ACCELERATING IMPACTS OF CGIAR CLIMATE RESEARCH FOR AFRICA (AICCRA) (P173398)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

Pilot of Climate Smart Agricultural Innovations and Climate Information Service Technologies in Zambia

December 2022

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Acronyms

AICCRA	Accelerating Impacts of CGIAR Climate Research for Africa
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centre for International Tropical Agriculture
CIS	Climate Information Services
CITES	Convention on International Trade in Endangered Species
COMACO	Community Market for Conservation
CSA	Climate-Smart Agriculture
CSO	Civil Society Organizations
CoC	Code of Conduct
E&S	Environmental and Social
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMCA	Environment Management and Co-ordination Act
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESRM	Environmental and Social Risk Management
GBV	Gender Based Violence
GM	Grievance Mechanism
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
ICRISAT	International Crop Research Institute for Semi-Arid Tropics
IDA	International Development Association
IITA	International Institute of Tropical Agriculture
IWMI	International Water Management Institute
LMP	Labor Management Procedures
NAP	National Action Programme
NFCS	National Frameworks for Climate Services
NHCC	National Heritage Conservation Commission
NPCC	National Policy on Climate Change
OHS	Occupational Health and Safety
PLHIV	People Living with HIV
PMC	Project Management Committee
PPE	Personal Protective Equipment
PWD	People with Disabilities
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SME	Small and Medium-Scale Enterprises
UNCCD	United Nation Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars
USSD	Unstructured Supplementary Service Data
ZARI	Zambia Agriculture Research Institute
ZEMA	Zambia Environmental Management Authority
ZMD	Zambia Meteorological Department

EXECUTIVE SUMMARY

Background

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project being implemented in Africa to help deliver a climate-smart African future, driven by science and innovation in agriculture. It is led by the Alliance of Biodiversity and Centre for International Tropical Agriculture (CIAT) and supported by a grant from the International Development Association (IDA) of the World Bank.

The Project's **Development Objective** is to strengthen the technical, institutional, and human capacity needed to enhance transfer of climate-relevant information, decision-making tools, and technologies in support of scaling efforts in IDA-eligible countries in Africa. The project is structured into 4 major components and comprises of **Component 1:** Knowledge generation and sharing; **Component 2:** Strengthening partnership for delivery; and **Component 3:** Validating climate-smart agriculture (CSA) innovations through piloting, testing, and demonstration.

AICCRA-Zambia aims to improve water, food, and energy security through access to knowledge, technologies, and decision-making tools to strengthen climate resilience in Zambia's agriculture and food systems in the face of a hotter and drier climate. The project aims to strengthen local capacity by training intermediaries to communicate climate services, as well as by implementing a local internship program; providing accelerator grants for SMEs and entrepreneurs; and assessing challenges in the enabling environment for startups. It also seeks to inform policy and enhance investment plans by identifying suitable financing mechanisms and using fiscal tools to de-risk private sector investments in food value chains.

The AICCRA-Zambia activities with the SMEs are focused on co-funding new investments with private sector to address development and business challenges related to the scaling of the developed CSA technology packages. This collaboration is focused on scaling out and demonstrating several CSA technologies developed by AICCRA-Zambia and are suitable for smallholder farmers in the various agro-ecological zones.

The scale-out and demonstrative of these CSA innovations and technologies are expected to lead to some environmental and social (E&S) risks at the proposed sites for demonstrations. In line with this expectation and in accordance with the requirements of the project's Environmental and Social Risk Management (ESRM) guide, the AICCRA-Zambia team conducted site specific E&S screening and broader E&S review on the proposed scale-out CSA innovations. Based on the Environmental and Social (E&S) risks identified through the assessment, this Environmental and Social Management Plan (ESMP) has been prepared to outline measures for avoiding and mitigating those risks.

Rationale for the Preparation of the Environmental and Social Management Plan (ESMP)

The environmental and social screening exercise conducted on the proposed demonstration and scale-out of CSA demonstration in AICCRA Zambia confirmed a range of Environmental and Social (E&S) risks, which if not mitigated, could cause harm to people and the environment. Based on these findings, this ESMP is prepared to clarify (i) the measures that will be taken during the implementation of project activities to eliminate or offset adverse E&S impacts, or to reduce them to acceptable levels; and (ii) actions needed to implement these measures.

Purpose, Objectives and Scope of the ESMP

The purpose of this ESMP is to consider and develop proper measures to decrease the possibility of environmental degradation during all phases of the project, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety.

This ESMP provides a practical plan to mitigate and respond to the potential E&S risks identified on the proposed demonstration of CSA innovations and CIS technologies in Zambia. The plan specifically details:

i. Environmental and social risks review of proposed innovations, and the description of the sites identified for CSA demonstrations and key E&S risks identified.
ii. Relevant national and international legal requirements and guidelines.
iii. Relevant baseline environmental and social conditions.
iv. Measures to be taken during the implementation and operation of a project to eliminate, mitigate or offset adverse environmental and social impacts or reduce them to acceptable levels.
v. Environmental & social management and monitoring plans in compliance with the relevant environmental laws.

Scope of work

The proposed CSA innovations and CIS technologies will evolve around five CSA bundles prioritized by AICCRA Zambia. These are as follows.

- **CSA Bundle 1: Sustainable Financing for Off Grid Solar Irrigation -** Addressing physical and economic water scarcity through the provision of off-grid solar pumps to smallholder farmers in key value chains and supporting adaption through sustainable finance solutions

- **CSA Bundle 2: Integrated Aquaculture Agriculture Systems** - Promote integrated management and use of aquaculture, agriculture, and providing access to improved/quality and resilient fish seed by linking farmers to trained seed producers in their communities. This will involve renovating existing fish hatcheries and fishponds on land.

- **CSA Bundle 3: Addressing Drought through Climate Smart Seed Varieties** - Improve access to multi-stress tolerate varieties in partnership with a wide range of actors along the seed value chain

- **CSA Bundle 4: Diversified integrated mixed chicken / goats - legume systems** - Diversified integrated crop-livestock systems in support of adaptation to climate change through increased returns on farm enterprise investment.

- **CSA Bundle 5:** Gender & Social Inclusion - Improving social inclusion and gender sensitive impacts on the acceleration of CSA.

Further details on the bundles as well as the application forms are highlighted in Table 1.

National Policy, Legal and Institutional Framework

The Zambia's Constitution of 1991 with amendments through 2016 is the fundamental law of the country that provides the basis from which all other laws are derived. The relevant national and sector legislations, policies, institutional frameworks, and international conventions relevant to CSA demonstration are summarized below.

Relevant Acts and Regulations	
The Environmental Management Act, 2011	The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations.
The Water Resource Management Act, 2011	The Land's Act (Cap 184) No. 29 of 1995
The Employment Act, No. 3 of 2019	National Heritage Conservation Commission 23 of 1989 and 13 of 1994 CAP 173.
The Public Health Act, Cap 295 of 1930	The Fisheries Act No. 22 of 2011
Water Resources Management Act, 2011 (No. 21 of 2011)	
Relevant Policies and Plans	
National Development Plan, Vision 2030	National Agricultural Policy 2012 -2030
The National Policy on Climate, 2016	National Water Policy, 2010
International Conventions	
The United Nations Framework Convention on Climate Change (UNFCCC)	
The United Nations Convention to Combat Desertification (UNCCD)	

E&S Risks Identified

Overall, the potential E&S risks envisaged on the pilot of CSA/CIS innovations/technologies include:

- Habitat degradation through vegetation clearance and land digging and consequently loss of biodiversity, especially of organisms that are prevalent in the micro-areas.
- Occupational injuries from equipment cuts, slips and falls;
- Fish feeds, hormones, and other chemicals used for the treatment of fish may contaminate the natural water systems if water from the ponds is drained and released into the natural water systems.
- Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts, hence may weaken the gene pool of the wild fish.
- Attraction of new biological species into the area, principally predators which will include snakes, monitor lizards, and prey birds.
- Ponds may be a source of diseases such as malaria and bilharzia by serving as breeding grounds for mosquitoes and bilharzia parasites.
- The fishponds could act as drowning hazards to children, livestock, and even workers.
- Exclusion of vulnerable groups (women and youth, elderly, disabled, etc.) farmers from participating in learning sessions to be organized around CSA innovations and demonstration farms;
- Exposure to the COVID-19 infection, which may arise from the interaction of project workers with cooperative members or between project workers.
- Gender Based Violence (GBV) in relation to contact between project workers and members of the cooperative groups.
- Absence or lack of GRM pathways for vulnerable cooperative members to voice grievances.

During the on-farm screening activities, neither flora and fauna endangered species or at risk nor any protected species or areas have been identified next to the study areas.

Environmental and Social Risks Mitigation Plan

This ESMP considered a number of mitigation measures to eliminate the adverse E&S risks and impacts that were identified. These measures include:

- Fish farming safety and risks control measures;
- Occupational health and safety and risk control measures;
- Erosion control;
- Gender and social inclusion principles;
- SEA/SH prevention and response principles; and
- Stakeholder engagement and grievance redress mechanisms.
- Electronic waste management measures
- Integrated pest management measures

Conclusion

AICCRA-Zambia acknowledges that the activities and operations during the implementation of CSA innovations could potentially impact the environment, workers, and the communities, and is therefore very mindful of its obligations towards the protection of the environment and ensuring the health and safety of the farmers and communities within the project area. AICCRA-Zambia will continue to invest in measures that ensures safe environmental protection and operate in accordance with the Zambia laws as well as the Environmental and Social Framework of the World Bank.

2.0 BACKGROUND

2.1 Introduction

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) is a project being implemented in Africa to help deliver a climate-smart African future driven by science and innovation in agriculture. It is led by the Alliance of Biodiversity International and the Centre for International Tropical Agriculture (CIAT) and supported by a grant from the International Development Association (IDA) of the World Bank.

The **Project Development Objective** is to strengthen the technical, institutional, and human capacity needed to enhance the transfer of climate-relevant information, decision-making tools, and technologies in support of scaling efforts in IDA-eligible countries in Africa. The project is structured into 4 major components and comprises of **Component 1:** Knowledge generation and sharing; **Component 2:** Strengthen Partnership for Delivery; and **Component 3:** Validating Climate-Smart Agriculture Innovations through Piloting.

AICCRA-Zambia, led by the International Water Management Institute (IWMI), is focused on bridging the gap between research institutes and development organizations, to promote the adoption of improved technologies including digital climate advisories, for the purpose of enhancing the resilience of the country's agriculture and food systems. AICCRA-Zambia aims to improve water and food security in Zambia through access to knowledge, technology, and decision-making tools to strengthen climate resilience in Zambia's agriculture and food systems in the face of a hotter and drier climate.

AICCRA Zambia has brought onboard strategic partners from government and the private sector to scale out actionable Climate Information Services (CIS) and Climate-Smart Agriculture (CSA) options for priority value chains (e.g., cereals and fisheries) to end users while addressing the business challenges relating to the scaling of the developed CSA technology packages. The proposed scale out of CSA innovations with the private sector actors evolves around these five CSA bundles (i) sustainable financing for off grid solar irrigation (ii) integrated aquaculture agricultural systems (iii) addressing drought through climate smart seed varieties (iv) diversified integrated mixed chicken (v) gender and social inclusion.

As envisaged, the partnership with small and medium-scale enterprises (SMEs) to scale out CIS and CSA innovations is expected to lead to some environmental and social (E&S) risks. In line with this expectation and in accordance with the requirements of the project's Environmental and Social Risk Management (ESRM) guide, the AICCRA-Zambia team conducted partner and site-specific E&S screening, which identified a range of E&S risks, which if not mitigated, could cause harm to people and the environment.

The AICCRA-Zambia team has prepared this Environmental and Social Management Plan (ESMP) to guide the mitigation and response to the E&S risks identified with collaborating SMEs and on proposed sites for demonstration of CSA innovations under the AICCRA-Zambia project.

This ESMP has been prepared in tandem with a separate Labor Management Procedures (LMP), Sexual Exploitation, and Abuse (SEA)/Sexual Harassment (SH) Mitigation Action Plan, and a Stakeholder Engagement Plan (SEP) including a grievance mechanism (GM), as a collective set of mitigation instruments for managing E&S risks envisaged on AICCRA-Zambia activities. This ESMP is a living document, which will be updated and re-disclosed as and when new risks are identified, or field activities are expanded.

2.2 Scope of Work

The table 1 below provides details of the five CSA bundles prioritized by AICCRA Zambia for the scale out of CSA innovations, implementing partners and scope of activities. The implementation of each CSA bundle respectively receives technical backstopping from IWMI, World Fish, International Institute for Tropical Agriculture (IITA), International Crop Research for Semi-Arid Tropics (ICRSAT) and IWMI.

Table 1: Scope of Work

CSA Bundle	Focus	Implementing Partners	Scope and Summary of Key Activities
Bundle 1: Sustainable Financing for Off Grid Solar Irrigation	Addressing physical and economic water scarcity through the provision of off-grid solar pumps to smallholder farmers in key value chains and supporting adaption through sustainable finance solutions.	Limi Links, Lupiya and Vitalite	The partners are working as a consortium to achieve the overall aim of the bundle, but with a focus on the following respective activities. **Lima Links** • Leverage Lima Links' 111,000+ farmer user base to survey farmers and design a farmer-centric agri loan product ready to take to market. • Offer an existing Lima Links farmer user database as an avenue for marketing off-grid solar irrigation pumps to prospective end users and to generate demand for 2,000+ additional irrigation pump/CSA technology sales. • Pursue Lima Links' existing partnership with Zambia Meteorological Department (ZMD) to provide climate information services via Lima Links' USSD platform. **Lupiya** • Design and test farmer off-grid irrigation loan products that accelerate uptake of off-grid irrigation in legumes, horticulture, and poultry production • Pre-finance the procurement of 250 off-grid solar irrigation pumps from Vitalite. **Vitalie** • Supply 250 off-grid solar irrigation pumps to be prefinanced by Lupiya for small-scale farmers. • Use community embedded agents to offer after-sales service to farmers and monitor repayment of loans.
Bundle 2: Integrated Aquaculture Agricultural Systems	Promote integrated management and use of aquaculture, agriculture, and livestock & provide access to improved/quality and resilient fish seed by linking farmers to trained	Hopeways, Triple Blessings Center, Kasakalabwe multi-cooperative, ADSEK, Kasama Arts Council, EUNIMOS	**Hopeways** • Provide extension services and technical demonstration of climate resilience layout of fishponds, construction, and management of fish species. • Organize farmer field schools and conduct training for women and youth emerging in the fish industry on climate resilience management of commercial fishponds. **EUNIMOS** • Provide extension services and demonstrations of improved integrated livestock and fish production techniques to small-holder farmers. • Organize farmer field schools and conduct training for women and youth emerging in the fish industry on the management of commercial fishponds and farms. **Kasakalabwe Multi-Cooperative**

	seed producers in their communities.		• Upgrade climate resilience fish hatchery and greenhouse activities and use it as a venue to provide extension services and demonstration of integrated production and sex reversal of fingerlings. • Construct water tank stands for installation of water tanks which will facilitate water supply by gradient to the green house to maintain oxygen in the tilapia. • Construct cement ponds in the greenhouse for growing fries to fingerling size, up to sailing point. • Increase production and supply of high-quality sex reversal fingerlings, which are not locally available in the entire Luapula and Northern Provinces of Zambia. • Expand supply and delivery of resilience fingerlings to small holder out growers. • Conduct training and field shows for women and youth emerging in the aquaculture industry. **ADSEK** • Provide extension services and training to emerging smallholder fish farmers on commercial fish feeds for different species of fish. **Kasama Arts and Council** • Enhance dissemination of climate information services through social and cultural innovations such as road shows/drama. **Triple Blessings** • Provide extension services on fish harvesting, sorting, and packaging and expand the fish off-taker scheme for smallholder fish farmers. • Distribute information on fish marketing channels and link up smallholder out growers to off takers.
Bundle 3: Addressing Drought through Climate Smart Seed Varieties	Improve access to multi-stress tolerant varieties in partnership with a wide range of actors along the seed value chain.	Agova, iDE, Zambia Agriculture Research Institute (ZARI), Corteva Plant Catalyst	**iDE** • Set up 200 demonstration plots for maize and soyabean and collaborate with PlantCatalyst and Corteva to demonstrate improved seed varieties and the use of PlantCatalyst boosters in the Southern, Eastern, And Central provinces of Zambia. • Train 666 (333 in the Southern and 333 in the Central provinces) iDE lead farmers as Community Agents • Collaborate with PlantCatalyst to organize farmer field schools in Southern, Central, And Eastern Zambia provinces to train farmers on the proper application of Plant Catalyst boosters on maize, soyabeans, and groundnuts. • Disseminate climate data and meteorological reports to community agents and lead farmers. • Develop and broadcast a local radio program to disseminate climate information data and meteorological reports for catchment provinces. • Link farmers and community-based seed producers to capital providers and equipment suppliers. **ZARI** • Collaborate with PlantCatalyst to conduct multi-location on-farm trials with PlantCatalyst booster and climate-smart seed varieties of maize, groundnut, and soyabean to assess biological responses and economic viability. • Conduct multiplication of early generation seed varieties. • Undertake crop and soil analysis to determine appropriate agronomic practices, seed variety suitability, PlantCatalyst element uptake, and application methods.

			Corteva • Distribute improved seed varieties to community agents, and agribusiness in the Southern, Eastern, And Central provinces. • Hold seed fairs for maize and soybeans as well as subsidized PlantCatalyst in selected areas in Southern, Eastern, and Central Zambia. **Plant Catalyst** • Develop and broadcast a local radio program on PlantCatalyst in catchment provinces. • Collaborate with iDE to organize farmer field schools in the Southern, Eastern and Central Zambia provinces to showcase the use of PlantCatalyst on maize, soybeans and groundnuts. • Distribute Plant Catalyst packages to community agents, and agribusiness in Southern, Eastern, And Central provinces of Zambia. **Agova** • Lead the management of the project activities by ensuring that project activities are implemented as planned and meet the intended milestones and deliverables. • Lead on project monitoring, evaluation, and learning by conducting baseline and endline surveys, monitoring progress, and reporting. • Collaborate with ZARI to conduct a knowledge, attitude, and practices survey with a sample size of farmers drawn across the three regions to determine practices, especially regarding climate smart inputs, CIS, and incentive drivers.
Bundle 4: Diversified Integrated Mixed Chicken/Goat-Legume System	Diversified integrated crop-livestock systems in support of adaptation to climate change through increased returns on farm enterprise investment.	Community Market for Conservation (COMACO)	• Support the organizational strengthening of the Chitetezo Cooperative Federation. A federation of 55 farmer cooperatives that give equal opportunity to women and youth to become more profitable and food secure by adopting an agroforestry and legume-based farming system with their inherent conservation benefits. • Recruitment of a full-time federation manager to oversee implementation of workplan for building a coalition of farmer cooperatives around stated goals. • Undertake financial literacy and management training for the executive members to lead the management of a warehouse receipt system on behalf of its cooperative members. • Strengthen the federation to maintain an active voice on the COMACO local language talk radio program to disseminate information on the threats of climate change, harmful farming practices, and the benefits of practicing crop rotation with legumes alley cropped with Gliricidia sepium.
Bundle 5: Gender and Social Inclusion	Improving social inclusion and gender sensitive impacts on the acceleration of CSA	Better World Innovations	• Train 9 cooperative groups (made up of 3 groups of People Living with HIV (PLHIV), 1 group of Gender-Based Violence Survivors, 2 groups of women-led households, and 3 groups of young people) in the Central province of Zambia to engage in profitable and sustainable soya bean and groundnut farming. • Provide ongoing extension advisory support to the cooperatives on agronomic farming practices. • Provide regional specific climate information and train cooperative coordinators in the use of a mobile app to access climate and marketing information on soyabean. • Facilitate groups' access to climate resilient seed varieties, and • Link up cooperatives to off takers for sales of harvested crops.

2.3 Rationale for the Preparation of the ESMP

The environmental and social screening exercise conducted on proposed activities in Table 1 to scale out CSA innovations around the priority bundles confirmed a range of E&S risks, which if not mitigated, could cause harm to people and the environment. Based on these findings, this Environmental and Social Management Plan (ESMP) is prepared to clarify (i) the measures that will be taken during the implementation of project activities to eliminate or offset adverse E&S impacts, or to reduce them to acceptable levels; and (ii) actions needed to implement these measures.

2.4 Purpose, Objectives, and Scope of the ESMP

The purpose of this ESMP is to consider and develop proper measures and controls to decrease the potential for environmental degradation during all phases of the project, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety. This ESMP provides a practical plan to mitigate and respond to the potential E&S risks identified for the proposed demonstration of CSA innovations and CIS technologies in Zambia. The specific objectives of the ESMP are to:

i. Provide an assessment of the environmental and social risks of project activities and sites proposed for CSA demonstrations;
ii. Identifying and addressing relevant national and international legal requirements and guidelines;
iii. Describe relevant baseline environmental and social conditions;
iv. Detail the measures to be taken during the implementation and operation of a project to eliminate, mitigate or offset adverse environmental and social impacts or reduce them to acceptable levels.
v. Develop environmental & social management and monitoring plans in compliance with the relevant environmental laws.
vi. Document and address environmental and social concerns raised by stakeholders and the public in consultation events and activities.

3.0 PROJECT DESCRIPTION

3.1 The AICCRA Project and its Components

AICCRA is a World Bank supported project that seeks to strengthen the technical, institutional, and human capacity needed to enhance the transfer of climate-relevant information, decision-making tools, and technologies in support of scaling efforts in International Development Association (IDA) eligible countries in Africa. It supports critical knowledge creation and sharing, and capacity building activities to enable regional and national-level stakeholders to take Climate Smart Agriculture (CSA) innovations to scale. It will achieve this by further strengthening partnerships between CGIAR and regional and local research institutes, universities, civil society organizations (CSO), farmer organizations, and the private sector. AICCRA will facilitate the development of Climate Information Services (CIS) and promote the adoption of bundle CIS and CSA solutions across sub-regions within Africa that are extremely vulnerable to climate change. The project will also support on-the-ground activities in selected countries in Western, Eastern,

and Southern Africa where CGIAR science has the greatest chance of success in delivering catalytic results, which can be adopted by other countries in the region through spillover effects and regional engagement.

The **Project Development Objective** is to strengthen the technical, institutional, and human capacity needed to enhance the transfer of climate-relevant information, decision-making tools, and technologies in support of scaling efforts in IDA-eligible countries in Africa. Based on this overall objective, the project is structured into four components**:**

Component 1 - Knowledge generation and sharing: Supporting the generation and sharing of knowledge products and tools designed to address critical gaps in the design and provision of agricultural climate services, enable climate-informed investment planning, and contribute to the design of policies to promote uptake of CSA and CIS at the regional, sub-regional, and national levels.

Component 2 - Strengthen partnership for delivery: Strengthening the capacities of key regional and national institutions in Sub-Saharan Africa along the research-to-development continuum for anticipating climate change effects and accelerating the identification, prioritization, and uptake of best-bet adaptive, and mitigation measures.

Component 3 - Validating Climate-Smart Agriculture Innovations through Piloting: Supporting testing, validation, and equitable scaling (including gender and social inclusion) of CSA and CIS technologies in research stations and in farmers' fields; linking of validated bundled CSA and CIS packages to technology transfer systems; and improving their access by farmers and other value-chain actors to climate-informed agricultural advisory services to inform decision-making about choice of technology and enterprise management.

Component 4 - Project management: Supporting day-to-day implementation, coordination, supervision, and overall communication and management (including procurement, environmental and social risk management, financial management, monitoring and evaluation, auditing, and reporting) of project activities and results, all through the provision of goods, consulting services, non-consulting services, training and workshops, operating costs, and payment of staff salaries for the purpose.

3.1 Zambia Cluster Activities

The AICCRA-Zambia team develops services and innovations to help Zambian farmers and communities safeguard their livelihoods in the face of climate change.

In Zambia, climate change is threatening existing crop and livestock systems, impacting agriculture businesses and undermining livelihoods. It is becoming increasingly urgent for Zambian farmers and livestock keepers to be able to anticipate climate-related events and take appropriate preventative actions.

