |
| 2 | BIZARDORA Gashyamba | MUKURA | M |  |
| 3 | AKUMUNTO Yestamp | MUKURA | F |  |
| 4 | Singizomunwe cyirwa | rukura | M |  |
| 5 | rukurayumba umazigo | rukura | F |  |
| 6 | | | | |
| 7 | | | | |
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Annex 11. Project brief and RDB ESIA clearance procedure



Background

The Government of Rwanda is committed to ensuring that the minimal state of the nation's capital base is overcome through increased investment both domestic and foreign. In this spirit Rwanda Development Board (RDB) was created in September, 2008. The RDB combines eight former government agencies: the Rwanda Investment and Export Promotion Agency (RIEPA); the Rwanda Office of Tourism and National Parks (ORTPN); the Privatization Secretariat; the Rwanda Commercial Registration Services Agency; the Rwanda Information and Technology Authority (RITA); the Center for Support to Small and Medium Enterprises (CAPMER); the Human Resource and Institutional Capacity Development Agency (HIDA); and part of the Rwanda Environment Management Authority (REMA) in charge of Environmental Impact Assessment (EIA), awareness and cleaner production.

The Organic Law N° 04/2005 of 08/04/2005 determining the modalities of protection, conservation and promotion of environment in Rwanda in its article 67 stipulates that "every

project shall be subjected to environmental impact assessment before obtaining authorisation for its implementation. This applies to programmes and policies that may affect the environment".

With a purpose to meet the objectives and goals of the Investment Implementation Division this clearance procedure is aimed at facilitating and informing our clients on the procedures and the duration of services regarding EIA Certification.

Step 1: Application and submission of project brief by the Developer/Client

The client submits an official application which includes a project brief of the proposed project to Investment Implementation Division/RDB.

Required information:

- i) Name, title and address of developer.
- ii) Name, purpose, objectives and nature of project, including attributes such as size of project, design, activities that shall be undertaken during and after the establishment of the project, products and inputs, sources of inputs, etc.

- iii) Description of the proposed project site and its surroundings and alternative sites, if any, where the project is to be located.
- iv) Description of all planned activities and all materials to be used ;
- v) Description of how the proposed project and its location conform to existing laws, regulations and policies governing such project and the use of the site/area proposed for its location.
- vi) Description of any likely environmental impacts that may arise due to implementing various phases/stages of the project and proposed mitigation measures thereto.
- vii) Description of all mitigation and compensating measures to reduce, minimize or offset the negative impacts ;
- viii) Description of any other alternatives, which are being considered (e.g.siting, technology, construction and operation procedures, sources of raw materials, handling of wastes etc, decommissioning/closure and site restoration).
- ix) Any other information that may be useful in determining the level of EIA required (e.g. layout plan, architecture design, etc).

- x) **Attachments: land document (cadastral/ deed plan, lease contract)**

Note: We kindly request our clients/investors to submit all information needed in the above mentioned project brief to save time.

Step 2: Screening and site visit

After receipt of the project brief RDB screens it and if applicable a site visit can be carried out within 5 days. Within that time (5 days after project brief) to Investment Implementation Division /RDB communicates to the Client/ Investor on the progress of his/her project.

Step 3: Preparation of Terms of Reference and submission of ToR to the Developer/ Client by Investment Implementation Division /RDB.

Duration: Within thirty (30) calendar days after receipt of the project brief, Investment Implementation Division /RDB sends the ToRs to the Client.

Note: Step 2 and 3 may take at least thirty (30) calendar days from the application to the reception of ToRs in accordance with the Ministerial Order N° 003/2008 of 15/08/2008 relating to the requirements and procedure for environmental impact assessment

Step 4: EIA study

The Client/an Investor recruits the EIA expert to carry out the assessment at his/her expenses.

Duration: Depends on the size of the project and the capacity of the EIA Expert.

Step 5: EIA review

After the study, the developer/client submits the EIA study to Investment Implementation Division/RDB. Upon the receipt of the environmental impact study report, RDB analyzes the report to verify its conformity to the Terms of Reference.

Duration: within twenty (20) working days, Investment Implementation Division/RDB accepts or requests for additional information from the developer. This also depends on the nature of the project. If the project requires more time, then RDB within (20) informs the client of extended period within which the acceptance or rejection report would be communicated.

Step 6: EIA Certificate

After approval of the EIA study, Investment Implementation Division /RDB prepares the EIA certificate (together with conditions if necessary, after that the client is requested to sign condition of approval).

NB:

In case a project is not approved, a developer may appeal against the decision of the Authority (Investment Implementation Division/RDB) to the Ministry having environment in its attribution within thirty (30) working days from the date of the decision notification.

