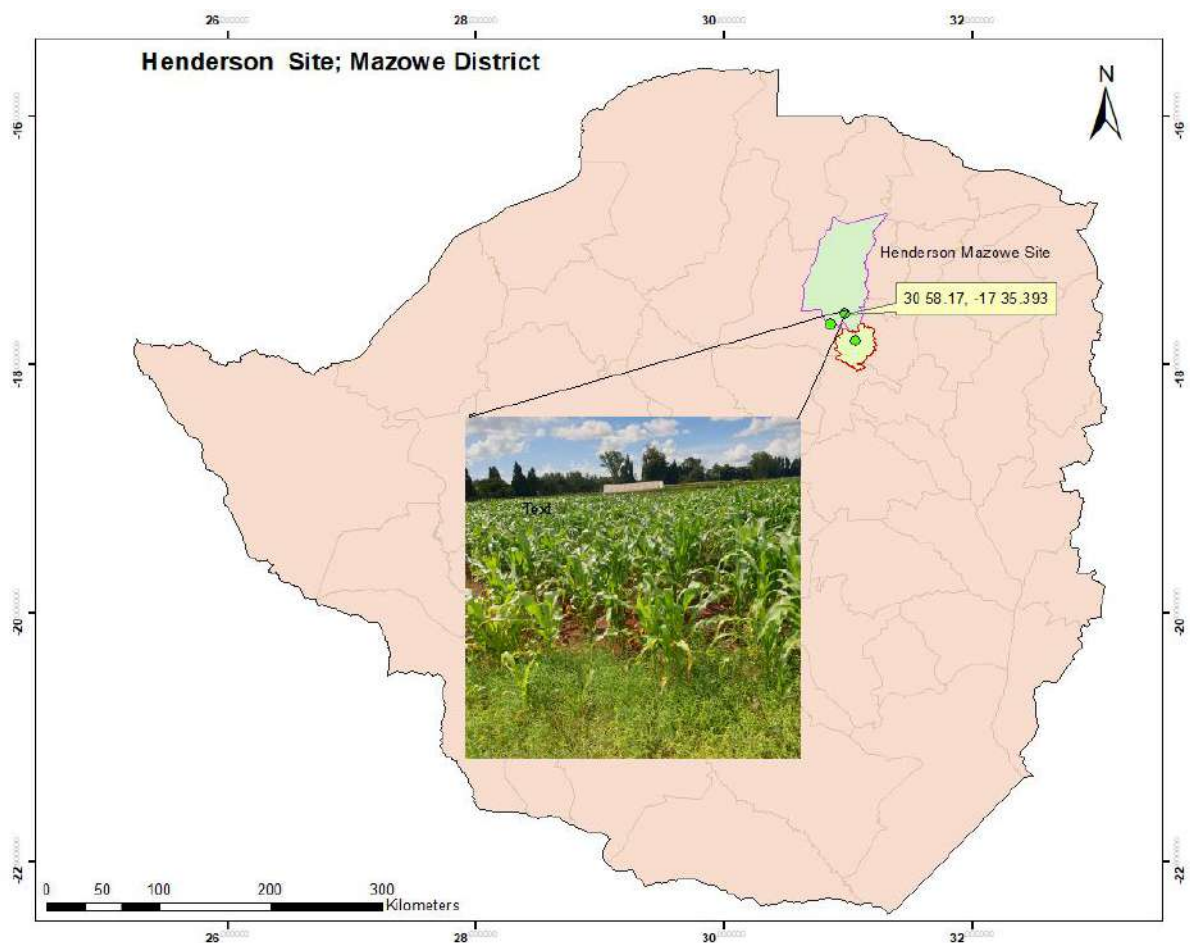


ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE HENDERSON RESEARCH STATION TAAT PROGRAM SITE - ZIMBABWE



Proposed for

The International Institute of Tropical Agriculture (IITA)



June 2022

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1.0 INTRODUCTION AND PROJECT BACKGROUND