AICCRA-Zambia aims to improve water, food, and energy security through access to knowledge, technologies, and decision-making tools to strengthen climate resilience in Zambia's agriculture and food Kenactionable Climate Information Services (CIS) and Climate-smart Agriculture (CSA) technologies such as sustainable financing for off-grid solar irrigation; integrated aquaculture-agriculture systems; addressing drought through climate-smart seed varieties; and diversified chicken/goats-legume systems, all of which are meant to promote gender and social inclusion.

The project aims to strengthen local capacity by training intermediaries to communicate climate services, as well as by implementing a local internship program; providing accelerator grants for SMEs and entrepreneurs; and assessing challenges in the enabling environment for startups. It also seeks to inform policy and enhance investment plans by identifying suitable financing mechanisms and using fiscal tools to de-risk private sector investments in food value chains.

The key activities of the cluster are cited below:

1.3.1 Development of ag-data hubs and decision support systems;
1.3.2 Strengthening digital climate advisory services in Eastern and Southern Africa;
2.3.1 Support strengthening of national meteorological real-time services;
2.3.3 Build capacity in three focus countries of public and private sector next users to support implementation of CSA technology packages;
2.3.4 Develop existing or strengthen new National Frameworks for Climate Services (NFCS);
3.3.1 Identify climate- and gender and social inclusion-smartness of CSA packages;
3.3.2 Prioritize and increase awareness of best-bet CSA options and approaches for key value chains;
3.3.3 Integrate climate-smart options and tailored CSI advisory systems for specific value chains;
2.3.2 Enhance the capacity of public institutions and private firms to provide climate service delivery models; and
3.3.4 Develop and promote climate-smart agricultural investment plans in East Africa.

4.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The AICCRA-Zambia team will strictly adhere to and follow the World Bank's Environmental and Social Framework (ESF) as well as the applicable legal and regulatory frameworks of Zambia for the implementation of various CSA innovations. This section provides a brief overview of relevant national, environmental, and social policies, regulations, and legal frameworks that provide guidance for the CSA activities under AICCRA Zambia.

4.1 National Legal Framework

Zambia's Constitution of 1991 with amendments through 2016

The Constitution is the supreme law of the Republic of Zambia and any other law or customary practice that is inconsistent with its provisions is considered void. Section 255 of the Constitution sets out the principles that underpin the management and development of Zambia's environment and natural resources. Section 257(g) commits the Zambian government to establishing and implementing mechanisms that address climate change. Article 14 protects citizens from slavery and forced labor. Article 16 prohibits the compulsory possession of a person's land unless by or under the authority of an Act of Parliament which provides for the payment of adequate compensation for the property or interest or right to be taken possession of or acquired.

Applicability/Relevance to the Project: *The foregoing therefore requires the AICCRA-Zambia team to implement the CSA demonstrations in a manner that promotes inclusion, prevents forced labor, and promotes sound environmental protection and management.*

Acts and Regulations

The Environmental Management Act, 2011: The principal legislation governing environmental management in Zambia is the Environmental Management Act (EMA) of 2011. The Act provides for the sustainable management of natural resources, protection of the environment, and the prevention and control of pollution. Of particular relevance is section 29 of the Act, which states that "A person shall not undertake any project that may have an effect on the environment without the written approval of the Agency, and except in accordance with any conditions imposed in that approval".

Applicability/Relevance to the Project: *The AICCRA-Zambia Team would need to ensure that any of the proposed CSA interventions to be conducted that meet any of these criteria are covered with relevant permits from ZEMA.*

The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997: The Environmental Impact Assessment (EIA) Regulations, Statutory Instrument 28 of 1997, demands that before a developer commences implementing a project, an EIA report be prepared and submitted to the relevant regulatory authority for review and approval. In respect of agriculture, this regulation specifies the following activities for which environmental impact assessment may be conducted prior to commencement: (a) Land clearance for large scale agriculture; (b) Introduction and use of agrochemicals new to Zambia; (c) Introduction of new crops and animals, especially exotic ones new to Zambia, (d) Irrigation schemes covering an area of 50 hectares or more; € Fish farms-production of 100 tons or more a year; and (f) Aerial and ground spraying-industrial scale.

Applicability/Relevance to the Project: *Given that none of the CSA interventions proposed has a scale that meets any of the above conditions, the AICCRA-Zambia team is not mandated to conduct an environmental impact assessment before commencing project activities.*

The Water Resource Management Act, 2011: The Water Resources Management Act was developed to establish the Water Resources Management Authority and define its functions and powers. It, among other issues, provides for the management, development, conservation, protection and preservation of the water resource and its ecosystems; provides for the equitable, reasonable and sustainable utilization of the water resource; ensures the right to draw or take water for domestic and non-commercial purposes, and that the poor and vulnerable members of the society have an adequate and sustainable source of water free from any charges; and creates an enabling environment for adaptation to climate change. Article 71 of this Act as relates to AICCRA-Zambia project requires persons who intend to use water among other things for the following purposes to obtain permits from the Water Resource Management Authority (i) drain of any swamp, marsh, dambo, wetland, recharge area or other land; (ii) sink, deepen or alter any borehole for any purpose in a water shortage area.

Applicability/Relevance to the Project: *The tenants of this act require AICCRA-Zambia to ensure that the SME's being partnered with to run aquaculture farms have relevant permits from WARMA over their operational sites.*

The Lands Act (Cap 184) No. 29 of 1995: The Lands Act is the statute governing land administration in Zambia, which vests all land in the country in the President and authorizes alienation of land by the President. For any alienation of land for the development of project interventions, Section 3 of the Lands Act, which deals with land administration, requires that consideration be given to customary law on land tenure, and that the Chief, the local authority, and the Director of the Department of National Parks and Wildlife, in the case of a game management area, be consulted. The Lands Act also requires that settlements, methods of cultivation, and utilization of land be controlled for the preservation of natural resources.

Applicability/Relevance to the Project: *The project will have to consider and conform to the land tenure systems and national acquisition process in the respective counties and wards where CSA demonstrations will be conducted.*

Plant Pest and Diseases Act, Cap 231: This Act provides for the eradication, and prevention of the spread of plant pests and diseases in Zambia and for the prevention of the introduction into Zambia of plant pests and disease, and other matter hereto. The Act further provides guidance for designation of certain pests and diseases vectors that require destruction. The Act mandates the Plant Quarantine and Phytosanitary Service (PQPS) in the Ministry of Agriculture (MOA) to provide services that prevent the introduction and spread of plant pests and diseases into the country and facilitate safe local and international agricultural trade. The Act further mandates on entities willing to use pesticides to control pest and diseases to conform to the pesticides approved by PQPS and ZEEMA.

Applicability/Relevance to the Project: *The AICCRA-Zambia Team would need to ensure that only pesticides and other chemicals approved by PQPS and ZEEMA are used to treat crop diseases during demonstration.*

The Employment Code Act, No. 3 of 2019:

This Act provides legislation relating to the employment of persons; to make provision for the engagement of persons on contracts of service and to provide for the form of and enforcement of contracts of service; to make provision for the appointment of officers of the Labor Department and for the conferring of powers on such officers and upon medical officers; to make provision for the protection of wages of employees; and to provide for the control of employment agencies. According to this law, it is illegal for any employer to engage an employee on a casual basis for any job that is of a permanent nature. The Act also bans unjustified termination of employment by employers.

Applicability/Relevance to the Project: *In compliance with this law, the AICCRA Zambia Team and Implementing Partners will ensure that individuals employed to work on the AICCRA project are of legal employment age and are provided with conditions of service that meet or exceed the minimum conditions of service.*

National Heritage Conservation Commission (NHCC) 23 of 1989 and 13 of 1994 CAP 173: The NHCC Act provides for the conservation of ancient, cultural, and natural heritage, relics and other objects of aesthetic, historical, pre-historical, archaeological, or scientific interest.

Applicability/Relevance to the Project: *Consistent with the requirements of this Act, the AICCRA project will have to ensure that the integrity of historical monuments and chance-found objects of archaeological, traditional, and scientific interest is not affected by the implementation of CSA demonstrations.*

The Public Health Act, Cap 295 of 1930: This Act provides for the prevention and suppression of diseases and the general regulation of all matters connected with public health in Zambia. The Act prohibits, among other things, anyone from causing a nuisance, where a nuisance is defined to include: (i) the pollution of potable water; (ii) any collection of water or any cesspit, latrine, or urinal found to contain mosquito larvae; (iii) any accumulation or deposit of waste which is offensive, injurious, or dangerous to health; (v) the discharge of noxious matter or waste water into a water course not approved for the reception of such discharge; (vi) premises without sufficient lighting or ventilation; dangerous buildings and overcrowded premises; and (vii) factories giving rise to smells and effluents which are offensive or dangerous to health.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the environs of the project are in sanitary condition and project activities do not generate conditions that can lead to any of the conditions prohibited under the Act.*

The Fisheries Act No. 22 of 2011: This Act makes provision with respect to the conservation and management of the fish resources of Zambia and the protection of fish. It also establishes the Fisheries and Aquaculture Development Fund and provides with respect to diseases affecting fish, aquaculture, and the importation and exportation of fish. Article 40 prohibits engagement in aquaculture without a license. Article 40 (2) states that any person who carries out aquaculture farming without a license commits an offence that is liable to a fine not exceeding three hundred thousand penalty units or to imprisonment for a period not exceeding three years, or to both.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the entities that implement aquaculture pond demonstration have the relevant license from the Fisheries Ministry as mandated by this Act.*

Water Resources Management Act, 2011 (No. 21 of 2011): An Act to establish the Water Resources Management Authority and define its functions and powers; provide for the management, development, conservation, protection, and preservation of the water resource and its ecosystems; provide for the equitable, reasonable, and sustainable utilization of the water resource; ensure the right to draw or take water for domestic and noncommercial purposes, and that the poor and vulnerable members of society have an adequate and sustainable source of water free from any charges; create an enabling environment for adaptation to climate change; provide for the constitution, functions, and composition of catchment councils, sub-catchment councils and water users associations; repeal and replace the Water Act, 1949; and provide for matters connected with, or incidental to, the foregoing.

Article 71 (1) requires any person who intends to drain any swamp, marsh, dambo, wetland, re-charge area or other land for commercial activity to obtain permits and pay surcharge fees for the use of the water. An application for a permit shall be made in the prescribed form and lodged with the authority, catchment council, sub-catchment council or water users' association.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the entities that implement aquaculture pond demonstrations have relevant permits for the use of bore hole water for fish farming activities.*

Solid, wastewater, hazardous waste?

4.2 Policies and Plans

National Development Plan, Vision 2030: The Zambia Vision 2030 (2006-2030) aims to transform Zambia into a prosperous middle-income nation by 2030 and to create a new Zambia which is a strong and dynamic middle-income industrial nation that provides opportunities for improving the well-being of all, embodying values of socio-economic justice. On agriculture, the national vision is to promote an efficient, competitive, sustainable, and export-led agriculture sector that assures food security and increases income by 2030.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the conduct and outcome of the CSA demonstrations contribute to the policy objectives of this national strategic document.*

National Agriculture Policy 2012 -2030: The vision of this policy is to develop a competitive and diversified agricultural sector driven by equitable and sustainable agriculture development through (i) promoting sustainable increase in agricultural productivity of major crops with comparative advantage; (ii) continuously improving agricultural input and product markets so as to reduce marketing costs and increase profitability and competitiveness of agribusiness; (iii) increasing agricultural exports as a way of fully utilizing the preferential (regional and international) markets and increasing contribution to foreign exchange earnings; (iv) improving access to productive resources and services for small-scale farmers, especially women and young farmers; and (v) continuously strengthening public and private sector institutional capabilities to improve agricultural policy implementation, resource mobilization, agriculture research, technology dissemination, and implementation of regulatory services.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the conduct and outcome of the CSA demonstration contribute to the policy objectives of this national strategic document.*

The National Policy on Climate Change (NPCC), 2016: The National Policy on Climate Change (NPCC) was developed to provide a framework for coordinated response to climate change issues. It gives guidance on how the Zambian economy can grow in a sustainable manner, and thereby fostering smooth implementation of the National Development Plans, including the achievement of the Vision 2030. The NPCC has guiding principles, policy objectives, and an implementation framework that are targeted at reversing the negative effects induced by climate change.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the implementation of CSA interventions conforms to key provisions in this policy.*

National Water Policy, 2010: The National Water Policy approved in 2010 aims to improve water resources management by establishing institutional coordination and by defining roles as well as responsibilities for various ministries.

Applicability/Relevance to the Project: *The AICCRA-Zambia team will have to ensure that the implementation of CSA interventions conforms to key provisions in this policy.*

4.3 International Treaties, Conventions and Protocols

At the international level, Zambia is party to the following international treaties, conventions, and protocols that govern the conduct of AICCRA-Zambia operations, and the implementation of project activities must recognize and adhere to key requirements and principles.

Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention): Zambia ratified this international convention in 1991. This convention provides a framework for protecting and managing wetlands sites of special scientific interest. Wetlands account for approximately 19% of Zambia's total area. They comprise natural lakes, man-made lakes, open river channels, wooded flooded areas, floodplains, swamps, and dambos. A total of eight (8) wetlands have been designated as wetlands of international importance since Zambia ratified the Ramsar Convention in 1991, namely: the Kafue Flats Wetland, Bangweulu Swamps, Barotse (Zambezi) Floodplains, Luangwa Floodplains, Busanga Swamps, Lukanga Swamps, Lake Mweru-wa-Ntipa, and Lake Tanganyika.

Applicability/Relevance to the Project: *The AICCRA-Zambia and all implementing partners would need to ensure that the implementation of project activities on CSA innovations do not affect or happen in any of the officially designated wetlands in Zambia.*

The United Nations Framework Convention on Climate Change and the Paris Agreement: Zambia has ratified both the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, under whose auspices it has assumed obligations to plan, take action, and report on measures taken to mitigate global warming.

Applicability/Relevance to the Project: *The pilot CSA innovations in Zambia are a form of effective climate adaptation interventions to improve agriculture and food security. The AICCRA-Zambia team would therefore need to conduct the pilot of the CSA innovations in accordance with these agreements.*

The United Nation Convention to Combat Desertification (UNCCD): Zambia ratified the UNCCD in 1996. The convention aims at combating desertification and mitigating the effects of drought by promoting effective action through innovative local programs and supportive action through international partnerships. Section 46 of EMCA requires County Environment Committees to identify areas that require re-forestation or afforestation as well as to mobilize local communities to carry out these activities, whilst minimizing activities that lead to vegetation clearance. In 2002, Zambia prepared a National Action Programme (NAP) to combat desertification and mitigate the serious effects of drought. The vision of the NAP is to restore land productivity in order to reduce poverty and foster development.

Applicability/Relevance to the Project: *The implementation of CSA innovations in AICCRA-Zambia should focus on actions that increase land productivity. The project team should first try to avoid vegetation clearance and only do so on a limited basis when necessary.*

4.4 World Bank Environmental and Social Framework

The design and implementation of the overall AICCRA project is guided by the World Bank's Environmental and Social Framework (ESF), of which AICCRA-Zambia is making conscious efforts to comply with all relevant requirements on Zambia's activities. The following standards are considered relevant for the implementation of CSA/CIS innovation in Zambia:

- ESS-1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS-2: Labor and Working Conditions
- ESS-3: Resource Efficiency and Pollution Prevention and Management

- ESS-4: Community Health and Safety
- ESS-6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESS-10: Stakeholder Engagement and Information Disclosure

These standards, especially ESS-1, set the basis for the E&S screening of project sites and the preparation of this ESMP. They further provide the lens for identifying potential E&S risks, key mitigation measures, and other procedures contained in this document.

Project activities are not taking place in areas in which Indigenous Peoples / Sub-Saharan African Historically Underserved Traditional Local Communities are present or have collective attachment to a proposed project area. AICCRA-Zambia on-farm activities are not expected to affect any cultural heritage sites or lead to involuntary land acquisition and physical displacements as all CSA demonstration activities will be occurred on existing ZARI and iDE model demonstration sites. The financing of the project activities will also not involve financial intermediaries. Therefore, the following ESSs are not relevant to the project.

- ESS-5: Land Acquisition, Restriction on Land Use, and Involuntary Resettlement
- ESS-7: Indigenous Peoples/Sub-Saharan Africa Historically Underserved Traditional Local Communities
- ESS-8: Cultural Heritage
- ESS-9: Financial Intermediaries

4.5 Comparing National Procedures and Relevant World Bank Standards.

The following table makes a comparison between national procedures in Zambia and World Bank policies.

Table 2: Comparison between national procedures and relevant World Bank E&S Standards.

Standard ESF	ESS relevance and key requirements	Zambia national laws	Gap(s)	Action required
ESS-1 Assessment and Management of Environmental and Social Risks and Impacts	ESS-1 is applicable to the entire project and sub-project activities where social and environmental impacts and risks are expected. It sets requirements for further assessment of E&S risks envisaged in sub-project activities and consideration of mitigation measures.	The Government of Zambia has a solid environmental legal and policy framework in place to protect, conserve, and mitigate adverse impacts. Environmental Impact Assessment Regulations, 1997, states that: A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter. The Environmental Impact Assessment (EIA) regulation of 1997 gives guidance, schedules and categories the various project types and the relevant EIA studies to undertaken. It further gives provision on post EIA approval management of projects and guidelines for developing ESMP's.	Both give provisions for E&S risks assessment. The various activities to be undertaken on the project are likely to have environmental and social impacts and this will require that site specific environmental instruments be prepared to eliminate or minimize possible impacts.	AICCRA Zambia will follow the requirements of the Environmental Impact Assessment Regulations of 1997 and ESS1 to realize site-specifics risks and impacts assessment.
ESS-2 Labor and Working Condition	ESS-2 is relevant because the sub-project activities will contract workers who could be exposed to different types of risks from project activities. ESS-2 sets requirements to address terms and working conditions, equality of opportunity, workers' associations, grievance redress and include provisions that do not allow for forced or child labor.	The Zambian Employment Code Act No. 3 of 2019 provides legislation relating to the employment of persons; to make provision for the engagement of persons on contracts of service and to provide for the form of and enforcement of contracts of service; to make provision for the appointment of officers of the Labour Department and for the conferring of powers on such officers and upon medical officers; to make provision for the protection of wages of employees; to provide for the control of employment agencies; and to provide for matters incidental to and consequential upon the foregoing. Gender Equity and Equality Act, 2015 provides for the taking of measures and making of strategic decisions in all spheres of life in order to ensure gender equity,	Both regulations consider Labor Conditions, Health, and Safety.	During AICCRA project implementation various individuals will perform multiple tasks. This will require that all implementing partners on the project adhere to the provision of the employment act and the national labor laws. This will be achieved by creating a conducive work environment, treating workers in a humane manner and

Standard ESF	ESS relevance and key requirements	Zambia national laws	Gap(s)	Action required
		equality and integration of both sexes in society; prohibit harassment, victimization and harmful social, cultural and religious practices, provide for the elimination of all forms of discrimination against women, empower women and achieve gender equity and equality. The Zambian Occupational Health and Safety Act, 2010 contains provisions that oblige the employer to ensure the health, safety, and well-being of people in the workplace.		remuneration is favorable. AICCRA Zambia has prepared an LMP consistent with the Zambian laws and ESS2 to guide labor management on the project.
ESS-3 Resource Efficiency and Pollution Prevention and Management	ESS-3 is relevant to guide the pilot of agricultural technologies being promoted by the project to ensure efficient use of resources and improvements in achieving water and fertilizer use efficiency especially at the level of small-scale farmers to ensure land conservation and productivity. The standard also provides relevant guidelines on waste management and disposal from various agricultural production chains including waste management at fish farms and disposal electronic products in water solar pumps materials.	The Zambian regulations provide a solid framework for pollution prevention and management. National Policy on Environmental Policy (NPE), 2005 seeks among other things, to: secure for all persons now and in the future an environment suitable for their health and well-being. Environmental Management Act, 2011 provides for the prevention and control of pollution and environmental degradation. Part IV Environmental Protection and Pollution Control is about protection of the atmosphere, prohibition and reporting of discharges into environment, integrated pollution prevention and control, Promotion of cleaner production and sustainable consumption of goods and services, environment emergency preparedness, prohibition of water, air and soil pollution, wastes, pesticides and toxic substances management, etc.	Both promote efficient use of water and pesticides, fertilizer, and disposal of wastes to protect the environment.	AICCRA project will apply provisions of national legislation and ESS- to manage wastes and chemical products. Promote good agronomic practices. Prepare an electronic waste management plan as part of this ESMP to guide disposal of water solar pump obsolete electronic materials. Support fish farmers to use appropriate low-cost technology to aerate fishponds to minimize excessive water change in ponds leading to generation of wastewater.

Standard ESF	ESS relevance and key requirements	Zambia national laws	Gap(s)	Action required
ESS-4 Community Health and Safety	The ESS4 is relevant as the Project activities are expected to cause health and safety risks and impacts to local communities. The ESS4 standard is relevant. The research supported by the project might accidentally introduce or promote new zoonotic diseases which could become a threat to communities while new plant diseases and invasive animals and plants may also challenge future food production.	The Zambia legislation contains provisions for addressing public safety. These cover a range of important aspects including environmental pollution control; labor laws; occupational health safety policies; traffic management, handling of hazardous materials, setting exposure limits to various pollutants, and standards for workplace environmental emissions and discharges. The Public Health Act provides for the prevention and suppression of diseases and generally regulates all matters connected with public health in Zambia. Some of the issues dealt with in the Act include the provision of sanitary conveniences in various workplaces.	ESS-4 as well as Zambian laws provide guidelines for addressing public health and safety.	Improve awareness and implementation capacity on health and safety through training and orientations. Preparation of ESMP in line with ESS-4 requirements. Develop sound procedures for disposal and management of wastes and chemical products when applicable.
ESS-6 Biodiversity Conservation and Sustainable Management of Living and Natural Resources	The Project will not finance activities that will adversely affect biodiversity conservation or sustainable management of living resources. However, as the project supports research aiming to generate drought and pest-resistant seed varieties, multiplying, and making them available to farmers, it may pose some risks and impacts related to biodiversity and ecosystem services by introducing them.	The Zambian regulations provide a solid framework for the promotion of sustainable social and economic development through sound management of the environment and natural resources. National Policy on Environmental Policy (NPE), 2005 seeks among other things, to: secure for all persons now and in the future an environment suitable for their health and well-being; promote efficient utilization and management of the country's natural resources; facilitate the restoration, maintenance and enhancement of the ecosystems and ecological processes essential for the functioning of the biosphere and prudent use of renewable resources; integrate sustainable environment and natural resources management. Environmental Management Act, 2011 provides for integrated environmental management and the protection and conservation of the environment and the sustainable management and use of natural resources; provide for the conduct of strategic environmental assessments of proposed policies, plans and programs likely to have an impact on environmental management; provide for the prevention and control of pollution and	ESS-6 and Zambia national laws provide frameworks for sound conservation of biodiversity and management of resources.	Enforce the project E&S exclusion list on CSA demonstration activities. Strengthen the screening procedures to include a checklist to assess whether a demonstration site has the potential for disturbing and affecting biodiversity.

Standard ESF	ESS relevance and key requirements	Zambia national laws	Gap(s)	Action required
		environmental degradation; provide for public participation in environmental decision making and access to environmental information.		
ESS-10 Stakeholder Commitment	This standard is relevant because the project will involve multiple stakeholders with diverse interests and influence on project activities. Therefore, the inputs and concerns of these stakeholder groups would need to be factored into project design and implementation through meaningful stakeholder engagements.	Principles for stakeholder engagement and information disclosure are provided in the Zambian regulation. The Environmental Assessment Regulation in Zambia requires effective public consultation and participation as an integral component of the Environmental and Social Impact Assessment (ESIA) procedures. Project proponents are required by law to effectively and continuously engage potential project-affected persons and communities and other stakeholders to ensure that issues of concern to them are addressed in project design and implementation. Environmental Management Act, 2011 provides for public participation in environmental decision making and access to environmental information. Section 91 (1) of Part VII on Public Participation relates that: "*The public have the right to be informed of the intention of public authorities to make decisions affecting the environment and of available opportunities to participate in such decisions*".	Both ESS-10 and Zambian laws promote stakeholder engagement and information disclosure during project preparation and implementation.	A Stakeholder Engagement Plan consistent with requirement of ESS-10 has been prepared and approved by the World Bank. Public consultations are held in accordance with the Zambian national laws. Promote and provide means for adequate engagement with Affected Communities. Ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.

4.6 AICCRA Environmental and Social Risks Management Guide

The AICCRA Environmental and Social Risks Management (ESRM) guide is a management tool that provides guidelines for agricultural research institutions under AICCRA to assess the potential E&S risks and opportunities associated with their research activities towards more productive and climate-resilient agriculture. The Guide provides information on what is needed for project grant recipients to assess the E&S risks, communicate requirements to agricultural research institutions, as well as monitor and report on implementation. The ESRM guide sets the following E&S exclusion criteria for all grant recipients under the project:

1. Production or activities involving forced labor[1];
2. Production or activities involving child labor[2];
3. Cross-border trade in pesticides, waste, and waste products, unless compliant to the Basel Convention and the underlying regulations[3];
4. Research that may lead to environmentally damaging activities, such as inappropriate use of chemical fertilizers;
5. Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, Polychlorinated Biphenyls (PCBs), wild life or products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
6. Biotechnology application in genetically modified crops that may involve genetic transformations of the national original crops and/or might generate irreversible environmental impacts;
7. Activities that could introduce invasive alien species and may impact critical habitats and/or legally protected areas;
8. Activities that may result in discrimination against vulnerable groups, including on the basis of gender and disability;
9. Activities involving land acquisition leading to economic or physical displacement;
10. Activities that affect existing land tenure arrangements or cultural heritage;
11. Activities carried out by institutions with a record of unresolved occupational, health, and safety incidents or accidents[4];

[1] Forced labor means all work or service not voluntarily performed that is extracted from an individual under threat of force or penalty.

[2] Employees may only be hired if they are at least 15 years old, in accordance with the ILO Minimum Age Convention (C138, Art. 2). Children under the age of 18 will not be employed in hazardous work. Children will not be employed in any manner that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social development.

[3] The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, usually known as the Basel Convention, is an international treaty that was designed to reduce the movements of hazardous waste between nations. Under the convention, hazardous waste, as defined under the convention, generally will not be traded cross-border without the consent of the state of import. Under the Basel Convention, "hazardous wastes" are defined as (a) Waste that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III; and (b) Waste that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the party of export, import, or transit.

[4] Whether such incidents or accidents have been resolved and an institution is therefore eligible for a sub-grant will be evaluated and decided jointly in writing by CIAT and the Association.

12. Activities carried out by institutions with a record of unresolved Sexual Exploitation and Abuse/Sexual Harassment incidents (SEA/SH)[5];

Applicability/Relevance to the Project: *The AICCRA-Zambia team and all the implementing SMEs will need to ensure that the implementation of CSA innovations under the various bundles does not involve any of the activities on the project exclusion list.*

5.0 ENVIRONMENTAL AND SOCIAL BASELINE CONDITION

This section provides a brief outline of the environmental and social baseline condition of the four provinces where various bundle of CSA innovations will be implemented in Zambia.

5.1 Location

Table 3: Location

Province	Description of Location
Luapula	Luapula Province, named after the Luapula River, is one of Zambia's 10 provinces, located in the northern region of the nation. Mansa is the province's capital, and it shares an international border with the Democratic Republic of Congo.[6]
Northern	Zambia's Northern Province is one of the country's 10 provinces. The province is located in northern Zambia, bordering the provinces of Luapula to the west and Muchinga to the east. The province borders the Democratic Republic of Congo in the north, Tanzania in the east, and the Great Lakes area through Lake Tanganyika. Even in years when the country is experiencing severe drought, enough rainfall (for rain-fed agriculture) is guaranteed. [7]
Eastern	From Isoka in the northeast to the north of Luangwa in the south, the province is divided by the Luangwa River and borders Malawi to the east and Mozambique to the south. Chipata is the provincial capital. Eastern province covers 51,476 km2 (19,875 sq mi) and is split into eleven districts. It has a boundary with three other provinces in the nation. [8]
Central	Kabwe, the province capital, is home to the Mulungushi Rock of Authority. The Central Province covers 110,450 square kilometers. It contains 12 districts and is bordered by eight other provinces. Central Province accounts for 20.64 percent of Zambia's total cultivated land and contributes 23.85 percent of the country's overall agricultural output. [9]
Copperbelt	All towns in this province are involved in copper production, which accounts for more than 50% of the country's foreign currency earnings. Other minerals, such as emeralds and cobalt are also mined in the Copperbelt province. Even though Copperbelt is the hub of industrial activities such as manufacturing, agriculture is increasingly contributing to the economic activities of the province.[10]

5.2 Sensitive Zones

[5] Whether such incidents have been resolved and an institution is therefore eligible for a sub-grant will be evaluated and decided jointly in writing by CIAT and the Association.

[6] https://www.lua.gov.zm/
[7] https://www.nor.gov.zm/?page_id=1105
[8] http://ziflp.org.zm
[9] https://www.cen.gov.zm/?page_id=1069
[10] https://www.fao.org/3/bl823e/bl823e.pdf

Table 4: Sensitive Zones

Province	Sensitive Zones (Habitats, areas with high biological importance, important bird areas, import plant areas, protectorates, wildlife, and archeological sites.
Luapula	Lumangwe Waterfalls (the second largest waterfall in Zambia), Lake Mweru, the Lupaula River, Lusenga Plain National Park, and Lake Bangweulu and its wetlands, Mumbuluma Falls, Mumbotuta Waterfalls, Kundabwika Waterfalls and Chilongo Waterfalls. [11]
Northern	Nsumbu National Park/Kaputa GMA/Mweru Wantipa National Park, Lake Mweru, Lake Tanganyika. Kalambo Falls, Bangweulu Wetlands, Lavushi Manda and Isangano National Parks, and the Chambeshi, Luwingu and Bangweulu Game Management Areas (GMAs). [7]
Eastern	Luangwa Valley, North Luangwa National Park, South Luangwa National Park, Luambe National Park and Lukusuzi National Parks, and Munyamadzi, Musalangu, Mukumgule, Lupande, Lumimba, Sandwe, Chisomo GMAs. [8]
Central	Kafue National Park, Kasanka National Park, South Luangwa National Park, the Mulobezi, Sichifulo, Mumbwa, Kasonso-Busanga, Lunga-Luswishi, Namwala, Bilili Springs, and Nkala GMAs, the Busanga Swamps and plains, Kafue River, lake of the Itezhi-Tezhi Dam, Kafue Flats, Blue Lagoon National Park, the Lunsemfwa and Lukusashi River valleys, Lukanga Swamp and the Bangweulu wetlands.[9]
Copperbelt	Kafue River, Chembe Bird Sanctuary, Chimfunshi Wildlife Orphanage

5.3 Air Quality and Noise

Table 5: Air and Noise Quality

Province	Air Quality [12]	Noise Quality
Luapula	Data not available	Data not available
Northern	AQI 17 (good)	Data not available
Eastern	AQI 17 (good)	Data not available
Central	AQI 18 (good)	Data not available
Copperbelt	AQI 17 (good)	Data not available

5.4 Rainfall, Climate, and Weather

Table 6: Rainfall, Climate, and Weather

Province	Climate	Annual Rainfall (average)	Annual Temperature	Monthly Humidity Levels
Luapula [6, 13]	Luapula province has a tropical climate with three distinct seasons: a cool dry season from April to August, a hot dry season from August to October and a warm wet season from November through to April.	1100 mm	31.2 °C	58%
Northern [14]	Northern is the coldest region in Zambia and is warm or hot all year. Days with heavy rain and large amounts of precipitation are in October.	1400 mm	27°C	40-60%

[11] https://www.usaid.gov/zambia/documents/usaidzambia-luapula-province-fact-sheet
[12] https://air-quality.com/country/zambia/4d0616fa?lang=en&standard=aqi_us
[13] https://web.archive.org/web/20140620015743/http://www.yr.no/place/Zambia/Luapula/
[14] https://www.worlddata.info/africa/zambia/climate-northern

Eastern [15]	Eastern is one of the warmest regions in Zambia with three different climate classifications: tropical savanna climate, hot-summer Mediterranean climate and Humid subtropical climate.	998 mm	32°C	61%
Central [16]	This province has a predominant humid subtropical climate but also exhibit subtropical highland oceanic climate and a tropical savanna climate type.	919 mm	28°C	62%
Copperbelt[17]	The climate here is mild, and generally warm and temperate. Situated at an elevation of 1271 m above sea level, Copperbelt has a humid subtropical climate, with three distinct seasons, the cool and dry season, the hot and dry season and the hot and wet season.	1400 mm	28 °C	65%

5.5 Soil, Topography, and Vegetation

Table 7: Soil, Topography and Vegetation

Province	Soil Condition[18]	Topography and Drainage[19]	Vegetation[20]
Luapula	Soil deposits in this province are characterized by high acidity and low nutrition for plant growth, high in exchangeable aluminum and manganese, both of which are toxic to most crops.	The topography varies from very flat wetland to a valley-like rugged hilly area. A large part of the land area is covered by lakes, swamps, rivers and dambos and the Chienge district, located at most northern part of Luapula province, has many valleys along the lakeside and lower areas of the valley land. Due to earth's land formation, the valley areas are undulating, leaving much of the valley with a lot of streams and rivers.	Swamp and Riparian forests occur in the high rainfall zones of Luapula Provinces. Swamp forests are characterized by dominant trees, which have buttresses and stilt roots to give stability on damp ground. Swamp and Riparian forests are also common at stream heads, stream sides, river estuaries and on wide flats beside rivers and lakes. Lake basin Chipya is a vegetation type that probably resulted from the destruction, usually by fire, of Parinari and Marquesia forests. It is three-storied with an open, evergreen or deciduous top canopy up to 25m, a broken understory 6-12m and a 2-3m shrub layer. It occurs over a large part of the

[15] https://en.climate-data.org/africa/zambia/eastern-province-1612/
[16] https://en.climate-data.org/africa/zambia/central-province-1562/
[17] https://en.climate-data.org/africa/zambia/copperbelt-province-1563/
18 https://www.yieldgap.org/zambia
19 https://openjicareport.jica.go.jp/pdf/12039822_01.pdf
20 https://www.fao.org/3/x6802e/x6802e.pdf

			Luapula Province in the Chambeshi and Luapula valleys.
Northern	Soil deposits in this province are characterized by high acidity and low nutrition for plant growth, high in exchangeable aluminum and manganese, both of which are toxic to most crops.	The northern has a mixed topography including high mountain range areas in the eastern and northern parts, plateau in the central and southern parts, flat wet areas in the western part, and swamps and rivers dotted all over the province.	Swamp and Riparian forests also occur in the high rainfall zones of the Northern Provinces. Lake basin Chipya vegetation also occurs in an extensive area of Northern province around Lakes Bangweulu and Mweru. The soil is pale, sandy and very acidic.
Eastern	The most common soils are red to brown clayey to loamy soil types that are moderately leached. Furthermore, they are characterized by low water holding capacity and shallow rooting depth. The topsoils in most areas of the province are susceptible to erosion and have low nutrient reserves and retention capacity, have low organic matter and nitrogen content, and are phosphorus deficient.	There are isolated hills on the eastern border, some of which rise to a height of 6,000 ft to 7,000 ft in the province. The Luangwa Valley which rifts the highlands dividing Zambia and Malawi, is also located in the region.	Eastern part of Zambia has three main vegetation types, which are locally known as miombo, chipya and matsehi. Miombo is the main vegetation type usually found on the plateau areas. It forms a single-story, light but closed-canopy. Deciduous woodland of 12-15m tall and dominated by leguminous tress such as Brachystegia and Julbernardia. The chipya and mateshi vegetation occur on the lower valley basin with scatterd group of tree up to 15m tall.
Central	The most common soils in the province are red to brown clayey to loamy soil types that are moderately to strongly leached. Physical characteristics of the soils that affect crop production include low water holding capacity, shallow rooting depth, and top soils prone to rapid deterioration and erosion. These soils also have low nutrient reserves and retention capacity, are acid, have low organic matter and nitrogen content, and are phosphorus deficient.	The landmark is generally low-lying with isolated hilly areas. The province is home to the Lukanga Swamp, the largest permanent swamp in Zambia covering 1,850km2 It also contains major lagoons such a Lake Chiposhye and Lake Suye.	Mopane and Munga woodland are prominent on soils in the Central Province. Munga woodland is a park-like woodland with trees scattered or in groups. The dominant species are Acacia, Combretum and Terminalia and this vegetation type is characterized by the presence of dense tall grass, flat ground and rich clayey soils.
Copperbelt	Soil deposits in this province are highly weathered and leached and characterized by extreme acidity. Consequently, the soils have few nutrients available for plant growth, and are high in exchangeable aluminum and manganese, both of which are toxic to most	The region lies on the eastern Central African Plateau, with gently undulating terrain mostly between 3,000 and 5,000 feet (900 and 1,500 meters) in elevation and occasionally broken by isolated hills.	Swamp and Riparian forests occur in parts of the Copperbelt Province. Lake basin Chipya vegetation type also occurs on the Copperbelt where it is called Copperbelt Chipya.

	crops unless soils are limed to increase pH.		

5.6 Socio-economic

Table 8: Socio-Economic

Province	Population (males and females) [21]	Percentage Engaged in Agriculture [22]	Average income levels (monthly per capita) [23]	Major food crops	Major cash crops
Luapula	1,099,151 540,363(m) 558,788(f)	10.5%	180.300ZMW	Sweet potato, rice, cassava, maize, tobacco and edible oils [6]**Error! Bookmark not defined.**	
Northern	1,264,212 626,935(m) 637,277(f)	16.5%	208.600ZMW	Cassava, millet, sorghum, groundnuts, beans, maize and rice [7]	maize, finger millet, rice, cassava, sweet potatoes, common beans, soybeans, groundnuts, fruits and vegetables [7]
Eastern	1,766,300 873,994(m) 892,306(f)	19.1%	215.100ZMW	maize, vegetables, and groundnuts [24]	maize, vegetables, groundnuts, cotton, tobacco [24]
Central	1,474,093 731,938(m) 742,155(f)	13.0%	392.199ZMW	Wheat, maize [9]	Wheat, cotton, maize [9]

6.0 POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS AND MITIGATION MEASURES FOR IMPLEMENTING PARTNERS AND ACTIVITIES

This section provides E&S risks review summary of the activities proposed under the five CSA bundles.

6.1 CSA Bundle 1: Sustainable Financing for Off Grid Solar Irrigation

Scope of Work

This bundle focuses on addressing physical and economic water scarcity through the provision of off-grid solar pumps to smallholder farmers in key value chains and supporting adaption through sustainable financial solutions. The SME firms AICCR-Zambia is collaborating with to achieve the aims of this bundle include Limi Links, Lupiya, and Vitalite. Working as a consortium to achieve the overall aim of this bundle, the four partners will each focus on the following activities:

[21] https://zambia.opendataforafrica.org/vnredld/gender-statistics?region=1000270-luapula
[22] https://zambia.opendataforafrica.org/rgtzwag/labourforce-survey-2008-zambia?regionId=ZM-04
[23] https://zambia.opendataforafrica.org/dajivbb/living-conditions-statistics?region=1000270-luapula-province
[24] https://www.econstor.eu/bitstream/10419/77443/1/687911206.pdf

Lima Links

- Leverage Lima Links' 111,000+ farmer user base to survey farmers and design a farmer-centric agri loan product ready to take to market (MVP).
- Offer an existing Lima Links farmer user database as an avenue for marketing off-grid solar irrigation pumps to prospective end users and to generate demand for 2,000+ additional irrigation pump/CSA technology sales.
- Pursue Lima Links' existing partnership with ZMD to provide climate information services via Lima Links' USSD platform.

Lupiya

- Design and test a farmer off-grid irrigation loan product that accelerates uptake of off-grid irrigation in legumes, horticulture, and poultry production.
- Pre-finance the procurement of 250 off-grid solar irrigation pumps from Vitalite.

Vitalite

- Supply 250 off-grid solar irrigation pumps to be prefinanced by Lupiya for small scale farmers.
- Use community embedded agents to offer after-sales service to farmers and monitor repayment of loans.

Potential Environmental and Social Risks Identified on Bundle 1 Activities

The potential E&S risks posed by the activities proposed under this bundle are low. The proposed activities will mainly focus on the supply of prefinanced off-grid irrigation pumps to farmers and the provision of after-sales services, technical advisories, and dissemination of climate information.

The potential environmental risk envisaged is improper disposal of damaged and obsolete solar pumps by farmers. Currently, Vitalite equipment service and maintenance unit maintains an after-sale network with famers to facilitate effective retrieval and disposal of damaged equipment in accordance with the national electronic waste disposal guidelines. This existing mechanism will be extended to all off-grid solar pumps to be supplied under the project. An electronic waste management plan (E-WMP) has been included at Sub-section 7.3 to guide retrieval, storage, and disposal of solar panel e-waste.

One social risk identified is the potential exclusion of farmers not subscribed to the Lima Links farmer use database from the allocation of prefinanced solar pumps. However, to reach out to these farmers and create demand for them, Lima Links and Vitalate have considered running road shows in target project communities to demonstrate the use, cost effectiveness, and resilience of the solar pumps for climate change adaption. Another social risk identified is potential breach of data privacy for farmers on the Lima Links farmer user base. However, the Lima Links database automatically prompts farmers subscribing to approve their consent for the use of their profile for other marketing purposes.

Although the implementation of these activities could lead to significant levels of information requests and complaints, all the three partners have existing active call centers that will be leveraged to receive and promptly respond to questions and resolve all potential complaints from user farmers. Lupiya will also insure all the 250 off-grid irrigation pumps to be supplied to farmers to forestall potential repayment losses to farmers through theft and damage prior to complete loan repayment and transfer of asset ownership to farmers.

The other social risks envisaged include:

- Exposure to the COVID-19 infection, which may arise from the interaction of project workers with cooperative members or between project workers.
- Gender Based Violence (GBV) in relation to contact between project workers and members of the cooperative groups.
- Absence or lack of courage of vulnerable cooperative members to voice grievances.

6.2 CSA Bundle 2: Integrated Aquaculture Agricultural Systems

Scope of Work

In the Northern and Luapula provinces of Zambia, aquaculture and fisheries have been affected by climate-related extreme weather events such as floods, rising temperatures, and unpredictable rainfall patterns. This bundle, therefore, focuses on promoting integrated management and use of aquaculture, and livestock. It seeks to provide farmers with access to improved/quality and resilient fish seed by linking farmers to trained seed producers in their communities. In so doing, AICCRA-Zambia, through World Fish, is partnering with a consortium of 6 SME's based in the Luapula and Northern provinces of Zambia to achieve these ends. The 6 partners selected and the respective activities to be implemented under this bundle are presented below:

HopeWays

- Provide extension services and technical demonstration of climate resilience in the layout of fishponds, construction, and management of fish species.
- Organize farmer field schools and conduct training for women and youth emerging in the fish industry on climate resilience management of commercial fishponds.

EUNIMOS

- Provide extension services and demonstrations of improved integrated livestock and fish production techniques to small holder farmers.
- Organize farmer field schools and conduct training for women and youth emerging in the fish industry on the management of commercial fishponds and farms.

Kasakalabwe Multi-Cooperative

- Upgrade climate resilience fish hatchery and greenhouse activities and use them as a venue to provide extension services and demonstration of integrated production and sex reversal of fingerlings.
- Construct water tank stands for installation of water tanks which will facilitate water supply by gradient to the green house to maintain oxygen in the tilapia.
- Construct cement ponds in the greenhouse for growing fries to fingerling size, up to sailing point.
- Increase production and supply of high-quality sex reversal fingerlings, which are not locally available in the entire Luapula and Northern Provinces of Zambia.
- Expand supply and delivery of resilience fingerlings to smallholder out growers.
- Conduct training and field shows for women and youth emerging in the aquaculture industry.

ADSEK

- Provide extension services and training to emerging smallholder fish farmers on commercial fish feeds for different species of fish.

Kasama Arts and Council

- Enhance dissemination of climate information services through social and cultural innovations such as road shows/dramas.

Triple Blessings

- Provide extension services on fish harvesting, sorting, and packaging and expand the fish off taker scheme for smallholder fish farmers.
- Disseminate information on fish marketing channels and link up smallholder out growers to off takers.

Description of sites for proposed ponds

In April 2022, the AICCRA-Zambia Team conducted site-specific E&S screening of the sites proposed by Hopeways, EUNIMOS and Kasakalabawe Cooperative for fish farming demonstration. A brief account of these sites is presented below. Detailed E&S screening checklist and findings are provided in Annex 1.

Hopeways Pond Site: The site is located at Mulunga community in Mansa District of Luapula Province. The plot is situated on Hopeways' 4.5-hectare land being used for commercial fish production. The land is owned by the Executive Director of the organization, who bought the land from the Chiefs of Muluga in 2014 and with a registered title deed as shown in Annex 2. In compliance with existing legislation, Hopeways has also obtained an official permit from ZEMA, Fisheries Department and District Water Management Authority as shown in Annex 2.

Photo 1: Proposed site for construction of Hopeways demonstration fishpond.

The proposed plot is about 15 by 30 meters. It is adjacent to 6 existing fishponds of similar size. During the site screening visit, the plot was covered with grass of about 1 meter tall. The dimension of the proposed pond is about 10 by 20 meters with a depth of 1.5 meters. When constructed, the proposed pond will be supplied with water flowing from an existing network of inlet and outlet pipes at the site. The main source of water for Hopeways' fishing activities is from a water shed at the upstream part of the land. To preserve this watershed and sustain its all-year flow of water, Hopeways has nurtured the growth of native tree species into about a 2.5-acre woodland around the water shed.

Photo 2: Shallow Well dug by Hopeways to drain water existing water and tress planted to protect the watershed.

Source: Field visit during E&S screening of project sites, April 2022.

Potential Site-Specific Environmental and Social Risks Identified.

- Habitat degradation through vegetation clearance and land digging and consequently loss of biodiversity, especially of organisms that are prevalent in the micro-areas;
- Occupational injuries from equipment cuts, slips and falls; and
- Fish feeds, hormones, and other chemicals used for the treatment of fish may contaminate the natural water systems if water from the ponds is drained and released into the natural water systems.
- Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts, hence may weaken the gene pool of the wild fish.
- Attraction of new biological species into the area, principally predators which will include snakes, monitor lizards, and prey birds.

- Ponds may be a source of diseases such as malaria and bilharzia by serving as breeding grounds for mosquitoes and bilharzia parasites.
- The fishponds could act as drowning hazards to children, livestock, and even workers.
- Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements.

Kasakalabwe Cooperative Demonstration site: Kasakalabwe Cooperative has proposed to upgrade the layout of an existing fish hatchery into a greenhouse structure to support production of fingerlings. The greenhouse structure as shown in the photo below is occupied by two existing ponds, which the cooperative intends to convert the first pond into two concrete-erected water tanks of about 1.5 by 1.5 meters and a height of 1.6 meters.

Source: Field visit during E&S screening of project sites, April 2022.

The greenhouse structure is located within the inner parameters of Kasakalabwe Cooperative Commercial Fish Farm. The 4.5-hectare land secured by the cooperative for fish farming is located in the Millima village in Kasama District of Northern Province. The cooperative bought the land in 2015 and registered it in 2016. Kindly see Annex 3 for official title deeds. The cooperative also has permits from the ZEMA, the Fisheries Department of Zambia and the Water Resource Management Authority as shown in Annex 3. Nonetheless, the cooperative may need to further seek permit from the Zambia Bureau of Standards for intended use of sex reversal hormones in fingerlings.

Potential Site-Specific Environmental and Social Risks Identified.

- Habitat degradation through vegetation clearance and land digging and consequently loss of biodiversity, especially of organisms that are prevalent in the micro-areas;
- Occupational injuries from equipment cuts, slips and falls; and

- Fish feeds, hormones, and other chemicals used for the treatment of fish may contaminate the natural water systems if water from the ponds is drained and released into the natural water systems.
- Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts, hence may weaken the gene pool of the wild fish.
- Attraction of new biological species into the area, principally predators which will include snakes, monitor lizards, and prey birds.
- Ponds may be a source of diseases such as malaria and bilharzia by serving as breeding grounds for mosquitoes and bilharzia parasites.
- The fishponds could act as drowning hazards to children, livestock, and even workers.
- Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements.

EUNIMOS Demonstration Pond: The site proposed by EUNIMOS for the demonstration of commercial fishpond management is located within the parameters of a 10-hectare farmland belonging to the Executive Director. The farmland is located at Mulonga village in the Mansa District of Luapula Province. The proposed area is already being used by EUNIMOS for commercial fish farming.

Photo 3: Proposed site for EUNIMOS Demonstration Pond and layout of existing fishponds at the site.

Source: Field visit during E&S screening of project sites, April 2022.

EUNIMOS has an official land title deed and relevant permits from the Fisheries Department, and the Water Resource Authority as shown in Annex 4. The proposed dimension of the pond is about 21 by 23 meters and 1.5 meters in depth. The pond will be watered through a network of existing inlet and outlet pipes with water flowing from a shallow well dug out by EUNIMOS.

Potential Site-Specific Environmental and Social Risks Identified.

The main E&S risks and impacts of CSA bundle 2 will be on the construction and management of fishponds and fish hatchery tanks to be carried out by Hopeways, EUNIMOS, and Kasakalabwe Cooperatives. The construction of the pond and fish hatchery tanks could lead to:

- Habitat degradation through vegetation clearance and land digging and consequently loss of biodiversity, especially of organisms that are prevalent in the micro-areas;
- Occupational injuries from equipment cuts, slips and falls; and

The following E&S risks are also envisaged during pond management,

- Fish feeds, hormones, and other chemicals used for the treatment of fish may contaminate the natural water systems if water from the ponds is drained and released into the natural water systems.
- Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts, hence may weaken the gene pool of the wild fish.
- Attraction of new biological species into the area, principally predators which will include snakes, monitor lizards, and prey birds.
- Ponds may be a source of diseases such as malaria and bilharzia by serving as breeding grounds for mosquitoes and bilharzia parasites.
- The fishponds could act as death traps through drowning accidents involving children, livestock, and even workers.
- Exclusion of vulnerable groups (women and youth, elderly, disabled, etc.)

The proposed locations for the siting of the ponds conform to the respective land zoning and Ward development plan for the locations. All the three partners have official land registration titles and permits from ZEMA.

Additional social risks are also envisaged on interactions between project workers and small-holder fish farmers during ESDA and Tripple blessing trainings, farmer field days to be conducted by Hopeways, EUNIMOS, and Kasakalabwe and CSA/CIS dissemination durbars to be organized by Arts. These increased interactions could lead to gender-based violence and infections such as COVID-19. Proposed mitigation measures for these risks are presented in Section 6.

6.3 CSA Bundle 3: Addressing Drought through Climate Smart Seed Varieties

Scope Work

The main thrust of this bundle is to facilitate farmers with access to multi-stress tolerant seed varieties in partnership with a wide range of actors along the seed value chain. The actors selected for this partnership to improve farmers' access to drought tolerant seeds include Agova, iDE, ZARI, Corteva and Plant Catalyst. The brief set of activities to be implemented by each partner in this consortium are presented below:

iDE

- Set up 100 demonstration plots for maize and soyabean and collaborate with PlantCatalyst and Corteva to demonstrate improved seed varieties and the use of PlantCatalyst boosters in the Southern, Eastern, And Central provinces of Zambia.
- Train 666 (333 in the southern and 333 in central provinces) iDE lead farmers as Community Agents.
- Collaborate with PlantCatalyst to organize farmer field schools in The Southern, Central, And Eastern Zambia provinces to train farmers on the proper application of Plant Catalyst boosters on maize, soyabeans, and groundnuts.
- Disseminate climate data and meteorological reports to community agents and lead farmers.
- Develop and broadcast a local radio program to disseminate climate information data and meteorological reports for catchment provinces.
- Link farmers and community-based seed producers to capital providers and equipment suppliers.

ZARI

- Collaborate with PlantCatalyst to conduct multi-location on-farm trials with PlantCatalyst boosters and climate-smart seed varieties of maize, groundnut, and soyabean to assess biological responses and economic viability.
- Conduct multiplication of early generation seed varieties.
- Undertake crop and soil analysis to determine appropriate agronomic practices, seed variety suitability, PlantCatalyst element uptake, and application methods.

Corteva

- Distribute improved seed varieties to community agents, and agribusiness in southern, eastern, and central provinces.
- Hold seed fairs for maize and soybeans as well as subsidized PlantCatalyst in selected areas in Southern, Eastern, and Central Zambia.

Plant Catalyst

- Develop and broadcast a local radio program on PlantCatalyst in catchment provinces.
- Collaborate with iDE to organize farmer field schools in Southern, Eastern, and Central Zambia provinces to showcase the use of PlantCatalyst on maize, soybeans and groundnuts.
- Distribute PlantCatalyst package to community agents, and agribusiness in southern, eastern, and central provinces of Zambia.

Agova

- Lead the management of the project activities by ensuring that project activities are implemented as planned and meet the intended milestones and deliverables.
- Lead on project monitoring, evaluation, and learning by conducting baseline and endline surveys, monitoring progress, and reporting.

Environmental and Social Risks Identified on Bundle 3 Activities.

The E&S risks on activities planned under this bundle are classified as moderate. The moderate risks take into consideration the potential E&S risks envisaged on the demonstration plots to be set up and operated by iDE and ZARI in Central, Eastern, and Copperbelt provinces of Zambia. The key CSA innovations to be showcased by iDE include climate stress tolerant maize seed, minimum tillage, and plant catalyst booster. Inaddition, ZARI will showcase the use of manure and Gliricidia for soil nutrient amendments,

Corteva and iDE which will respectively supply climate stress tolerant seeds and Catalyst for demonstration activities have received the relevant government certification and approval on the inputs to be supplied. The key certifications are presented in Annex 5 and Annex 6 respectively.

Selection of Demonstration Sites

The following measures were taken into consideration during selection of sites

- Strict consideration was given to sites not within forest reserve, protected area or 500 meters closer to sensitive sites.
- As part of project partnership with iDE and ZARI and as requested by the project, sites selection was limited to existing operational areas of iDE and ZARI in Eastern, Central, and Copperbelt Provinces.
- Within these provinces, iDE and Zari focused on partnering with their existing Lead Farmers and by using existing plots that are used for annual model demonstrations to showcase seed varieties and other farming innovations.
- Ensure balance involvement of both Male and Female Lead Farmers as well as persons with disability. Of the 2017 plots selected, 67, representing 31% belong to women whilst the remaining 69% are led by men. Overall, 4 of the Lead Farmers selected were persons leaving with various forms of physical disabilities.

Site-Specific Risks Identified

Table 9, 10, and 11 below contains the site-specific E&S risks identified in each of the project sites across Central, Eastern, and Copperbelt Provinces. The set of CSA innovations and CIS technologies to be piloted in all project sites meet the E&S exclusion list for the AICCRA project. There are no flora and/or fauna of endangered species; no important physical cultural resources nearby or protect areas/forest or water sources. The demonstration activities will not also lead to the introduction of invasive alien species; and will not involve the application of biotechnology application in genetically modified crops.

Site-Specific Environmental and Social Risks of CSA Demonstration Plots in Eastern Province

Table 9:Site-specific E&S Risks of Demonstration Plots in Eastern Province

District	Ward	Village/Project Site	No of Plots	Site Profile	Site-Specific Potential E&S Risks and Impacts Identified
Nyimba	Central 2	Lumangwa	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, test of climate resilient Sahara Maize variety, soyabean, and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Petauke	Sinbo	Chilembwe	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient soyabean, groundnut, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Inappropriate use of agrochemicals and Harmful exposure to pesticides to be used for managing crop pest and diseases. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
Sinda	Nyamtuma	Seba	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance.	• Potential erosion due to sloppy nature of demo plot. • Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions.

				• Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient groundnut, soyabean, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	• Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Chipagari	Musandile	Mabvundo	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety, groundnut, soyabean and Plant Catalyst booster. • Potential use of pesticides for pest and disease control.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds Inappropriate use of agrochemicals and harmful exposure of workers to pesticides to be used for managing crop pest and diseases.
Rumezi	Shamtowa	Chitalawe	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exposure to sun heat and burns, snake bites etc. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, •
Chasefu	Luwerezi	Chibisa	1	• A model demo plot used by ZARI for annual demonstrations with farmers.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and

				• The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient soyabean, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases	preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Sinda	Mung'omba	Mkhunthiawa	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient groundnut, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Potential sheet erosion due to sloppy nature of the plot surface. • Inappropriate use of agrochemicals and Harmful exposure to pesticides to be used for managing crop pest and diseases. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
Kasenengwa	Chingazi	Matowa	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety and Plant Catalyst booster.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle.

				• Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment •
Chipata	Mtowe	Chanika	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient soyabean, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure of workers to pesticides to be used for managing crop pest and diseases. •
	Kanjala	Lima section	2	• A model demo plots used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plots are owned by a ZARI Lead Male Farmer and a Female Farmer with disability. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient groundut, Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exposure to sun heat and burns, snake bites etc. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, •
	Kanjala	Zikonianthu	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases,

				• Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient groundnut variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	• Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Mambwe	Mnkhanya	Maulidi	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Soyabean variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Potential sheet erosion due to sloppy nature of the plot surface. • Inappropriate use of agrochemicals and Harmful exposure to pesticides to be used for managing crop pest and diseases. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Mnkhanya	Ben	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment •
	Mnkhanya	Philimon	1	• A model demo plot used by ZARI for annual demonstrations with farmers.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and

				• The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient groudnut variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
	Mnkhanya	Sapulani	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient soyabean variety and Plant Catalyst booster. • Potential use of pesticides for control of pest and diseases.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure of workers to pesticides to be used for managing crop pest and diseases. •
	Mnkhanya	Mumba	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety and Plant Catalyst booster.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exposure to sun heat and burns, snake bites etc. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds

				• Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, •
	Chisemgo	Joshua Farm	1	• A model demo plot used by ZARI for annual demonstrations with farmers. • The size of the plot is 5x30 meters. • Plot is customary owned by ZARI Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include minimum tillage, use of manure and Gliricidia for soil nutrient amendments, climate resilient Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Occupational Health and Safety (OHS) relating to exposure to sun heat and burns during farming activities, snake bites. • Potential sheet erosion due to sloppy nature of the plot surface. • Inappropriate use of agrochemicals and Harmful exposure to pesticides to be used for managing crop pest and diseases. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •

Site-Specific Environmental and Social Risks of CSA Demonstration Plots in Copperbelt Province

Table 10: Site-specific E&S Risks of Demonstration Plots in Copperbelt Province

District	Camp	Village/ Project Site	Number of Plot	Demonstration and Site Characteristics	Site-Specific Potential E&S Risks and Impacts Identified
Chililabombwe	Konkola	Butondo	2	• Plots communally owned by two iDE Lead Female Farmers. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 30x50 meters • CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment.

				• Potential use of pesticides for control of fall army worms.	• Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Chililabombwe		Bwelele	1	• Plot is owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
Chingola	Ipafu	Ipafu	3	• Plots communally owned by two iDE Lead Male Farmers and a Lead Female Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Chingola	Kafue gulf hippo	kafue Gulf Hippo pool	4	• Plots communally owned by two Female and two Male Lead armers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •

Chingola	Muchinshi	Bosso	2	• Plots communally owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
Chingola		Muchinshi	2	• Plots communally owned by a Lead Female and Male Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
Chingola	Mutenda	Mutenda	3	• Plots communally owned by two iDE Lead Female Farmers and a Male Lead Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
Chingola	Kasompe	Kasompe	4	• Plots communally owned by two Female and two Male Farmers.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities.

				• Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Kalulushi	Chabote	chabote	2	• Plots communally owned by a Lead Female Farmer and a Lead Male Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
Kalulushi		Chibote	4	• Plots communally owned by two Female and two Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
Kalulushi		Mindolo Farm Block	1	• Plot is owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape.

				• Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
Luanshya	Luanshya Phase 1	Kawama	2	• Plots communally owned by two iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
Luanshya	Luanshya Phase 2	Kawama	1	• Plot is owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Luanshya	Luanshya Phase 3	Kawama	1	• Plot is owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases.

				• Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Luanshya	Luanshya Phase 4	Mpatamatu	1	• Plot is owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
Luanshya	Chola Nils	Chisokone	6	• Plots communally owned by 6 iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Lufwanyama	Mukweka	Chapula	6	• Plots communally owned by 3 iDE Lead Female Farmers and 3 Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters	• Potential inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle.

				• Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Masaiti	Nyenyezi	Kawama	1	• Plots communally owned by an iDE Lead Female Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
Masaiti		Nyenyezi	2	• Plots communally owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
Mufulira	Mukuba B	Mukuba B	5	• Plots communally owned by one Female Lead Farmer and four Male Lead Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle.

				• Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Mufulira	Murundu	Murundu	4	• Plots communally owned by two Female and two Male Lead Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Risk associated with labor and working condition including workplace sexual harassment. •
Mufulira	Kasunswa	Chandamali	1	• Plots communally owned by an iDE Lead Male Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
Mufulira		Kalindini B	1	• Plots communally owned by an iDE Lead Male Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •

Mufulira		Kasunswa	1	• Plots communally owned by an iDE Lead Female Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.
Ndola	Miseka B	Luansaka	8	• Plots communally owned by one iDE Lead Female Farmer and 7 Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Exposure to occupational health hazards such as sun head and burns, dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
Ndola		Mwanawasa	5	• Plots communally owned by two iDE Lead Female Farmers and three Male Lead farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
Luanshya	Fifungo	Luminina	4	• Plots communally owned by two iDE Lead Female Farmers and two Male Lead farmers.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases.

				• Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
Ndola	Mwekera	Mwekera	1	• Plots communally owned by an iDE Lead Male Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Risk associated with labor and working condition including workplace sexual harassment. •
Ndola	Twapia	Twapia	1	• Plots communally owned by two iDE Lead Male Farmer. • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •

Site-Specific Environmental and Social Risks of CSA Demonstration Plots in Central Province

Table 11:Site-Specific E&S Risk of Demonstration Plots in Central Province.

District	Camp	Village /Project Site	Number of Plots	Demonstration and Site Characteristics	Potential E&S Risks and Impacts Identified at Site
Chibombo	Simabwe	Simabwe	1	• Plot is customary owned by iDE Lead Male Farmer. Plot size is 10x50 meters • A model demo plot used by iDE for annual demonstrations with farmers. • Plot is a modified farmland, do not require vegetation clearance. • Potential demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
	Kashaya	Kashaya	2	• Plots are owned by two iDE Lead Female Farmers. • Plots are modified farmland, which are being used by iDE as model demo plots for the past 3 years. • Each plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
	Chuni	Chuni	2	• Plots owned by two iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 10x30 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exposure to sun heat and burns, snake bites etc. • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment.

				• Potential use of pesticides for control of fall army worms.	• Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, •
		Shungumbe	1	• Plot is owned by an iDE Lead Female Farmer who acquired it by customary inheritance. • Plot is a modified farmland, mostly used by iDE for model demonstration, do not require vegetation clearance. • Each plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure of workers to pesticides to be used for managing crop pest and diseases. •
	Musopelo	Musopela B	1	• Plot owned by iDE Lead Male Farmer. • Plot is a modified farmland, and do not require vegetation clearance. • A model demo plot of 10x60 meters, which is used by iDE for annual demonstrations with farmers. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Inappropriate handling of chance finds • Potential inappropriate use of agrochemicals and harmful exposure of workers. •
		Musopelo C	2	• The two plots are customary owned by two iDE Lead Male Farmers. • The plots are modified farmlands, mostly used for joint demonstrations with iDE. • Each plot size is 10x40 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster.	• Potential exposure to sun heat and burns. • Harmful exposure to pesticides to be used for managing crop pest and diseases and potential inappropriate use. • Plot not fenced and therefor the tendency for livestock intrusion and destruction of crops. • Exclusion of vulnerable people, especially persons with disability from learning sessions.

				• Potential use of pesticides for control of fall army worms.	• Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working conditions including workplace sexual harassment. • Inappropriate handling of chance finds •
	Chitetele	Chitetele	1	• Plots owned by two iDE Lead Male Farmers. • Plot is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years and each is 20x50m. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Mukalashi Camp	Mukalashi area	3	• Plots owned by three iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
	Chipembele	Chipembele	1	• Plots owned by iDE Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plot used for joint demonstration with iDE over the past 3 years. • Each plot size is 20x60 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds

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	Kamweendo	Kamweendo	1	• Plot is owned by iDE Lead Female Farmer by customary inheritance. • Plot is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years, its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trips and falls due to uneven plot surface. • Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
	Mwachi-sompola	Mwachisopola	2	• The plots are owned by two iDE Lead Female Farmers. • Plots are mostly used for joint model demonstrations with iDE. • Each plot size is 10x40 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
	Chambwa	Chambwa	2	• Plots customary owned by two iDE Lead Male Farmers. • Plots are modified farmland, used for annual demonstration activities with iDE. • Each plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trip and falls due to presence of tree stumps • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motorbike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •

	Shilumbwa	Shilumbwa	I	• Plot is owned by an iDE Lead Male Farmer who usually offers the plot for annual demonstrations with iDE. • The plot is a modified farmland and do not require vegetation clearance. • The plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Kabichi	Kabichi	I	• The plot is owned by an iDE Lead Male Farmer. • It is a about 10 by 50 modified farmland and do not require vegetation clearance. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
	Kalola	Kalola	2	• Plots are customary owned by an iDE Lead Female and a Male Farmer. • They are modified farmland usually offered for annual joint model demonstrations. • Each plot size is 30x50 meters • Proposed demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
		Kalola 3	I	• The plot is owned by an iDE Lead Male Farmer, who inherited it from the father.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape.

				• Each plot is a modified farmland of about 10 by 40 meters, which is used by iDE for annual model demonstrations. • Plots used for joint demonstration with iDE over the past 3 years. • Demo activities will be rain-fed and CSA innovations to be showcase include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Chikoloma	Chikoloma	I	• Plots is owned by an iDE Lead Male Farmers. • Plots is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • The plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trips and falls due to uneven plot surface. • Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Inappropriate handling of chance finds. • Potential for sheet erosion due to gentle sloppy nature of the land surface. •
	James Mpande	James Mpande	I	• Plots is owned by an iDE Lead Male Farmer. • Plots is a modified farmland, do not require vegetation clearance. • Plot used for joint demonstration with iDE over the past 3 years. Its size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trip and fall due to presence of stumps on land surface. • Air pollution from dust emissions during preparation which could further lead to catarrh and other respiratory diseases. • Inappropriate use of agrochemicals and harmful exposure of workers to pesticides to be used for managing pest and diseases, • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Chibombo Central	Chuni	I	• Plots customary owned by an iDE Lead Male Farmer. • Plots is modified farmland used by iDE for annal model demonstration activities. • Plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions.

				• Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
		Kashaya	2	• Plots owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots were previously used by iDE for model demonstration with farmers. • Each plot size is 10x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Chititi	Musopelo A	1	• Plot is owned by an iDE Lead Male Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • The plot size is 20x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trip and falls due to presence of tree stumps • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motorbike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
		Musopelo B	2	• Plots is owned by two iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • Each plot size is 30x50 meters • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Exclusion of vulnerable people, especially persons with disability from learning sessions.

					• Potential tensions with workers over road accidents involving project vehicle. •
	Mwachi-sompola	Chaona	1	• The proposed land is about 20x50 meters model demonstration plot, which belong to an iDE Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plot has been used for joint demonstration with iDE over the past 3 years. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
Chisamba	Chola	Chola	1	• The plot is customary owned by an iDE Lead Female Farmer. • Plot is a modified farmland, do not require vegetation clearance. Its size is 30x50 meters • Plot is used for joint demonstration with iDE over the past 3 years. • Demo activities are rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trip and falls due to presence of tree stumps • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motorbike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Chikuse	Chikuse	1	• The Plot is customary owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used for joint demonstration with iDE and do not require vegetation clearance. • The plot size is about 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Potential sheet erosion due to sloppy nature of the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •

	Mwendalui	Mwendalui	I	• The plot is owned by an iDE Lead Male Farmer through customary inheritance. • Plot is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. • The plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Chankumba	Chankumba	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland and has been used for model demonstrations with iDE. • Each plot size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
	Kasukwe	Kasukwe	I	• Plots is owned by an iDE Lead Male Farmer. • Plots is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. Plot size is 30x50m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Mwanje	Mwanje	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations.	• Potential inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases,

				• Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
	Musompa	musompa	I	• Plot is owned by an iDE Lead Female Farmer. • Plots is a modified farmland previously used by iDE for demonstration activities. • Plot size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds •
	Kanankatapa	Kanakantapa	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Chipembi	kasha	I	• Plot is owned by two iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •

		Nacesha	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. • Inappropriate use of agrochemicals •
		shiponda	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Chankuba	Chankumba	I	• Plot is owned by two iDE Lead Male Farmers. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Kanaka	Mudenda /kanakantapa	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape.

				• Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
Kapiri Mposhi	Chipuluka	Chipuluka	I	• Plot is owned by an iDE Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
	Kabwale	Kabwale	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Lukomba	Chikosa	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions.

					• Risk associated with labor and working condition including workplace sexual harassment. Inappropriate handling of chance finds.
		Munga	I	• Plot is owned by an iDE Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
		Mutanuka	3	• Plots are owned by two iDE Lead Male Farmers and one Female Lead Farmer. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
		Mulanshi	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •

		Ntabike	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Lwanshimba	Greenleaf	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
		Luanshimba	2	• Plots are owned by an iDE Lead Female and Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
		Lusumpuko	2	• Plots are owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases.

				• Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
		PCC	1	• Plot is owned by iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Lunchu	Lunchu	3	• Plots are owned by one iDE Lead Female Farmer and two Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Kalenda	Mpangamesela	4	• Plots are owned by four iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment.

					• Inappropriate handling of chance finds. •
	Lwanchele	Kapandula	I	• Plots owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
		Kombe	I	• Plot is owned by an iDE Lead Female Farmers. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
		Miyoba	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
		Mpikwa	I	• Plot is owned by an iDE Lead Male Farmer.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases.

				• Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
		Mulanshi	2	• Plots are owned by iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
		Sitonko	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Nchembwe	Kakulamabbwe	2	• Plots are owned by two iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases,

				• Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
		Mulungushi	4	• Plotsare owned by two iDE Lead Female Farmers and two Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
		Nchembwe	4	• Plots are owned by four iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Limansa	Mwangaukila	3	• Plots are owned by three iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Musosoloki	Chipepo	1	• Plot is owned by an iDE Lead Male Farmer.	• Inappropriate use of agrochemicals and potential harmful exposure.

				• Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
	Kakulu	Kakulu	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
	Chibwe	Chilundami west	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
		Chibwe	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions.

				• Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds. •
		Mambwe	2	• Plots are owned by iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. •
		Sanjungu	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
		Saulo- pensulo	2	• Plots are owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment.

					• Inappropriate handling of chance finds. •
	Lukanda A	Fibawe East	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle.
		Fibawe west	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
		Kanshintu west	I	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.
		Lukanda B	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions.

					• Potential tensions with workers over road accidents involving project vehicle.
	Lukanda B	Fibawe	2	• Plots are owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment.
		Forpenge	2	• Plots are owned by iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 20x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle.
		Kabachi chidano	1	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.
		kabowe	1	• Plot is owned by an iDE Lead Female Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions.

				• Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals
	Kashintu	Chola	2	• Plots are owned by two iDE Lead Female Farmers. • Plots are modified farmland, do not require vegetation clearance. • Plots are used for annual model demonstration with iDE. Each size is 30x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
		Input Lukanga	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle.
		Kautwe	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used by iDE for model demonstrations. • Its size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.
		Lubuto	2	• Plots are owned by two iDE Lead Male Farmers. • Plots are modified farmland, do not require vegetation clearance.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases,

				• Plots are used for annual model demonstration with iDE. Each size is 30x50 m • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals •
	Rumbi	16 Miles	2	• Plots are owned by iDE Lead Female and a Male Farmer. • Plots is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. Its size is 30x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential sheet erosion due to sloppy nature of the plot. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment.
		Rumbi	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plot size is 30x50 meters. It used by iDE for annual model demonstration. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Potential trip and fall • Harmful exposure to pesticides to be used for managing crop pest and diseases. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds
	Vuba	Banda	1	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. Plot size is 30x50m. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate use of agrochemicals and potential harmful exposure. • Risk of OHS relating to trip and falls on the plot due to uneven surface, snake bites because of their presence in the landscape. • Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.

					•
		Vuba	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plot size is 20x50 meters and it's used for annual joint demonstration with iDE. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Risk associated with labor and working condition including workplace sexual harassment, non-compliance with national labor requirements. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals and harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. •
	Muzyamba	Muzyamba	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, do not require vegetation clearance. • Plots used for joint demonstration with iDE over the past 3 years. Its size is 30x50 meters. • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Inappropriate handling and harmful exposure to pesticides to be used for managing crop pest and diseases. • Exposure to sun heat and burns during farming activities. • Potential exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle or motor bike. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds.
	Kabala	Kabala	I	• Plot is owned by an iDE Lead Male Farmer. • Plot is a modified farmland, previously used for joint model demonstration with iDE • Plot size is 20x50 meters • Demo activities will be rain-fed and CSA innovations to be showcased include Sahara Maize variety and Plant Catalyst booster. • Potential use of pesticides for control of fall army worms.	• Air pollution from dust emissions during land tillage and preparation which could further lead to catarrh and other respiratory diseases. • Harmful exposure to pesticides to be used for managing crop pest and diseases, • Exclusion of vulnerable people, especially persons with disability from learning sessions. • Potential tensions with workers over road accidents involving project vehicle. • Risk associated with labor and working condition including workplace sexual harassment. • Inappropriate handling of chance finds • Inappropriate use of agrochemicals

6.4 CSA Bundle 4: Diversified Integrated Mixed Chicken/Goat-Legume System

Scope of Work

The aim of this bundle is to stimulate farmers' adoption of a diversified integrated crop-livestock system in support of adaptation to climate change through increased returns on farm enterprise investment. The implementation of this bundle is led by ICRISAT and in partnership with COMACO.

COMACO is a social enterprise that finances improved agricultural practices through the adoption of agroforestry and a legume-based farming system that increases food crop yields and market opportunities for over 230,000 small-scale farmers. The proposed project will build on this foundation by partnering with the Chitetezo Co-operative Federation. Through this partnership, COMACO will expand its impact on sustainable agriculture adoption and the various ways these practices can increase conservation outcomes, including reduced deforestation and dependencies on such livelihoods as charcoal-making and wildlife poaching.

COMACO aims to strengthen the Federation, which represents 55 farmer cooperatives in the Eastern Province of Zambia, to help improve the cost-efficiency of its community-based supply chain of legumes by enhancing cooperative leadership to address such challenges as grain quality, crop bulking, transport logistics, and local adoption of mobile banking. The specific activities that will be implemented by COMACO under the AICCRA project to strengthen the federation include:

- Support the organizational strengthening of the Chitetezo Cooperative Federation. A federation of 55 farmer cooperatives that give equal opportunity to women and youth to become more profitable and food secure by adopting an agroforestry and legume-based farming system with their inherent conservation benefits.
- Recruitment of a full-time federation manager to oversee implementation of a workplan for building a coalition of farmer cooperatives around stated goals.
- Undertake financial literacy and management training for the executive members to lead the management of a warehouse receipt system on behalf of its cooperative members.
- Strengthen the federation to maintain an active voice on the COMACO local language talk radio program to disseminate information on the threats of climate change, harmful farming practices, and the benefits of practicing crop rotation with legumes alley cropped with Gliricidia sepium.

Environmental and Social Risk Review Summary

The E&S risks anticipated on the proposed activities under this bundle are low. Project activities are predominantly technical assistance and capacity building. The proposed interventions will not require any physical interventions such as civil works or the establishment of demonstration farms on the field. Activities with potential social risks are mainly relating to interventions that will create interaction between project workers and farmers. Such interactions could create grounds for COVID-19 transmission, and Gender-Based Violence. The interactions between the 55 farmer cooperatives in the federation could also lead to the emergence of complaints and tensions that require clear channels for receiving and managing such grievances. There could also be potential exclusion of vulnerable groups, such as persons with disabilities (PWD) from the federation's activities. However, this can be mitigated by encouraging the federation executives to deliberately target PWD especially, the deaf and blind farmers in their

sensitization and marketing activities. Proposed mitigation measures on for these risks presented in Section 6.

6.5 CSA Bundle 5: Gender and Social Inclusion

Scope of Work

This bundle specifically targets the inclusion of social minority groups that are often overlooked by mainstream institutions during the scale out of CSA innovations. The bundle, led by Better World Innovations, seeks to promote climate resilience agricultural practices on soyabeans among 10 minority cooperative groups in the Central province of Zambia. The target minority groups include 3 groups of People Living with HIV (PLHIV), 2 groups of Gender-Based Violence Survivors, 2 groups of women-led household cooperatives, and 3 groups of young people between the ages of 20 and 26 years. The key interventions planned by Better World Innovations for these groups include the following:

- Provision of technical training for the 10 cooperative groups in climate-smart agriculture practices on soyabeans and groundnut farming.
- Facilitate the cooperative group's access to climate resilient seed varieties.
- Provision of extension advisory services to the cooperative groups on agronomic farming practices.
- Provision of regional specific climate information and training of cooperative coordinators on the use of phones to access climate and marketing information from a mobile app.
- Facilitation of market linkages for cooperative groups to off-takers to ease sales of harvested farm products and improve profitability.

Environmental and Social Risk Review Summary

The potential environmental risks and impacts of the proposed operation under bundle 5 are low**.** The proposed interventions will not require Better World Innovations to set up any demonstration farm on the field or jointly undertake farming activities with the coperative groups. Better World Innovation will only focus on providing technical training on CSA practices and the dissemination of relevant CIS information. The proposed training for the coperative groups will occur in an urban setting where relevant sanitation facilities will be available for training participants.

Although the interaction between project workers and PLHIV and GBV survivors coperatives could expose members to stigmatization, the staff of Better World are well trained and experienced to handle such sensitivites. For instance, the Project Director of Better World worked with the Network of Zambian People Living with HIV/AIDS for over six years prior to joining the organization. As shown in Annex 7, Better World has official approval from the Ministry of Community Development and Social Services to work with these groups. Better World has also received an official introduction from the National Sectretariate of the Network of Zambian People Living with HIV/AIDs to work with the local charter in Central Province.

The other social risks envisaged include (i) exposure to COVID-19 infections which may arise from the interaction of project workers with cooperative members or between project workers; (ii) GBV in relation to contact between project workers and members of the cooperative groups; and (iii) absence or lack of courage of vulnerable cooperative members to voice out grievance. Mitigation measures are presented in Section 6.

7.0 ENVIRONMENTAL AND SOCIAL RISKS MITIGTAION STRATEGY

7.1 E&S Risks Identified, Mitigation Measures, and Cost

Overall, the potential E&S risks envisaged on the pilot of CSA/CIS innovations/technologies include:

- Habitat degradation through vegetation clearance and land digging and consequently loss of biodiversity, especially of organisms that are prevalent in the micro-areas.
- Occupational injuries from equipment cuts, slips and falls; and
- Waste (sludge) generation from the digging.
- Fish feeds, hormones, and other chemicals used for the treatment of fish may contaminate the natural water systems if water from the ponds is drained and released into the natural water systems.
- Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts, hence may weaken the gene pool of the wild fish.
- Attraction of new biological species into the area, principally predators which will include snakes, monitor lizards, and prey birds.
- Ponds may be a source of diseases such as malaria and bilharzia by serving as breeding grounds for mosquitoes and bilharzia parasites.
- The fishponds could act as death traps through drowning accidents involving children, livestock, and even workers.
- Exclusion of vulnerable groups (women and youth, elderly, disabled, etc.) farmers from learning sessions.
- Exposure to the COVID-19 infection, which may arise from the interaction of project workers with cooperative members or between project workers.
- Gender Based Violence (GBV) in relation to contact between project workers and members of the cooperative groups.
- Absence or lack of courage of vulnerable cooperative members to voice grievances.

During the on-farm screening activities, neither flora and fauna endangered species or at risk nor any protected species or areas have been identified next to the study areas.

The table 12 below provides an overview of the potential adverse E&S risks, associated risk rating, proposed mitigation measures, responsible parties, and the estimated costs.

Table 12:Environmental and Social Management Plan Summary

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
Planning Phase						
Proposed sites not suitable for CSA demonstrations.	CSA demonstrations works not implementable.	Hopeways, EUNIMOS, Kasakalabwe Cooperatives on bundle 2 and iDE on bundle 3.	Moderate	• Conduct E&S due diligence on proposed sites to ensure suitability. • Follow World Bank and national protocols on voluntary land acquisition to acquire plots.	AICCRA-Zambia Cluster Lead and Safeguard Focal Person. IITA and World Fish Institutional Leads on AICCRA. AICCRA E&S Specialists	$4000
SMEs staff not aware of AICCRA E&S risk management requirements.	Non-compliance with AICCRA ESRM guide.	All implementing SMEs.	Moderate	• Train staff of implementing SMEs on E&S requirements and procedures under the ACCRA project and for implementation of CSA bundle activities.	AICCRA E&S Specialists. AICCRA-Zambia Safeguard Focal Person.	$2000 This was done during the site-specific E&S screening.
Farmers not aware of safeguard requirements.	Non-compliance with ESMP.	Farmers.	Moderate	• Sensitize farmers on applicable AICCRA E&S safeguard requirements, particularly grievance mechanisms, child labor and SEA/SH prohibitions, and occupational health and safety measures.	Lead Staff of SMEs on implementation of CSA bundle activities. AICCRA-Zambia Safeguard Focal Person	$4000
Implementation Phase						
Mitigation Measures on E&S Risks Identified on the Construction and Management of Fishponds under Bundle 2.						

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
Ponds serving as breading grounds for malaria and bilharzia vectors.	Increase in malaria and bilharzia incidents among workers and nearby residents.	Project Workers Residents for nearby communities.	Moderate	• For malaria, the tilapia fish to be reared in the ponds could serve as a biological control measure by feeding on the mosquito larvae in the water. • For Bilharzia, workers must be educated to avoid direct contact such as wading through ponds without protective clothing. • Regularly change the water in the pond to prevent mosquito breeding. • Remove excess vegetation and organic debris that provide mosquito larvae with food, shelter from the sun and hiding places from predators. • Sensitize and encourage residents of nearby communities to sleep in mosquito nets.	Project Leads of Hopeways, EUNIMOS and Kasakalabwe Cooperatives. WorldFish AICCRA-Zambia Safeguard Focal Person.	Nil
Environmental pollution from release of waste pond waters with fish feeds, hormones, and other chemicals used for treatment of fish diseases.	Contamination of natural water systems.	Existing water bodies.	Moderate	• Use appropriate aeration technology to minimize excessive change of water in ponds and generation of wastewater. • Ensure use of the right chemicals and hormones. • Minimize regular contact such waters and the natural water systems. • Treatment of pond waste water by ensuring adequate time for biodegradation of the chemicals used.	Project Leads of Hopeways, EUNIMOS and Kasakalabwe Cooperatives. WorldFish AICCRA-Zambia Safeguard Focal Person.	Nill
Fish escaping from the pond into the water body system.	Weakened gene of wild fish from potential cross breeding.	Existing aquatic life.	Moderate	• Ensure control and periodical checks of the pond exit cages. • Monitor and diagnose for any escape holes in the cages and determine the duration and longevity of the cages.	Project Leads of Hopeways, EUNIMOS and Kasakalabwe Cooperatives. WorldFish, AICCRA-Zambia Safeguard Focal Person.	Nill
Attraction of new biological predators e.g.	Change in local ecosystem food chain.	Local fauna and flora.	Moderate	• Regular checks and control of predators and dangerous species. • Good management of the ecosystems.	Project Leads of Hopeways, EUNIMOS and Kasakalabwe Cooperatives.	Nill

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
snakes, monitor lizards, prey birds.				• Minimize the proliferation of dangerous fauna and flora through controls.	WorldFish, AICCRA-Zambia Safeguard Focal Person.	
Drowning accidents involving children, livestock, and even workers.	Injuries, death and disruption of workflow.	Workers, visitors, residents, and livestock in nearby communities.	Moderate	• Ensure the pond sites are fenced off to prevent children and livestock accessing them easily. • Even where they are fenced, put up warning signs. • Mandate two-person visits to ponds and prohibit lone individual visits to pond sites. • Carry out public awareness and education as a means to prevent accidental deaths by drowning.	Project Leads of Hopeways, EUNIMOS and Kasakalabwe Cooperatives. WorldFish, AICCRA-Zambia Safeguard Focal Person.	$2000
Mitigation Measures for E&S Risks Identified on the Demonstration of CSA innovations under Bundle 3.						
Pesticide and other chemical use for crop pest control on all the 16 demonstration plots	Air, water, and land pollution, Poisoning of aquatic and terrestrial life. Poison of project workers and residents of host communities.	Workers, farmers, animals, and consumers of farm products	Moderate	• Promote good farming practices that use fewer chemical inputs • Use pesticides approved by the national government. • Integrate training of workers and farmers in the proper handling and disposal of chemical residue and cans. • Comply with prescriptions contained in the pesticide safety data sheets. • Follow pesticide storage procedures contained in the safety data sheets. • Consider the direction of the wind during phytosanitary treatments and do not spray against the direction of the wind. • Provide appropriate protective clothing and equipment i.e., protective googles, hand gloves, air purifying disposable/washable masks, neoprene gloves, chemical resistant hats. • Avoid practices likely to cause unintentional emissions of persistent organic pollutants (POPs) such as open burning of agricultural residues treated with pesticides.	Project Leads of ZARI and iDE AICCRA-Zambia E&S Focal Person.	$3000
Air pollution from land tillage	Increase risk of headache, catarrh and respiratory diseases	Workers and nearby residents	Moderate	• Consider doing land tillage immediately after rains or in the morning when humidity may be high to reduce floatation of loose soil particles in the air. • Prove air purifying nose masks to workers doing land tillage.	Project Leads of ZARI and iDE AICCRA-Zambia E&S Focal Person.	$1000

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
Indiscriminate disposal and improper handling of solid waste at all project sites	Land and water pollution, poisoning of terrestrial and aquatic life.	Residents, river bodies, land and animals,	Low	• Provide waste bins at demonstration sites. • Dispose of waste at approved waste dump sites. • Keep hazardous substances including obsolete agrochemicals and empty agrochemical containers in a secure storage area. • Sensitize workers and visiting farmers on waste disposal arrangements. • Return agrochemical containers to the suppliers.	Project Leads of ZARI and iDE AICCRA-Zambia E&S Focal Person.	$1500
Sheet erosion on farm fields.	Destruction of soil structure and loss of soil nutrient.	Productivity of farm plots.	Low	• Construct terraces across landscape to minimize sheet erosion. • Provide adequate sediment traps to holdoff loose soil from entering river channel. • Promote mulching of bare plots surfaces to reduce flow of runoff water. • Pesticides and other chemical application should be scheduled to avoid likely period of heavy rains.	Project Leads of ZARI and iDE AICCRA-Zambia E&S Focal Person.	$500
Mitigation Measures for Other E&S Risks Applicable to all CSA bundle activities implementing SME's						
Occupational Health and Safety (OHS) at all project sites.	Injuries, accidents, disruption of workflow, etc.	Workers & Visiting Farmers.	Moderate	• Include OHS requirements in the workers' Code of Conduct (CoC). • Provide OHS orientation to workers, visiting farmers, and other stakeholders. • Procure and provide relevant PPE for staff working on demonstration sites and encourage visiting farmers to use the same. • Ensure that all equipment is maintained and in a safe operating condition. • Inspect all farm equipment with the view of ascertaining its safety status before use. • Provide first aid boxes at project demonstration sites. • Provide workers and visiting farmers with access to toilets and potable drinking water. • Investigate the cause of accidents at the workplace and maintain a record of health and safety incidents.	Project Leads of all SME's	$5000

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
				• Workers will have the right to refuse work in unsafe conditions. • Comply with the prescriptions contained in the pesticide safety data sheets.		
Indiscriminate disposal and improper handling. of solid waste at all project sites.	Land and water pollution, poisoning of terrestrial and aquatic life.	Residents, river bodies, land and animals,	Low	• Provide waste bins at demonstration sites. • Dispose of waste at approved waste dump sites. • Keep hazardous substances, including obsolete agrochemicals and empty agrochemical containers, in a secure storage area. • Sensitize workers and visiting farmers on waste disposal arrangements. • Return agrochemical containers to the suppliers.	Project Leads of all SMEs	$1000
COVID-19 transmissions at all project sites.	Increased spread of the corona virus.	Residents; workers.	Moderate	• Provide nose masks to workers and visiting farmers at no cost to them and require the wearing of face masks at sites as per national policy on mask wearing. • Ensure social distancing at the workplace. • Provide handwashing facilities supplied with soap, disposable paper towels and closed waste bins at key places at the sites. • Provide accessible sanitation areas with water, soap, and sanitizers. • Ensure that all workers have adequate and updated information on COVID-19 and Government of Zambia's updated COVID-19 guidelines. • Establish measures and a referral pathway including linkage with the Ministry of Health for workers who get infected with COVID-19 in the line of duty. • Immediately isolate workers or visiting farmers with symptoms of COVID-19 (e.g., fever, dry cough, fatigue) and report suspected cases through the following emergency numbers: 0800 721 316 or link up with local district health authorities for immediate evacuation or medical help.	Project Leads of all SMEs	$1000

Type of risk	Potential impact	Key receptor	Risk level	Proposed mitigation measures	Responsible	Estimated cost (US$)
				• Provide adequate support to workers who get exposed to the virus at the workplace.		
Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH) at all project sites	Female workers being harassed. Female farmers and other community members being sexually exploited. Violation of sexual privacy.	Workers, residents.	Low	• Include SEA/SH prohibitions and sanctions in the workers' code of conduct and enforce compliance. • Provide mandatory training and awareness-raising for the workforce on SEA/SH probations and the CoC • Informing workers about national laws and institutional policies that make sexual harassment and gender-based violence punishable offences. • Provide safe and suitable toilets and washing facilities, separate for men and women workers, particularly during on-farm demonstrations. • Provide safe and confidential grievance channels easily accessible to all stakeholders. • Awareness raising to inform project stakeholders including project host communities and farmers on SEA/SH risks and mitigation strategies • Incorporate SEA/SH Requirements and expectations in grantees and consultants' contracts	Project Leads of SMEs	$3,000
Exclusion of vulnerable groups (women and youth, elderly, persons with disability etc.)	Discrimination against people with disability	Persons with disabilities.	Low	• Use local languages for all engagements and meetings with farmers. • Organize women-only focus groups and learning sessions. • Engage the services of sign language interpreters. • Maintain sensitivity to local culture and traditional meeting and event days. • Provide free transport services for PWDs as and when necessary.	Project Leads of SMEs	$2000

7.2 Chance Find Procedures

In the event of finding previously unknown sites or features of cultural value during project implementation, the following standard procedures for identification, protection from theft, treatment, and recording should be followed:

Specifically,

i. Stop the activities in the area;
ii. Delineate the discovered site or area;
iii. Secure the site to prevent any damage or loss of removable objects;
iv. Notify the AICCRA Safeguard Focal Person, who in turn will notify the responsible authorities;
v. The Ministry of Arts and Culture, in collaboration with responsible local authorities (where applicable), would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures;
vi. The Ministry of Arts and Culture will decide on how to handle the findings. This could include changes in the layout (such as when finding irremovable remains of cultural or archaeological importance), conservation, restoration, and salvage;
vii. The Ministry of Arts and Culture, through the Department of Arts and Culture shall communicate implementation of the authority decision concerning the management of the finding in writing; and
viii. Demonstration activities could resume only after permission is given from The Ministry of Arts and Culture, or other responsible authorities concerned with safeguarding the cultural heritage.

7.3 E-wastes Management Plan (E-WMP)

❖ Introduction

Electric and Electronic Waste, or E-waste, is an informal name for electrical and electronic products nearing the end of their "useful life." Computers, televisions, stereos, copiers, and faxmachines are common electronic products. For this project such wastes are solar panels used for crops' irrigation. Many of the components of the solar panels can be reused, refurbished, or recycled. However, electronic discards are one of the fastest growing segments of the Zambian waste stream.

Out of the identified potential environmental and social risks in the ESMF is the generation and management of solar panel wastes which requires its own E-waste Management Plan (E-WMP). Therefore, this E-WMP shall serve as a guidance document for AICCRA Zambia project to meet the challenges for providing a safe, environmentally sound, and unified response for the management of solar panel wastes. The goal of this E-WMP is to protect human health and the environment while complying with applicable local regulatory requirements.

This plan involves the tracking of solar panel wastes resulting or associated with the activities of the AICCRA Zambia Project from the point of generation through its final disposition. IWMI, its partners and the project stakeholders are aiming to avoid the generation of solar panel waste where possible. Where waste generation cannot be avoided, the project aims to minimize the generation of waste, and reuse, recycle and recover waste in a manner that is safe for human health and the environment. Where waste cannot be reused, recycled, or recovered, solar panel waste shall be treated, destroyed, or disposed of

in an environmentally sound and safe manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material. All Project Workers involved in any waste management process will carefully read the procedures contained within this guidance document to apply them for the benefits of the population and the environment.

❖ **Project Related E-Waste Sources**

The electronic devices which could result in the generation of e-wastes in AICCRA Zambia project are solar panels. Lupiya will prefinanced the supply of 250 off-grid solar irrigation pumps for small-scale farmers.

The main waste products from solar irrigation equipment are panels. Management/recovery methods include export for processing abroad, local pre-processing, and recycling. The following table gives waste classification of PV modules.

Table 13: Waste Classification of PV modules

Item	Material used
Frame	Aluminium
Modular cover	Glass
Solar cell	Silicon Cadmium, tellurium, indium, gallium, selenium compounds
Solar cell coating	Silver, copper, lead, gallium /boron/phosphorus, aluminium
Cell and module interconnections	Lead, copper, tin
Backsheet, encapsulants	Polymer

Source: Suresh et al., 2019.

❖ **Potential Environmental and Social Impacts**

The following are the potential environmental risks that could arise from the generation of solar panel wastes.

- Generation of leachate and the release of pollutants and heavy metals to the environment due to unsafe and improper disposal, posing health and safety risks to the public.
- Contamination and acidification of agricultural soil, affecting soil fertility and agricultural yield.
- Water, air, and soil pollution due to the release of environmental pollutants such as heavy metals and harmful chemicals generally present in photovoltaic cell (cadmium telluride, copper indium selenide, cadmium gallium (di)selenide, copper indium gallium (di)selenide, lead, polyvinyl fluoride, hexafluoroethane, nitrogen trifluoride (NF3), nickel, tin and zinc).
- Improper recycling of solar panels wastes as such practices are done for scavenging resalable components and parts, therefore causing environmental pollution due to the burning of cables, random disposal of wastewater from the recycling processes, and random dumping of irretrievable e-waste.

In addition, improper collection, management, and disposal of solar panel waste could pose the following health and social risks.

- Nuisance to communities due to aesthetical and visual pollution.
- Contamination of drinking water, underground water resources with hazardous metals, and other harmful chemicals.
- Various health impacts (cancer, kidney, liver, lungs and brain damage, which are toxic to blood, prostate, respiratory system and also recognized for reducing reproduction, increasing behavior problems as well as humans and wildlife death) due to heavy metals in water, air, and soil due to the carcinogenic and harmful nature of these pollutants and their bioaccumulation in the food chain and water resources.

The following table presents the hazardous materials used in PV manufacturing.

Table 14:Hazardous material used in PV manufacturing

Type of cell	Material used	Critical issues if disposed improperly
GaAs	Arsenic (As)	Poisonous, cancer promoting, lung affecting
	Arsine (As H3)	Toxic gas, blood, kidney damaging
	Trimethyl gallium	Pyrophoric liquid
	Hydrochloric acid	Corrosive material
	Methane	Flammable gas
a-Si	Diborane (as dopant)	Flammable gas Pulmonary problem
	Diethylsilane (in deposition)	Flammable liquid
	Silane (in deposition)	Pyrophoric gas, irritant, fire hazard
	Hydrofluoric acid	Corrosive material
	Silicon tetrafluoride (in deposition)	Toxic and corrosive gas
	Hydrogen	Flammable gas and fire hazard
CuSe.InSe	Selenium	Poisonous and irritant
CdTe	Tellurium	Adverse effect on liver
	Cadmium	Can cause lung cancer, also affects bones and kidneys

Source: Nkuissi et al., 2020[25].

❖ Mitigation Measures and solar panel waste Management

The following are the general requirements for solar panel wastes management.

[25] Suresh S, Singhvi S, Rustagi V (2019) Managing India's PV module waste. Available at: https://bridgetoindia.com/backend/wp-content/uploads/2019/04/BRIDGE-TO-INDIA-Managing-Indias-Solar-PV-Waste-1.pdf (accessed 19 December 2022).

1. Waste minimization and prevention through maintenances.
2. Selection of technologies and equipment based on international standards to maximize their lifetime and minimize associated risks at their end-of-life stage.
3. Coordination with the relevant authorities and stakeholders.
4. Identification, labelling, and segregation at source.
5. E-waste quantification, and qualitative record keeping.
6. Temporary storage on site.
7. Collection and transport.
8. Central storage at designated location.
9. Reuse, recycling, and recovery of suitable waste.
10. Treatment and disposal.
11. Incident reporting of related accidents.

E-waste segregation must consider the hazardous nature of the waste or its content (e.g., heavy metals, and other hazardous substances) shall always be segregated from other e-waste that does not contain environmental, carcinogenic, or other pollutants. The segregation shall be done based on content, and correct labelling and quantification must be applied.

- **Solar panel waste Minimization and Prevention**

The following set of measures aims to prevent and/or minimize the quantities of solar panel waste generated and the hazards associated with:

- Procure solar panels from credible manufactures to avoid purchasing second hand, refurbished, or obsolete devices with a short shelf life or already categorized as e-Waste.
- Instituting good housekeeping and operating practices, including inventory control to reduce the number of solar panel wastes resulting from materials that are out-of-date, off specification, contaminated, damaged, or excess to operational needs.
- Minimizing hazardous solar panel wastes generation by implementing stringent waste segregation; and
- Instituting procurement measures that recognize opportunities to return usable materials.

- **Solar panel waste Segregation and Quantification**

Lupiya shall be assigned the responsibility of sound solar panels wastes segregation, quantification, and labelling in accordance with this E-WMP. This in turn will be reinforced in their contracts and their responsibilities towards the e-waste segregation, quantification, and labelling will be clearly stated in the bidding documents.

As such, characterization, segregation, sorting, labelling, quantification, temporary storage and transport to final storage location, this shall be conducted according to composition, source, type of solar panel wastes produced, pollutants content (heavy metals, hazardous chemicals, and others).

- **Solar panel waste Recycling, Reuse, and Recovery**

Operational assessment of end-of-life equipment shall be conducted by running appropriate tests to assess the functionality when replacing or retrofitting project related equipment.

In addition to the implementation of e-waste preventive strategies, the total amount of solar panel waste may be significantly reduced through reusing utilizable components within the project, or through outsourcing to certified and licensed firms that shall be contracted to receive project related solar panel waste. Reuse of panel can be done either by direct reuse or after refurbishment.

- **Solar panel waste Storage**

Lupiya shall ensure that the storage of project related e-waste is being conducted in accordance with the national laws and legislations, and the World Bank EHS Guidelines containing measures on Hazardous Waste. Solar panel waste shall be stored in a way that prevents and controls accidental release to natural resources (air, soil, and water). The following measures are to be followed in the storage of solar panel wastes.

- Temporary storage containers shall be available until transported into their final storage location.
- Solar panel waste shall be stored in closed containers, each depending on type and composition away from direct sunlight, rain, wind, electrical fixtures, water systems and in an area where ventilation system is not circulated to other rooms or facilities.
- Solar panel waste shall be stored in an appropriate manner preventing the mixing or contact between different sorts of e-waste and in a separate location from solid waste.
- The storage arrangement shall allow for inspection between containers to monitor leaks or spills.
- The Contractor, employees involved in the solar panel waste management, and the disposal or recycling enterprises shall provide their personnel with training and induction on the proper handling of these wastes.
- Employees involved with solar panel waste management shall be provided with the appropriate PPEs, vaccinations, and a medical record shall be kept.
- Conduct periodic inspection of solar panel waste storage area and document the findings.

- **Solar panel waste Transportation**

All containers designated for off-site transport shall be secured in the designated storage location and shall be labelled with the contents, associated hazards, receiver, destination, and other information. solar panels wastes shall then be properly loaded onto the transport vehicles in accordance with OHS guidelines on loading and unloading, specified in the World Bank EHS Guidelines.

The containers shall be accompanied by an e-waste transfer note, in the form of a transport manifest that describes the load and its associated hazards, in suitable and well-suited vehicles. The handler and transporter shall be registered and certified.

- **Solar panel waste Treatment and Disposal**

In cases when solar panel wastes are still generated after the implementation of feasible e-waste prevention, reduction, reuse, recovery and recycling measures, solar panel waste materials should be treated and disposed of, and all measures should be taken to avoid potential impacts to human health and the environment. Selected management approaches include timely removal, treatment and/or disposal at permitted/ approved facilities specially designed to receive the solar panel waste in accordance with national legislation and WB framework.

- **Monitoring**

When significant quantities of solar panel waste are generated and stored on site, monitoring activities shall include:

- Monthly visual inspection of all storage collection and storage areas for evidence of accidental releases and to verify that solar panel waste is properly labelled and stored.
- Monthly visual inspection of labelling, quantities, and containers conditions.
- Weekly inspection of loss or identification of cracks, corrosion, or damage to protective equipment, or floors.
- Verification of locks, and other safety devices for easy operation.
- Documenting any changes to the storage facility, and any significant changes in the quantity of materials in storage.
- Regular audits of solar panel waste segregation and collection practices.
- Tracking of solar panel waste generation trends by type and amount.

Additionally, record keeping of collected solar panel waste needs to be monitored. Solar panel waste collected, stored, or transported shall include:

- Name and identification number of the material(s) composing or Physical state.
- Quantity/Number of solar panels.
- Schedule (date of collection, date of transportation, etc…).
- Hazardous and pollutant contents (i.e., existence of heavy metal, hazardous chemicals).
- Transport tracking documentation shall include, quantity and type, date dispatched, date transported, and date received, record of the originator, the receiver, and the transporter.
- Method and date of storing, repacking, treating, or disposing at the facility, cross-referenced.

- **Budget and Resources Requirements**

The table below provides an indicative outline of the cost and resources requirements needed for the implementation of the E-WMP.

Table 15:Buget and resource requirements for E-WMP

Activity	Cost
Training workers on the identification and handling of solar panel waste, segregation, filling data sheets, and storage.	1,000 $
Providing containers for solar panel waste collection, temporary storage & Transport to final	2,000 $

storagelocation	
Tracking and monitoring	1,000 $
Total	4,000 $

7.4 Pest Management Plan

The focus of the CSA demonstration being implemented by ZARI and iDE in AICCRA-Zambia is to showcase good farming practices on climate resilient and high yielding varieties of maize, groundnut, and maize. In so doing, ZARI and iDE recognize that pest and diseases would need to be controlled to ensure production of high yield and excellent quality products. This strategy therefore outlines the approach and measures that will be used to control pest and diseases on the CSA demonstrations.

The general approach is to support an integrated and comprehensive pest management which includes cultural practices, plant nutrition, mechanical controls, and pesticides. The use of pesticides may be the last resort and where the use of pesticides is inevitable, the most environmentally friendly products approved by the ZEEMA and the Plant Quarantine and Phytosanitary Service (PQPS) in the Ministry of Agriculture (MOA). The management of various pests under the AICCRA project will be based on Integrated Pest Management (IPM) approach. This approach recommends the combination of multiple control methods against pests while considering the use of chemical pesticides as a last resort. In this regard, several management methods such as biological control, agronomic control, varietal selection, and the judicious use of chemicals when needed.

Tables below provides the pest management strategy for each of the five selected value chains.

Table 16: Pest management strategy

	1. Groundnut	
#	**Insect Pests**	**Intervention/ Management Strategy**
	Category: Insects	
	Armyworms *Spodoptera* spp.	• Use recommended varieties. • Avoid planting in an already infested field. • Remove and destroy crop residues before planting. • Frequently control weeds and other alternative hosts as they may serve as breeding spots. • Monitor fields regularly for early warning signs. • Spray neem-based products. • Spray recommended insecticides such as Bt - Bacillus thuringiensis (Bypel), Emamectin benzoate, etc. at the recommended rate and time. • Practice push-pull technology.
	Thrips (Tobacco thrips)	• Use adequate plant spacings to avoid overcrowding; provide plants with adequate irrigation and fertilization to encourage the fast establishment of seedlings and growth of a close canopy which is unattractive to thrips vectors. • Regular plant observation/ neem shredded • Decis or Dimethoate product will be applied at the recommended dose (in case of severe attacks)

	Velvetbean Caterpillar *Anticarsia gemmatalis*	• Encourage natural predators and parasites in the field; • Early or late planting of crops helps in escaping the insect attack; • Grow available resistant varieties; • Spray biocontrol agents like nuclear polyhedrosis virus (NPV) and the bacterium Bacillus thuringiensis (Bt). • Use pesticide products as last resort.
	Category: nematodes	
	Root-knot nematode *Meloidogyne* spp	• Select and use improved/tolerant varieties. • Select clean and healthy yam setts. • Amend ridges/mounds with bio-nematicides. • Intercropping or crop rotation. • Ensure proper farm sanitation; some weeds serve as alternative hosts therefore regular clearing of weeds is advisable.
	Category: mite	
	Two-spotted spider mite *Tetranychus urticae*	• biological control by conservation of natural enemies. • Use of pesticide products as last resort.
Diseases		
	Category: Fungal	
	Fungus	• Avoiding frost damage by planting early peanut varieties can help protect the plant from fungal colonization; • providing the plants with adequate irrigation and fertilization reduces susceptibility to the disease; • plant peanut varieties that have some resistance to the disease; • rotation of crop with nonhost may help to reduce inoculum in the soil; • application of appropriate soil fumigants in heavily infested fields. • peanut crop debris should be plowed into soil after harvest and any volunteers removed from the nonhost crop; • The disease is held in check by fungicides applied to control early or late leaf spots. • Allow field to fallow for at least one month between successive peanut plantings; remove any volunteer peanut plants during fallowing to reduce inoculum; • Plant seeds that are coated with protectants; avoid injuring plants with tools and/or machinery; • application of appropriate fungicides can reduce crop losses when the disease is present. • Plow crop debris deeply into the soil after harvest of crops • Eliminate weeds in the plantation which may allow inoculum to build up in the soil; • Remove and destroy infected crop residue after harvest to reduce inoculum in the field.
	Category: Viral	
	Stunt Peanut stunt virus	• Avoid planting peanuts in close proximity to legumes. • Remove any infected plants from the plantation to reduce inoculum.
	Tomato spotted wilt virus & Peanut bud necrosis	• Use high-quality seeds and use adequate plant spacings to avoid overcrowding; • provide plants with adequate irrigation and fertilization. • Intercropping peanut with millet.
2. Soyabean		

Pest/Disease	Intervention/ Management Plan
Aphids	• Select and use improved/tolerant varieties. • Rotate cowpea with crops such as maize. • Intercrop cowpea with crops such as garlic. • Ensure good agricultural practices such as applying the recommended planting distances. • Application of bio-pesticides such as neem-based products. • Judicious application of insecticides.
Flower Thrips	• Grow tolerant soyabean variety. • Plant early maturing varieties to escape periods of heavy attack. • Intercrop cowpea with cereals such as maize to reduce population of thrips. • Apply neem-based products. • Judiciously apply recommended insecticides such as Chlorpyrifos.
Soyabean pod borer	• Plant improved tolerant variety. • Hand pick and crush insects and their eggs. • Practice good cultural practices such as weed control, as weeds can serve as hiding place for the insects. • Prune excess leaves from stem to allow sunlight. • Judiciously apply recommended insecticides.
Parasitic weeds- Striga	• Select and grow improved/tolerant varieties. • Practice crop rotation with non-host plants. • Apply optimal amount of Nitrogen nutrients. • Spray recommended herbicides. • Timely weeding/ hand pulling of striga before it flowers.
Mosaic virus disease	• Plant tolerant varieties. • Effectively control insect pest such as aphids.
Cercospora Leaf spot disease	• Plant tolerant varieties. • Treat seeds with fungicides before planting. • Practice proper field sanitation such as removal of weeds which may serve as alternative host and removal of plant debris. • Intercrop cowpea with other crops such as maize. • Judiciously apply recommended fungicides such as mancozeb at recommended dosages.
3. Maize	
Pest/disease	Intervention/ Management Plan
Striga	• Plant improved/tolerant maize varieties. • Pull out striga plants prior to flowering. • Cultural practices such as crop rotation with poor host such as groundnut and soyabean. • Apply recommended fertilizer at the recommended rates.
Stem borers	• Remove, destroy or bury crop residues on the field after harvest. • Amend soil with neem seed cake/neem-based product at planting. • Crop rotation with poor hosts such as legumes. • Intercrop maize with non-host crops such as cassava and legumes. • Practice push-pull technology. • Wisely apply insecticides such as Karate at the recommended rate when necessary.
Fall Army worm	• Use recommended maize varieties. • Do not plant in already infested field. • Remove and destroy crop residues before planting.

	• Frequently control weeds and other alternative hosts as they may serve as breeding spots. • Monitor fields regularly for early warning signs. • Spray neem-based products. • Spray recommended insecticides such as Bt - *Bacillus thuringiensis* (Bypel), Emamectin benzoate etc. at the recommended rate and time. • Practice push-pull technology.
Cutworms	• Turn up the soil to expose them to sunlight and predators such as birds. • Monitor field, hand pick and mechanically destroy caterpillars. • Apply Bt based products. • Treat soil with insecticides such as chlorpyrifos.
Maize Streak virus	• Use tolerant varieties. • Manage vectors by judiciously applying recommended insecticides.

7.5 Institutional Arrangements and Responsibilities for Implementing the ESMP

The implementation of material actions contained in this ESMP will be the primary responsibility of the 15 SMEs engaged to implement project activities under the respective bundles. The scale of material actions to be implemented by each partner will depend on the type of E&S risks identified with project activities. The efforts of these partners will be supported by IWMI, WorldFish, ICRISAT and IITA. The AICCRA-Zambia Safeguard Focal Person and the AICCRA Senior E&S Specialist will provide additional oversight for the implementation of all actions. Detailed level of oversight, responsibility, and key roles are provided in the table below:

Table 17: Institutional Roles and Responsibilities in th implementation of the ESMP.

Institution/Lead Person	Roles and Responsibilities
AICCRA Senior E&S Specialist	• Provide technical support for the implementation of material actions in this plan. • Monitor compliance with mitigation measures through regular field monitoring and on-the-spot checks. • Provide biannual reports to the World Bank on progress of implementation and compliance.
AICCRA-Zambia Safeguard Focal Person	• Facilitate overall coordination and support the implementation of material actions in the ESMP. • Sensitize project partners and workers on this ESMP. • Monitor compliance with mitigation measures through regular field monitoring and on-the-spot checks. • Document implementation progress, grievances received, incidents and accidents. • Provide biannual progress updates on implementation and compliance with AICCRA PMC (Project Management Committee).
ICRISAT, IWMI, IITA and World Fish Project Leads	• Provide funding for the implementation of material actions in this ESMP. • Support SMEs in the implementation of key mitigation measures • Monitor compliance with mitigation measures through regular field monitoring and on-the-spot checks.
SMEs	• Sensitize workers and farmers on this ESMP and on all mitigation measures relevant to operation.

	• Implement applicable material actions. • Receive grievances from the farmers and community members and escalate them to the AICCRA-Zambia Safeguard Focal Person.

7.6 Institutional Strengthening and Capacity Building for ESMP Implementation

For effective implementation of this ESMP, there will be a need to enhance the appreciation of implementation partners, project workers, and relevant stakeholders on the E&S mitigation and response measures considered in this document. Capacity building is needed for key partners to enable them to take appropriate responsibility in implementing mitigation measures outlined in this document. The following broad areas, but not limited to, have been identified as key areas that deserve attention for capacity building:

- Occupational health and safety measures;
- Engagement of casual laborers;
- Mitigation of fish farming related E&S risks;
- Mechanism for inclusion of vulnerable groups i.e., women and persons with disabilities.;
- Receipt and management of grievances including cases linked to SEA/SH; and
- Reporting on E&S issues.

The AICCRA-Zambia team has already started this sensitization and capacity building for implementing partners. During the E&S screening exercise, adequate time was devoted to leadership of each SME to explain the key E&S risks envisaged on activities, mitigation measures required; and procedure for implementing each mitigation measure. Following the World Bank's approval of this ESMP, the AICCRA-Zambia Safeguard Focal Person shall organize another capacity building session for workers of SMEs assigned to implement project activities under their respective bundles. The training on mitigation of fish farming related risks will be led and conducted by the World Fish.

7.7 Grievance Mechanism

The AICCRA-Zambia team is committed to providing a transparent and easily accessible grievance mechanism for all workers and community members to report complaints relating to, expected, or actual project impact on them; disagreements on working conditions; health and safety; discrimination; bullying; sexual harassment; and abuse.

Two-prong grievance mechanisms would be made available for all workers and community members to respectively report-labor related grievances, including SEA/SH. These include (i) existing grievance mechanism and public call centers maintained by each respective SME; and (ii) the AICCRA-Zambia grievance mechanism outlined in the AICCRA-Zambia stakeholder engagement plan (SEP).

Existing Grievance Mechanism for SMEs

During the E&S screening exercise, each implementing SME visited confirmed the existence of an internal grievance procedure for workers and publicly available contact numbers for receiving complaints and information requests on their operations from stakeholders and farmers. The AICCRA-Zambia team will encourage the SMEs to use these existing mechanisms to receive and manage general complaints from both workers and stakeholders except SEA/SH. Partners have been encouraged to promptly refer all SEA/SH grievances relating to the AICCRA project to the Zambia PIU for management. However, each partner will be required to provide quarterly reports to the AICCRA Safeguard Focal Person on the grievances received and how they have been/are being resolved. In addition, each SME will also be required to share contact details of the AICCRA-Zambia grievance mechanism with farmers and encourage them to reach out directly to the AICCRA project management if they feel uncomfortable reporting cases to the SME.

AICCRA-Zambia Grievance Mechanism

The AICCRA-Zambia grievance mechanism outlined in the cluster SEP constitutes an alternative pathway for project workers and community members to report grievances, including cases linked to SEA/SH. The mechanism provides several channels for lodging complaints, including emails, phone calls, texts, letters, and a toll-free line that will also be accessible to all workers and community members. Information on this grievance will be made available to all workers and community members to ensure that all workers have adequate knowledge of how to lodge a complaint and receive resolution through the mechanism. Further details of the AICCRA-Zambia GM can be found in the project SEP approved by the World Bank.

SEA/SH Grievance Mechanism

Overall, the AICCRA project has prepared an SEA/SH mitigation and response action plan to detail material measures for preventing and handling potential SEA/SH cases. Based on the measures set out in this plan, anonymous reporting channels have been provided as part of CGIAR and AICCRA-Zambia grievance uptake points to encourage reporting of SEA/SH related cases. When such a case is reported, the complainant would be provided with information about the available services, including confidential appropriate medical and psychological support, emergency accommodation, and any other necessary services as appropriate, including legal assistance. The Safeguard Focal Person will refer all SEA/SH survivors to the relevant GBV service providers identified by the project. When a case of that nature is reported, the AICCRA-Zambia Safeguard Focal persons will record the case with the following limited information: the nature of the incident, the age and sex of the complainant, and whether the survivor was referred to a service provider.

The AICCRA-Zambia Grievance committee will review all cases referred to it to determine and agree upon course of action for handling and resolving the case. The appropriate institution that employs the perpetrator will be required to review the case and take disciplinary action in accordance with the employer's code of conduct and the national legislation. Disciplinary actions may include informal warning, formal warning, additional training, suspension, or termination of employment. A survivor may continue to receive support from the appropriate GBV service providers while the case is being handled by the employer.

7.8 Public Consultation, Participation, and Information Disclosure

Information disclosure and stakeholder consultations have been a crucial process leading to the preparation of this ESMP and will continue to be carried out during the implementation of this ESMP and throughout the project lifespan.

In accordance with the AICCRA-Zambia SEP, the project team will publicly disclose this ESMP to all stakeholders and further share it with SMEs engaged to implement various activities. Project workers and other relevant stakeholders will be educated on the risk mitigation measures at the demonstration sites and what is required of them when visiting the demonstration sites. Various methods, such as community meetings, focus group discussions, public announcements, and posters would be used to educate farmers and ensure their full compliance with the E&S risk mitigation measures.

Additional measures will be taken to address the consultation and participation needs of vulnerable groups, such as women and people with disabilities. In line with the measures in the AICCRA-Zambia SEP, when necessary, women-focused group discussions with female facilitators will be organized to ensure full participation of women in the CSA demonstration learning process.

Each SME will hold biannual engagements with stakeholders to update them on the progress of project activities and outcomes of measures being implemented to avoid, mitigate, and respond to E&S risks and impacts.

7.9 Environmental and Social Monitoring, Reporting, and Completion Audit

Monitoring

Monitoring of compliance with mitigation measures contained in this document will constitute an essential activity in the implementation of this plan. E&S monitoring will aim to ensure compliance with:

i. The mitigation measures proposed in this plan;
ii. Commitment of partners in connection with the implementation of mitigation measures applicable to their operations; and
iii. Requirements relating to national laws and regulations.

The overall framework proposed to guide monitoring of E&S risk and mitigation progress is organized in Table 4 below:

Reporting on the ESMP

The AICCRA-Zambia Safeguard Focal Person based at IWMI shall be responsible for providing progress updates on compliance and implementation status of material actions contained in the plan. At a minimum, the report will include the following issues:

i. Grievance received, resolved, and outstanding;
ii. Incidents and accidents recorded;
iii. Changes made to the ESMP due to identification of new E&S risks or scale up of CSA pilot demonstrations; and
iv. Difficulties and/or constraints relating to the implementation of the ESMP.

Based on these sets of indicators, implementing SMEs shall be required to provide quarterly reports to the AICCRA-Zambia Safeguard Focal Person.

Completion Audit

Consistent with the requirements of ESS-1, a completion audit will be commissioned at the end of the pilot of CSA innovations to determine whether the objectives of this ESMP were achieved. The audit will allow the AICCRA-Zambia team to verify whether mitigation measures proposed in this plan have been implemented as required. The audit will also evaluate and ascertain whether the actions prescribed in the ESMP contributed to improving the overall environmental and social outcomes of the project.

Table 18: E&S Risk Mitigation Monitoring Plan

Type of risk	Proposed mitigation measures	Monitoring Indicators	Means of Verification	Responsible
Proposed sites not suitable for CSA demonstrations	• Conduct E&S due diligence on proposed sites to ensure suitability. • Follow the World Bank and national protocols on voluntary land acquisition to acquire plots.	• Project sites screened. • ESMP prepared and cleared by the World Bank.	ESMP document.	AICCRA E&S Specialist AICCRA-Zambia Safeguard Focal Person
SMEs staff not aware of AICCRA E&S risk management requirements	• Train staff of implementing SMEs on E&S requirements and procedures under the ACCRA project and for implementation of CSA bundle activities.	• Workers of SMEs are trained on E&S requirements.	Records of E&S training for grantees.	AICCRA E&S Specialist
Farmers not aware of safeguard requirements	• Sensitize farmers on applicable AICCRA E&S safeguard requirements, particularly grievance mechanism, child labor and SEA/SH prohibitions, and occupational health and safety measures.	• E&S sensitization organized for farmers and regular refresher briefings provided to farmers prior to any engagements with them on the farm.	Records of E&S sensitization and refresher briefing for farmers. Regular checks by Safeguard Focal Person.	AICCRA-Zambia Safeguard Focal Person.
Ponds serving as breading grounds for malaria and bilharzia vectors.	• For malaria, the tilapia fish to be reared in the ponds could serve as a biological control measure by feeding on the mosquito larvae in the water. • For Bilharzia, workers must be educated to avoid direct contact such as wading through ponds without protective clothing. • Regularly change the water in the pond to prevent mosquito breeding. • Remove excess vegetation and organic debris that provide mosquito larvae with food, shelter from the sun and hiding places from predators. • Sensitize and encourage residents of nearby communities to sleep in mosquito nets.	• Pond with clear water surface. • Availability of PPEs for pond entry.	Spot check.	AICCRA-Zambia Safeguard Focal Person

Type of risk	Proposed mitigation measures	Monitoring Indicators	Means of Verification	Responsible
Environmental pollution from release of waste pond waters with fish feeds, hormones, and other chemicals used for treatment of fish diseases.	• Ensure the use of right chemicals and hormones. • Minimize regular contact between pond waste waters and the natural water systems. • Treatment of pond wastewater by ensuring adequate time for biodegradation of the chemicals used.	• Existence of functional wastewater treatment reservoir.	Spot checks.	AICCRA-Zambia Safeguard Focal Person
Fish escaping from the pond into the water body system	• Ensure controls and periodical checks of the pond exit cages. • Monitor and diagnose for any escape holes in the cages and determine the duration and longevity of the cages.	• Properly secured pond exits.	Spot checks.	AICCRA-Zambia Safeguard Focal Person
Attraction of new biological predators e.g. snakes, monitor lizards, prey birds	• Regular checks and control of predators and dangerous species. • Good management of the ecosystems. • Minimize the proliferation of dangerous fauna and flora through controls.	• Incidence of predatory intrusion at ponds.	Spot checks.	AICCRA-Zambia Safeguard Focal Person
Drowning accidents involving children, livestock, and even workers.	• Ensure the pond sites are fenced off to prevent children and livestock accessing them easily. • Even where they are fenced, put up warning signs. • Mandate two-person visits ponds and prohibit lone individual visits to pond site. • Carry out public awareness and education as a means to prevent accidental deaths by drowning.	• Project site fenced. • Evidence of restricted access to people and animals.	Spot checks.	AICCRA-Zambia Safeguard Focal Person
Occupational health and safety (OHS) at all project sites	• Include OHS requirements in workers' Code of Conduct (CoC). • Provide OHS orientation to workers, visiting farmers, and other stakeholders. • Procure and provide relevant PPE for staff working on demonstration sites and encourage visiting farmers to use the same. • Ensure that all equipment is maintained and in safe operating condition. • Inspect all farm equipment with the view of ascertaining its safety status before use. • Provide first aid boxes at project demonstration sites.	• Signed code of conduct by workers. • OHS orientation provided to workers. • Adequate and appropriate use of PPEs. • Health and safety register. • First aid kit procured and made available at project	Daily self-check by the project lead Spot checks.	AICCRA-Zambia Safeguard Focal Person

Type of risk	Proposed mitigation measures	Monitoring Indicators	Means of Verification	Responsible
	• Provide workers and visiting farmers with access to toilets and potable drinking water. • Investigate the causes of accidents at the workplace and maintain a record of health and safety incidents. • Workers will have the right to refuse work in unsafe conditions. • Comply with the prescriptions contained in the pesticide safety data sheets.	sites. • Functional grievance mechanism.		
Indiscriminate disposal and improper handling of solid waste at all project sites	• Provide waste bins at demonstration sites. • Dispose of waste at approved waste dump sites. • Keep hazardous substances, including obsolete agrochemicals and empty agrochemical containers, in a secure storage area. • Sensitize workers and visiting farmers on waste disposal arrangements. • Return agrochemical containers to the suppliers.	• Waste containers at the project sites.	Regular and on-the-spot checks.	AICCRA-Zambia Safeguard Focal Person
COVID-19 transmissions at all project sites	• Provide nose masks to workers and visiting farmers at no cost to them and require the wearing of face masks at sites as per national policy on mask wearing. • Ensure social distancing at the workplace. • Provide handwashing facilities supplied with soap, disposable paper towels and closed waste bins at key places at the sites. • Provide accessible sanitation areas with water, soap, and sanitizers. • Ensure that all workers have adequate and updated information on COVID-19 and Government of Zambia updated COVID-19 guidelines. • Establishing measures and a referral pathway including linkage with the Ministry of Health for workers who get infected with COVID-19 in the line of duty. • Immediately isolate workers or visiting farmers with symptoms of COVID-19 (e.g., fever, dry cough, fatigue) and report suspected cases through the following emergency numbers: 909 or link up with local district health authorities for immediate evacuation or medical help. • Provide adequate support to workers who get exposed to the virus at workplace.	• Nose masks procured and made available for use by farmers. • Handwashing facilities made available at the project sits. • Number of COVID-19 transmission incidents links to the project.	Regular and on the spot checks. Daily self-check by the project lead.	AICCRA-Zambia Safeguard Focal Person

Type of risk	Proposed mitigation measures	Monitoring Indicators	Means of Verification	Responsible
Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH) at all project sites	• Include SEA/SH prohibitions and sanctions in workers' code of conduct and enforce compliance. • Provide mandatory training and awareness-raising for the workforce on SEA/SH probations. • Informing workers about national laws and institutional policies that make sexual harassment and gender-based violence punishable offences. • Provide safe and suitable toilets and washing facilities, separate for men and women workers, particularly during on-farm demonstrations. • Provide safe and confidential grievance channels easily accessible to all stakeholders.	• Signed codes of conduct. • Compliance to the Project GBV action plan. • Functioning grievance mechanism and referral pathways. • Male and female separate toilet facilities available at demonstration sites. • No reported incident on SEA/SH.	Regular and on-the-spot checks.	AICCRA-Zambia Safeguard Focal Person
Exclusion of vulnerable groups (women and youth, elderly, persons with disability etc.)	• Use local languages for all engagements and meetings with farmers. • Organize women-only focus groups and learning sessions. • Engage the services of sign language interpreters. • Maintain sensitivity to local culture and traditional meeting and event days. • Provide free transport services for PWDs as and when necessary.	• Satisfactory feedback from women, youth and people with disability on level of engagement and involvement learning activities.	Regular sample interviews with vulnerable groups.	AICCRA-Zambia Safeguard Focal Person

7.10 Indicated Budget for implementation of ESMP

The following project activities will be undertaken to facilitate the implementation of this ESMP:

- Public disclosure of the ESMP in national newspapers.
- Sensitization of project partners, workers, and stakeholders on the E&S risk mitigation measures contained in this ESMP.
- Field monitoring of compliance with mitigation measures in this ESMP.
- An E&S audit to ascertain the extent of compliance with the World Bank's ESF requirements and procedures.

All the activities outlined above will be financed from the project budget, and the estimated cost for implementing these activities is presented in table 13 below.

Table 19: Indicative Budget

#	E&S Activity	Estimate Cost (USD)
1.	Disclosure of ESMP	$200
2.	Sensitization of partners, workers, and stakeholders	$3,000
3.	Implementation of E-Waste Management Plan	$4,000
4.	Implementation of E&S risks mitigation measures in	$30,000
5.	Field Monitoring	$3,000
6.	E&S audit	$8,000
	Total	**$48,000**

7.11 Conclusion

The AICCRA Zambia team acknowledges that the activities and operations to be carried out during the implementation of CSA technologies could potentially impact the environment, workers, and communities, and are therefore very mindful of their obligations towards the protection of the environment and ensuring the health and safety of the farmers and communities within the project area. These partners will therefore carry out relevant sensitization and capacity building activities to ensure rigorous implementation of all material actions considered in this ESMP, as well as other complementary safeguard instruments. The AICCRA-Zambia team will operationalize this ESMP as a living document with a firm commitment to review, update, and redisclose it as and when project activities or locations change. The team will further provide biannual updates on implementation progress to the AICCRA program management unit and the World Bank.

Bibliography

AICCRA-Zambia Stakeholder Engagement Plan

AICCRA-Zambia Labor Management Procedures

AICCRA SEA/SH Action Plan

AICCRA Environmental and Social Risks Management Plan

Annex 1: Site Specific E&S Screening Checklist

Name of Sub-Project: Bundle 2- Integrated Aquaculture Agriculture				
Implementing Partner: Hopeways				
Project Location: AICCRA Zambia				
Province: Luapula	**District:** Mensa	**Ward:** Lukangaba	**Town:** Mulonga	
S No	**ISSUES**	**YES**	**NO**	**Comments**[26]
A	**Water and Soil Contamination**			
1.	Will the subproject generate large amounts of residual waste?		X	
2.	Will the subproject result in potential soil or water contamination?	X		Waste water released from fishponds if not well treated could pollute the local water system.
3.	Will the subproject involve the use of herbicides for vegetation control and chemicals for pest control?		X	
4.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals for pest control?		X	
5.	Will the subproject lead to increased sedimentation in river stream?		X	
D.	**Noise and Air Pollution Hazardous Substances**			
6.	Will the subproject increase the levels of harmful air emissions?		X	
7.	Will the subproject increase ambient noise levels?		X	
8.	Will the subproject involve the storage, handling or transport of hazardous substances?		X	
E.	**Fauna and Flora**			
9.	Will the subproject lead to the destruction of vegetation?	X		Clearing of site for pond construction
10.	Is the area home to a forest? Is the forest protected or proposed for protection? Is the forest high conservation value forest?		X	
11.	Is the subproject located in an area with designated natural reserves?		X	
12.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?		X	
13.	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?		X	
14.	Is the project likely to cause effects on rare, vulnerable and/or important species from an economic, ecological, cultural point of view?		X	

[26] Provide remarks/details for every criterion ticked as yes.

15.	Will the project have a potential to introduce alien species not native to the area (even if not intended)?		X	
16.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?	X		the demonstration fishpond will be constructed in a marshy area.
17.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?	X		Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts hence may weaken the gene pool of the wild fish.
18.	Will the subproject involve the use of water for irrigation?		X	
19.	Is the source of water a multiple water use point (i.e. livestock and domestic use), if yes does the project pose a risk to other users?		X	
20.	Does water scarcity exist in the area, and if yes, does it pose a risk to the project?		X	
21.	Are there areas at risk of salinization? If yes, does it pose a risk to the project?		X	
22.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?		X	
23.	Does the project have potential for carbon capture and, if so, is this potential being utilized?		X	
G.	**Cultural Property**			
24.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?		X	
25.	Is the subproject in an area with religious monuments, structures and/or cemeteries?		X	
26.	Is the subproject located in an area of tourist importance?		X	
H.	**Expropriation and Social Disturbance**			
27.	Will the subproject involve land expropriation or demolition of existing structures?		X	
28.	Will the subproject occur in an area with squatters or lead to relocation of squatters?		X	
I	**Labor and working condition**			
29.	Will the subproject involve the use of contracted workers (i.e. both skilled and unskilled labor)?	X		Hopeways permanent and casual employees will be involved.
30.	Will the subproject involve the use of primary supply workers?		X	

31.	Is the subproject located in an area with historical cases of child labor?		X	
32.	Is the subproject located in an area with historical cases of forced labor?		X	
33.	Are there adequate and appropriate use of personal protective clothing in project area?	X		
34.	Is the subproject located far (beyond 1km) from the nearby community (where farmers can access toilet facility)?		X	
35.	Are there case of sexual exploitation and abuse/ Sexual Harassment in this area		X	
36.	Will the subproject involve participation of vulnerable groups (e.g. women, disabled, elderly, youth etc.)? kindly risk and identify specific risks that each vulnerable group may face?	X		
J	**Social inequalities, conflicts, gender**			
37.	Could the project lead to an increase in social inequalities?			
38.	Could the project lead to incompatible uses or social conflicts between the different users?		X	
39.	Does the project disadvantage the integration of women and other vulnerable groups?		X	
K	**Health and safety**			
40.	Can the project induce risks of accidents for workers or the population?	X		There could be slip and falls into ponds, cutlass cuts, travel accident etc.
41.	Can the project cause health risks for workers or the population?	X		Through exposure to COVID-19.
42.	Can the project lead to an increase in disease vectors?	**X**		Malaria and Bilhazia vector

Name of Sub-Project: Pilot of CSA Innovations: Integrated Aquaculture Agriculture				
Project Location: AICCRA Zambia				
Implementing Partner: EUNIMOS				
Province: Luapula	**District:** Mensa	**Ward:** Chofwe	**Town:** Kakomo	
S No	**ISSUES**	**YES**	**NO**	**Comments[27]**
A	**Water and Soil Contamination**			
43.	Will the subproject generate large amounts of residual waste?		X	
44.	Will the subproject result in potential soil or water contamination?	X		Waste water released from fishponds if not well treated could pollute the local water system.
45.	Will the subproject involve the use of herbicides for vegetation control and chemicals for pest control?		X	

[27] Provide remarks/details for every criterion ticked as yes.

46.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals for pest control?		X	
47.	Will the subproject lead to increased sedimentation in river stream?		X	
D.	**Noise and Air Pollution Hazardous Substances**			
48.	Will the subproject increase the levels of harmful air emissions?		X	
49.	Will the subproject increase ambient noise levels?		X	
50.	Will the subproject involve the storage, handling or transport of hazardous substances?		X	
E.	**Fauna and Flora**			
51.	Will the subproject lead to the destruction of vegetation?	X		Clearing of site for pond construction.
52.	Is the area home to a forest? Is the forest protected or proposed for protection? Is the forest high conservation value forest?		X	
53.	Is the subproject located in an area with designated natural reserves?		X	
54.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?		X	
55.	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?		X	
56.	Is the project likely to cause effects on rare, vulnerable and/or important species from an economic, ecological, cultural point of view?		X	
57.	Will the project have a potential to introduce alien species not native to the area (even if not intended)?		X	
58.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?	X		the demonstration fishpond will be constructed in a marshy area.
59.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?	X		Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts hence may weaken the gene pool of the wild fish.
60.	Will the subproject involve the use of water for irrigation?		X	

61.	Is the source of water a multiple water use point (i.e. livestock and domestic use), if yes does the project pose a risk to other users?		X	
62.	Does water scarcity exist in the area, and if yes, does it pose a risk to the project?		X	
63.	Are there areas at risk of salinization? If yes, does it pose a risk to the project?		X	
64.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?		X	
65.	Does the project have potential for carbon capture and, if so, is this potential being utilized?		X	
G.	**Cultural Property**			
66.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?		X	
67.	Is the subproject in an area with religious monuments, structures and/or cemeteries?		X	
68.	Is the subproject located in an area of tourist importance?		X	
H.	**Expropriation and Social Disturbance**			
69.	Will the subproject involve land expropriation or demolition of existing structures?		X	
70.	Will the subproject occur in an area with squatters or lead to relocation of squatters?		X	
I	**Labor and working condition**			
71.	Will the subproject involve the use of contracted workers (i.e. both skilled and unskilled labor)?	X		EUNIMOS permanent and casual employees will be involved.
72.	Will the subproject involve the use of primary supply workers?		X	
73.	Is the subproject located in an area with historical cases of child labor?		X	
74.	Is the subproject located in an area with historical cases of forced labor?		X	
75.	Are there adequate and appropriate use of personal protective clothing in project area?	X		
76.	Is the subproject located far (beyond 1km) from the nearby community (where farmers can access toilet facility)?		X	
77.	Are there case of sexual exploitation and abuse/ Sexual Harassment in this area		X	
78.	Will the subproject involve participation of vulnerable groups (e.g. women, disabled, elderly, youth etc.)? kindly risk and identify specific risks that each vulnerable group may face?	X		
J	**Social inequalities, conflicts, gender**			

79.	Could the project lead to an increase in social inequalities?			
80.	Could the project lead to incompatible uses or social conflicts between the different users?		X	
81.	Does the project disadvantage the integration of women and other vulnerable groups?		X	
K	**Health and safety**			
82.	Can the project induce risks of accidents for workers or the population?	X		There could be slip and falls into ponds, cutlass cuts, travel accident etc.
83.	Can the project cause health risks for workers or the population?	X		Through exposure to COVID-19.
84.	Can the project lead to an increase in disease vectors?	**X**		Malaria and Bilhazia vector

Name of Sub-Project: Pilot of CSA Innovations: Integrated Aquaculture Agriculture				
Project Location: AICCRA Zambia				
Implementing Partner: Kasakalabwe				
Province: Luapula	**District:** Mensa	**Ward:** Chofwe	**Town:** Kakomo	
S No	**ISSUES**	**YES**	**NO**	**Comments**[28]
A	**Water and Soil Contamination**			
85.	Will the subproject generate large amounts of residual waste?		X	
86.	Will the subproject result in potential soil or water contamination?	X		Waste water released from fishponds if not well treated could pollute the local water system.
87.	Will the subproject involve the use of herbicides for vegetation control and chemicals for pest control?		X	
88.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals for pest control?		X	
89.	Will the subproject lead to increased sedimentation in river stream?		X	
D.	**Noise and Air Pollution Hazardous Substances**			
90.	Will the subproject increase the levels of harmful air emissions?		X	
91.	Will the subproject increase ambient noise levels?		X	
92.	Will the subproject involve the storage, handling or transport of hazardous substances?		X	
E.	**Fauna and Flora**			
93.	Will the subproject lead to the destruction of vegetation?		X	

[28] Provide remarks/details for every criterion ticked as yes.

94.	Is the area home to a forest? Is the forest protected or proposed for protection? Is the forest high conservation value forest?		X	
95.	Is the subproject located in an area with designated natural reserves?		X	
96.	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?		X	
97.	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?		X	
98.	Is the project likely to cause effects on rare, vulnerable and/or important species from an economic, ecological, cultural point of view?		X	
99.	Will the project have a potential to introduce alien species not native to the area (even if not intended)?		X	
100.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?		X	.
101.	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?	X		Fish escaping from the pond into the water body system may result in breeding between the farmed fish and the wild fish. The farmed fish are known to have poor survival instincts hence may weaken the gene pool of the wild fish.
102.	Will the subproject involve the use of water for irrigation?		X	
103.	Is the source of water a multiple water use point (i.e. livestock and domestic use), if yes does the project pose a risk to other users?		X	
104.	Does water scarcity exist in the area, and if yes, does it pose a risk to the project?		X	
105.	Are there areas at risk of salinization? If yes, does it pose a risk to the project?		X	
106.	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?		X	
107.	Does the project have potential for carbon capture and, if so, is this potential being utilized?		X	
G.	**Cultural Property**			

108.	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?		X	
109.	Is the subproject in an area with religious monuments, structures and/or cemeteries?		X	
110.	Is the subproject located in an area of tourist importance?		X	
H.	**Expropriation and Social Disturbance**			
111.	Will the subproject involve land expropriation or demolition of existing structures?		X	
112.	Will the subproject occur in an area with squatters or lead to relocation of squatters?		X	
I	**Labor and working condition**			
113.	Will the subproject involve the use of contracted workers (i.e. both skilled and unskilled labor)?	X		Both permanent and casual employees will be involved.
114.	Will the subproject involve the use of primary supply workers?		X	
115.	Is the subproject located in an area with historical cases of child labor?		X	
116.	Is the subproject located in an area with historical cases of forced labor?		X	
117.	Are there adequate and appropriate use of personal protective clothing in project area?	X		
118.	Is the subproject located far (beyond 1km) from the nearby community (where farmers can access toilet facility)?		X	
119.	Are there case of sexual exploitation and abuse/ Sexual Harassment in this area		X	
120.	Will the subproject involve participation of vulnerable groups (e.g. women, disabled, elderly, youth etc.)? kindly risk and identify specific risks that each vulnerable group may face?	X		
J	**Social inequalities, conflicts, gender**			
121.	Could the project lead to an increase in social inequalities?			
122.	Could the project lead to incompatible uses or social conflicts between the different users?		X	
123.	Does the project disadvantage the integration of women and other vulnerable groups?		X	
K	**Health and safety**			
124.	Can the project induce risks of accidents for workers or the population?	X		There could be slip and falls into ponds, cutlass cuts, travel accident etc.
125.	Can the project cause health risks for workers or the population?	X		Through exposure to COVID-19.
126.	Can the project lead to an increase in disease vectors?	**X**		Malaria and Bilhazia vector

Annex 2: Hopeways Land Title Deeds and Permits from ZEMA and Fisheries Department

Form V

Business Registration No. 320010101414

Serial No.

Republic Of Zambia

THE REGISTRATION OF BUSINESS NAMES ACT

(Act No. 16 of 2011 of the Laws of Zambia)

CERTIFICATE OF REGISTRATION

I HEREBY CERTIFY that: **HOPEWAYS FARMS AND GENERAL DEALERS** this 19th day of December 2001 have (has) been duly registered pursuant to and in accordance with the provisions of the Registration of Business Names Act, and the Regulation made there under, and have (has) been entered under the Number **320010101414** in the index of Registration.

Given under my hand at Lusaka, Zambia, this 19th day of December 2001

PACRA

PATENTS & COMPANIES REGISTRATION AGENCY

N.J. Moola

Assistant Registrar of Business Names

In reply please quote
Correspondence should be addressed
To District Fisheries Officer-Mansa
Tel 0977 575445

REPUBLIC OF ZAMBIA

MINISTRY OF FISHERIES AND LIVESTOCK

DEPARTMENT OF FISHERIES
P.O.BOX 710157
MANSA

5th May, 2022

The Director
International Water Management Institute
South Africa.

Dear Sir/Madam

RE: INTRODUCTORY LETTER-HOPEWAYS FISH FARM

Refer to the above subject matter

I am very delighted to write an introductory letter for Hopeways fish farm that operates its aquacultural activities within our jurisdiction area of Mansa District. The fish farm is situated in Kaole ward in Bahati constituency. The company currently has applied for Aquaculture License awaiting for approval from the **Director of Fisheries**.

I therefore highly recommend the company for laudable opportunities of funds if any may be rendered to them for future investments in aquaculture industry.

Nathan Chama
District Fisheries Officer
Mansa District

REPUBLIC OF ZAMBIA
MINISTRY OF FISHERIES AND LIVESTOCK
05 MAY 2022
DISTRICT FISHERIES OFFICER
P.O. BOX 710157,
MANSA.

Ministry of Lands,
Natural Resources and
Environmental Protection

Office of the Commissioner of Lands

Mulungushi House
Independence Avenue
P.O. Box 30069, Lusaka.
Telephone: 260-01-250610
FAX: 260-01-250610

Offer Letter

WILBROAD CHABA MUSANSHI

Tuesday, April 24 2018 9:37 am

Dear Sir/Madam,

SMALL HOLDING **Property No.: L/40757/M** **Serial No.: 2913400**

1. With reference to your recent application for a **SMALL HOLDING** in **Mansa District, Luapula Province, Zambia**

I am pleased to advise that it has been approved. We acknowledge your payment for the Offer Letter on receipt NO. RE_221247 broken down as follows:

Description	Amount (K)
ANNUAL RENT	73.80
CONSIDERATION FEE	3,833.40
REGISTRATION FEES	333.60
PREPARATION FEES	166.20
TOTAL	4,407.00

2. The lease will be for a term of **99** years from **01/04/2018** , and the annual ground rent under the lease will be K 124.80 payable in arrears to Lands Department on or before the 31 December, each year.

3. The lease will include the following clauses among others:

(i) requiring the completion not later than 18 months of the date of the offer letter, of building to a minimum value of K 100,000.00 and the completion of the foundation thereof by 9 months of the date of the offer letter;

(ii) restricting the use of the **SMALL HOLDING** to **AGRICULTURAL** purposes as permitted by the Approved Development Plan for township and no other purpose;

(iii) prohibiting the assignment subdivision, mortgaging or sub-letting of the Property without prior written consent of the President.

4. It is a condition of this offer that no refund will be made and no compensation will be paid if the land is relinquished, or the lease is terminated by the State for breach or non observance of any covenant contained in the lease.

5. You are reminded that before any development is effected on the land the prior consent of the Planning Authority must be obtained, pursuant to the Town and Country Planning Act

REPUBLIC OF ZAMBIA
MINISTRY OF LANDS
LANDS DEPARTMENT
14 APR 2018
PROVINCIAL LANDS OFFICER
P.O. BOX 710240,
MANSA

Yours faithfully,

Name Sarah Nalavwe

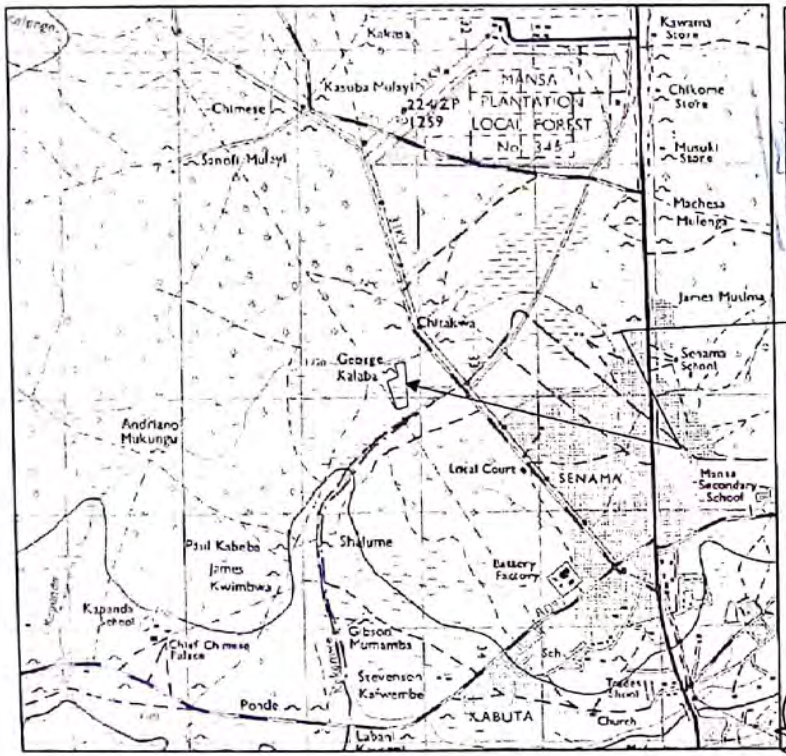
Signature: Nalavwe

for COMMISSIONER OF LANDS

cc Town Clerk/Council Secretary

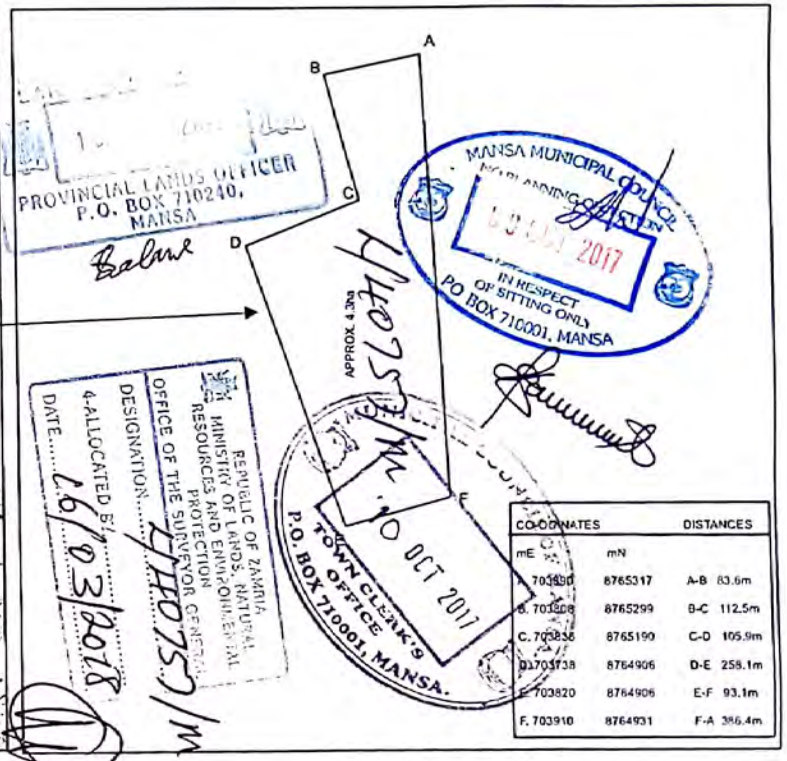
Offer Letter Generated by Sarah Nalavwe

LOCATION PLAN



SCALE; 1:50, 0000

LAYOUT MAP



CO-ORDINATES		DISTANCES	
mE	mN		
A. 703890	8765317	A-B	83.6m
B. 703908	8765299	B-C	112.5m
C. 703836	8765190	C-D	105.9m
D. 703738	8764906	D-E	258.1m
E. 703820	8764906	E-F	93.1m
F. 703910	8764931	F-A	386.4m

SCALE; 1:5, 000

PROPOSED SITE PLAN FOR REGULARISATION OF PLOT FOR WILBROAD C. MUSANSHI IN AREA, MANSA		DRAWN BY : A. N	MANSA MUNICIPAL COUNCIL DEPARTMENT OF DEVELOPMENT PLANNING 04/10/2017
CO-ORD. SYSTEM : Arc 1950	TOPO MAP: 1128 B2		

WARMA

WATER RESOURCES MANAGEMENT AUTHORITY

WATER PERMIT

for

Wilbroad Musanshi

WARMA No.: **WP12990**

Catchment Name: **Luapula** Catchment ID: **05**

Sub-Catchment/Water Resource: **(Luapula)**

Validity: **22nd April 2021** to **22nd April, 2026**

The seal of the Water Resources Management Authority was hereunto affixed this 22nd April 2021

In the presence of (Signature): ..... (Signature):.....

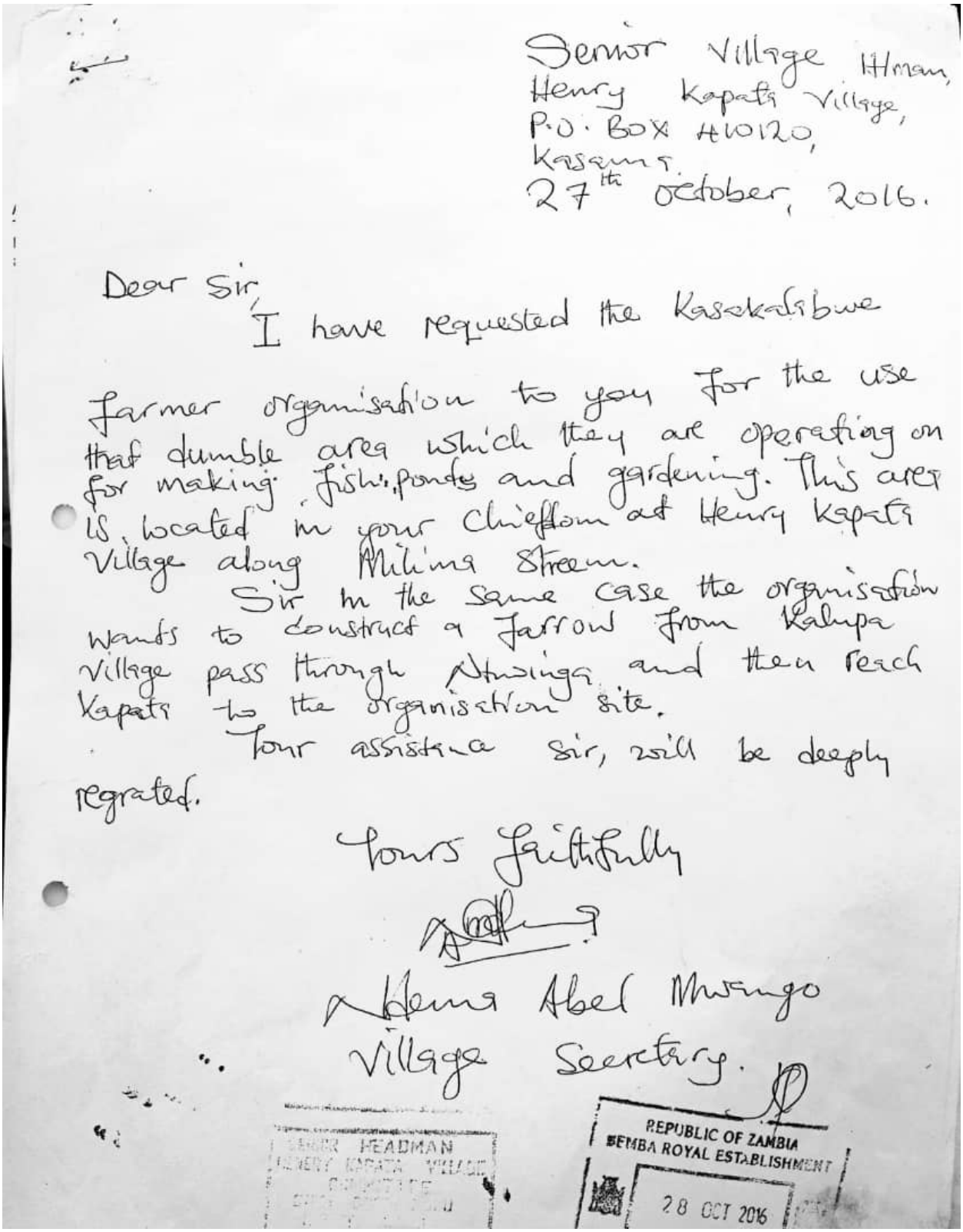
Authority Secretary **Director General**

Signature):.....

Board Chairperson

;pl

Annex 3: Kasakalabwe Cooperatives Land Title Deeds and Permits from ZEMA and Fisheries Department



Senior Village Headman,
Henry Kapata Village,
P.O. Box 410120,
Kasama.
27th October, 2016.

Dear Sir,

I have requested the Kasakalabwe farmer organisation to you for the use that dumble area which they are operating on for making fish ponds and gardening. This area is located in your Chiefdom at Henry Kapata Village along Mulima Stream.

Sir in the same case the organisation wants to construct a farrow from Kalupa village pass through Mwainga and then reach Kapata to the organisation site.

Your assistance sir, will be deeply regrated.

Yours faithfully

Hema Abel Mwango
Village Secretary.

SENIOR HEADMAN
HENRY KAPATA VILLAGE

REPUBLIC OF ZAMBIA
BEMBA ROYAL ESTABLISHMENT
28 OCT 2016

MWINE LUBEMBA

CHITIMUKULU KANYANTA - MANGA II

Bemba Royal Establishment Headquarters
P O Box 1 - Chitimukulu
Mungwi District

8th November 2016

The Secretary,
The water Board,
P.O. Box 51059,
LUSAKA

Greetings.

Re: APPLICATION FOR WATER RIGHTS BY THE KASAKALABWE FARMERS' ORGANISATION.

I refer to the above and wish to confirm that the Bemba Royal Establishment has no objection whatsoever with the intention of the above organization to make a canal of 5,100 metres from Milima river to Lukupa river in Mwinelubemba Chitimukulu Chiefdom in Kasama District of Northern Province

It's my hope and prayer that application will be favourably considered since this is one of the projects that is catering for our local community and hence will definitely be a key factor in our poverty reduction programmes.

And I very much thank you in anticipation.

REPUBLIC OF ZAMBIA
BEMBA ROYAL ESTABLISHMENT
08 NOV 2016
THE [illegible] CHIEF CHITIMUKULU
P.O. BOX 1, CHITIMUKULU
MUNGWI, ZAMBIA

HENRY KANYANTA SOSALA
MWINELUBEMBA CHITIMUKULU KANYANTA-MANGA II

eposit

LUSAKA

unt Name ZAMBIA BUREAU OF STANDARDS

Date 17/11/2020

Account No. 1396516300258

Depositor's Phone Number 0977240456

Notes	No. of Notes/ Coins	Amount
K100	47	K 4,700.00
K50		
K20	1	K 20.00
K10	1	K 10.00
K5		
K2		
Coins		
K1		
50n		
10n		
5n		
	Total K	4,730.00

Deposited By Felix Mulenga

Depositor's Signature

Narration required for this transaction ZABS CODE 0533340200106 123007 Certification of finishings

Amount in words: FOUR THOUSAND SEVEN HUNDRED AND THIRTY NWACHA ONLY

zanaco KASAMA BRANCH

Teller's Stamp & Initials 17 NOV 2020 TELLER 7 - RECEIVED 01-CS-52 KASAMA

Machine printed receipt confirms acknowledgement of receipt of cash by the teller

zanaco

Annex 4: EUNIMOS Cooperatives Land Title Deeds and Permits from ZEMA and Fisheries Department

Communications should be addressed to the Director General

Office Lines :0977-405352
0211-251934
Email: infor@warma.org.zm
Web : www.warma.org.zm

Plot Nos. LN-385-7 & LN- 385-8
Alick Nkhata Road, Longacres
Lusaka

WARMA

In reply please quote
WARMA /71/1/6

P.O.BOX 51059
LUSAKA

WATER RESOURCES MANAGEMENT AUTHORITY
(WARMA)

21st April, 2022

The Director
International Water Management Institute (IWMI)
SOUTH AFRICA

Dear Sir/ Madam

RE: EUNIMOS INVESTMENT LIMITED

The above subject matter refers.

I write to confirm that the Water Resources Management Authority (WARMA) Chambeshi Catchment Office in Kasama received a fully paid for application for aquaculture permit from Eunimos Investment Limited that has since been sent to our Head Office in Lusaka awaiting approval.

Kindly assist the Company in any way possible for them to undertake their project as they wait for a permit to be signed.

WATER RESOURCES MANAGEMENT AUTHORITY (WARMA) CHAMBESHI CATCHMENT OFFICE
21 APR 2022
MANAGER
PLOT # 38,
MUKULUMPE RD, KASAMA.

Mwiza Muzumara
Catchment Manager- Chambeshi
WATER RESOURCES MANAGEMENT AUTHORITY

In reply please quote
Correspondence should be addressed
To District Fisheries Officer-Mansa
Tel 0977 575445

REPUBLIC OF ZAMBIA

MINISTRY OF FISHERIES AND LIVESTOCK

DEPARTMENT OF FISHERIES
P.O.BOX 710157
MANSA

27th April, 2022

The Director
International Water Management Institute
South Africa.

Dear Sir/Madam

RE: INTRODUCTORY LETTER-EUNIMOS INVESTMENT LIMITED

Refer to the above subject matter

I am very delighted to write an introductory letter for Eunimos Investments Limited that operates its aquacultural activities within our jurisdiction area of Mansa District. Their fish farm is situated in Mulonga ward in Mansa central constituency.

I therefore highly recommend the company for laudable opportunities of funds if any may be rendered to them for future investments in aquaculture industry.

Nathan Chama
District Fisheries Officer
Mansa District

REPUBLIC OF ZAMBIA
MINISTRY OF FISHERIES AND LIVESTOCK
27 APR 2022
DISTRICT FISHERIES OFFICER
P.O. BOX 710157,
MANSA.

DR 1A

REPUBLIC OF ZAMBIA

No.: 0010579 70513

Registered No.: 40783/M/2

THE LANDS AND DEEDS REGISTRY ACT

(Section 45)

No.:

CERTIFICATE OF TITLE

THIS Certificate, dated the THIRD day of FEBRUARY two thousand and TWENTY under the hand and seal of the Registrar of the Lands and Deeds Registry of Zambia WITNESSETH that COLLINS CHONGO of Mansa in Zambia

is a tenant or lessee for the unexpired residue of a term of 99 years from the first day of January, 20 19 (subject to such reservations, restrictions, incumbrances, liens, estates and interests as are notified by memorial underwritten or endorsed hereon) of and in ALL that piece of

land in extent 10.1893 Hectares more or less being Lot 40783/M situate in Luapula Province of Zambia which piece of land is more particularly delineated and described on Diagram No. SD-17263 of 2019 except and reserved all minerals oils and precious stones whatsoever upon or under the said land

Registrar

Annex 5: Corteva Permits from National Biosafety Authority

All Correspondence
to be addressed to the Registrar

NBA/101/16/5

Our Ref

National Biosafety Authority | Off Kafue Road | Mount Makulu-Chilanga
P.O Box 51119 | Lusaka | Tel +260 211 278316 or +260 211 269615 | info@nbazambia.org.zm
nbacommunications1@yahoo.com | http://www.nbazambia.org.zm

14th October, 2021

TO WHOM IT MAY CONCERN

CERTIFICATION OF NON – GENETICALLY MODIFIED ORGANISM (GMO) CONTENT

Reference is made to the above subject matter.

This is to certify that the samples of **maize seed** listed below from **Corteva Agriscience Zambia** P.O Box 31917 Lusaka were tested and found to be non-genetically modified. The samples tested negative for the presence of **P35S** promoter.

Maize Seed	Quantity (Kg)
P3883W/PAN7M-83	400
PAN 3M-05	200
PAN 7M-87	500

The consignment tested is for export to **Pioneer Hi-Bred (Zimbabwe) Pvt Limited,** 599 Juru, Juru Growth Point – off Mukoko Road, Goromonzi Zimbabwe

Yours faithfully,

Lackson Tonga
Registrar/CEO.
NATIONAL BIOSAFETY AUTHORITY

NATIONAL BIOSAFETY AUTHORITY
20 OCT 2021
OFFICE OF THE REGISTRAR
P.O. BOX 51119, LUSAKA.

Harnessing biotechnology and biosafety for sustainable development

Annex 6: Plant Catalyst Permits from ZEMA

The Environmental Management (Licensing) Regulations,

Statutory Instrument No. 112 of 2013

Conditions Governing the Importation of Pesticides and Toxic Substances

No: LSK/PTS/01296/Z02/2021: IP-PN 7542

AGRIFOCUS LIMITED
PLOT NO 4298 BUYANTANSHI ROAD LIGHT INDUSTRIAL AREA
POSTNET 248/BAG E891, LUSAKA

These conditions are issued subject to the provisions of the Environmental Management Act No. 12 of 2011, the general provisions of Part V of the Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013 and the following specific conditions:

a) These conditions shall be valid for the ***Importation of:*** **Plant Catalyst** (Extracts of lignin containing calcium (Ca) 0.006% + Magnesium (Mg), 0.00114% + Nitrogen (N) 0.04% + Iron (Fe) 0.002089% + Zinc (Zn) 0.0000015% (QS)) a product of **Agrico, china.**

Chemical Name	Active Ingredient	Licence No.	Status Generic or Patented
Plant Catalyst	Extracts of lignin containing calcium (Ca) 0.006% + Magnesium (Mg), 0.00114% + Nitrogen (N) 0.04% + Iron (Fe) 0.002089% + Zinc (Zn) 0.0000015% (QS)	**LSK/PTS/01296/Z05/2021: IP-PN 7542**	Generic

b) **Plant Catalyst** shall be valid for the following use only: For agriculture purposes.

c) **Agrifocus Limited** shall ensure that the **Plant Catalyst** imported into Zambia bears a label which is approved by the Zambia Environmental Management Agency (ZEMA).

d) **Agrifocus Limited** shall ensure that the ***labelling*** requirements of the **Plant Catalyst** shall be as set out in the Eleventh Schedule of the Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013.

e) The **Plant Catalyst** shall be packed in a container or package that-

I. does not react chemically or physically with **Plant Catalyst**; and
II. is capable of preventing the leakage or spillage of **Plant Catalyst** during handling and transportation.

f) **Agrifocus Limited** shall notify ZEMA at least ninety (90) days before the arrival of the **Plant Catalyst** as set out in Form XIII of the First Schedule of the Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013.

g) **Agrifocus Limited** shall use a transporter with a valid Pesticides and Toxic Substances Licence for transportation of **Plant Catalyst.**

h) **Agrifocus Limited** shall send **bi-annual reports** related to the Importation of Pesticides and Toxic Substances to ZEMA without fail **on or before July 15 and January 15** for each year of the validity period for the licence in the attached format. In addition, electronic copies of the Reports shall be sent to-returns@zema.org.zm.

i) The licence is valid for a period of three years from the **17th** day of **May, 2021** to the **16th** day of **May, 2024** and may be renewed for a like period if **Agrifocus Limited** complies with these conditions.

j) **Agrifocus Limited** shall not transfer the licence to a third party without the prior approval by ZEMA.

k) An application for **renewal and/or transfer** shall be made at least six months before the expiry of the licence.

l) ZEMA may **revoke and/or suspend** this licence at any time and **without notice** in the event that **Agrifocus Limited** fails to comply with these conditions.

Date

Director General

Annex 7: BetterWorld Permits from Ministry of Community Development and Social Welfare.

NETWORK OF ZAMBIAN PEOPLE LIVING WITH HIV AND AIDS (NZP+)

Promoting Support, information and Representation of People Living with HIV and AIDS

02nd March, 2022.

The Chief Executive Officer
Better World Innovations
Plot 1528 A4/B Off Njanji Street,
10 Miles Chibombo

Dear Mr. Mubanga,

RE: TRAINING OF 1,000 COOPERATIVE MEMBERS IN CENTRAL PROVINCE

Reference is made to your letter dated 24th February, 2022.

The Network of Zambian People Living with HIV/AIDS (NZ+) is pleased and overwhelmed to be part of project to train and support 75,000 People Living with HIV – smallholder farmers in sustainable and profitable farming. NZP+ stands ready to mobilize support groups of people living with HIV who you are targeting with the training and support. NZP+ is confident that the knowledge gained from these trainings will benefit our support group members to be self-sustained amid climate change.

The Network of Zambian People Living with HIV/AIDS (NZP+) is a national organization for people living with HIV/AIDS. Established in 1996, NZP+ aims to improve the quality of life of people living with HIV and AIDS by pursing the following issues: support, communication and representation of people living with HIV. The Network is a non-profit making, non-governmental organization registered under Section 7(I) of the Zambian Societies Act.

We really appreciate for giving us this great opportunity. NZP+ is ready to have an in-person meeting to discuss the details of the project at the earliest possible time.
For further queries do not hesitate to contact Mr. Chibuye on 0971999740 or the undersigned on 0966373268

Yours Faithfully,

Fred M Chungu
Executive Director – NZP+

All correspondences must be addresed to: The executive Director, NZP+ Secretariat Ground Floor, kwacha House Annex, Cairo Road P.O Box 32717, 10101 Lusaka
Telephone: +260-211-238085, 238086, 238087 Email: nzpsec@gmail.com

BETTER WORLD INNOVATIONS
We Grow Innovations

Plot 1528 A4/B, Off Njanji Street, 10 Miles Chibombo.

Email: info@bwi.co.zm Mobile +260969 282002/0971 874752

www.bwi.co.zm

15th February 2022.

To the Permanent Secretary

Ministry of Small and Medium Enterprise

Government Complex 5th, Floor

Independence Avenue Road, Lusaka Zambia

Dear Sir

RE: TRAINING 1,000 COOPERATIVE MEMBERS IN CENTRAL PROVINCE

The above matter applies;

Better World Innovations (BWI) is an incorporated social enterprise training and supporting smallholder farmers engage in sustainable and profitable farming has received a small grant from the AICCRA Zambia Accelerator Grant. Better World Innovations was selected as the **Best in Class-Winner** for Gender and Inclusion to scale up climate smart agriculture in central province.

Through this grant, Better World Innovations will train and support 1,000 cooperative members and scale up to reach 75,000 beneficiaries by 2024.It is with this background that BWI is partnering with the Ministry of Small & Medium Enterprise to implement this project. The role of the Ministry of SMEs in this project is to mobilize cooperative members and render support to scale up this initiative to reach more cooperative members across the country.

We are looking forward for a fruitful partnership as we uplift the wellbeing of women and youths across the country together. We will be happy to hold an in-person meeting to discuss the details of the project.

We are looking forward to your usual cooperation.
Yours Faithfully

Chief Executive Officer

Casco Simon Mubanga

BETTER WORLD INNOVATIONS