1.1 INTRODUCTION

This Environmental and Social Management Plan (ESMP) was commissioned by the International Institute for Tropical Agriculture (IITA). The IITA is the Executing Agency for the Technologies for African Agricultural Transformation (TAAT), a program which is funded by the African Development Bank (AfDB/the Bank) as part of its Feed Africa initiative. Among other objectives, the TAAT program aims at improving agriculture across Africa by raising productivity, mitigating risks, and ensuring that farmers can access high-yielding, stress tolerant, nutrient rich crop varieties, and productive livestock breeds. The TAAT program is currently under implementation in 31 Sub Saharan African countries, including Zimbabwe. In Zimbabwe, the Department of Research and Specialist Services (DR & SS) is the implementing partner for the program. Preparation of this ESMP follows completion of a screening and scoping report prepared for the three sites in Zimbabwe where the TAAT phase 2 (TAAT 2) program is earmarked for implementation. The three sites are:

- a) Department of Research and Specialist Services (DR & SS) site in Harare
- b) Gwebi Testing Centre, in Zvimba District, and
- c) Henderson Research Station in Mazowe District

This ESMP is for the Henderson Research Station site.

1.2 PROJECT LOCATION

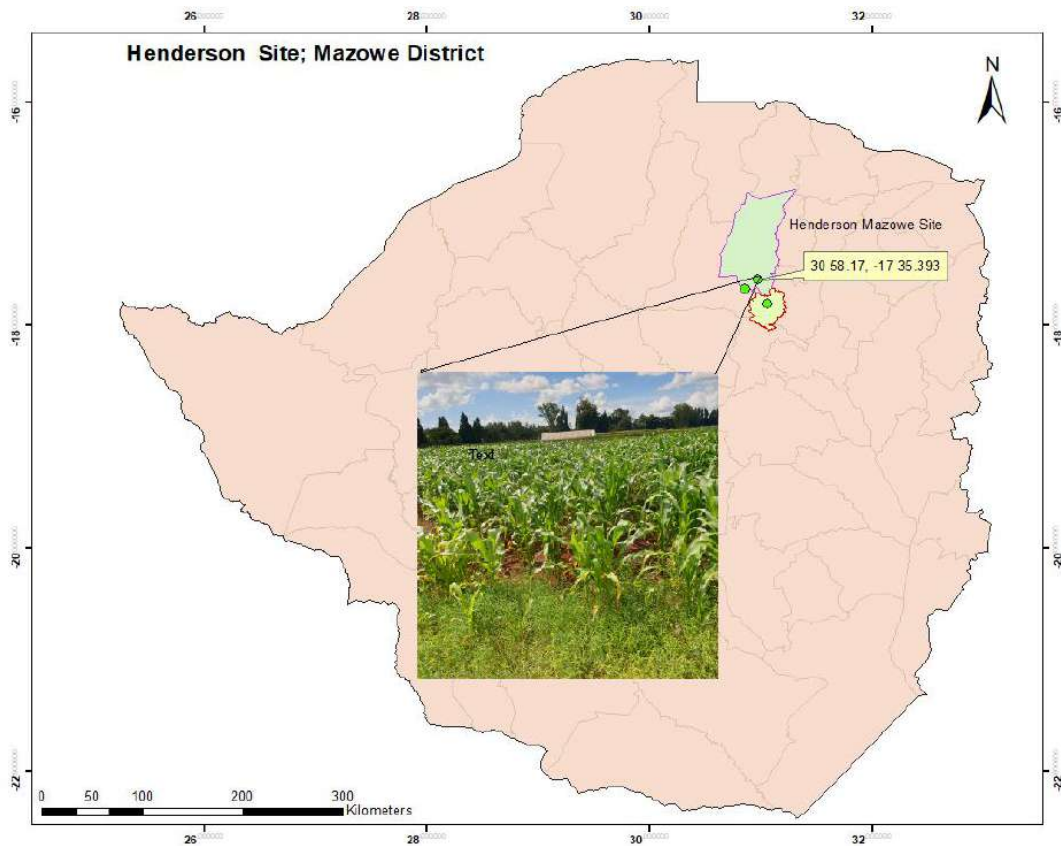
1.2.1 Site location

The Henderson site is in Mazowe District of Mashonaland Central Province, about 30km north of Harare. Henderson is an agricultural research station which was established by the Department of Research and Specialist Services (DR&SS) in 1948. The core functions of Henderson Research Institute are to develop technologies for sustainable intensive livestock and crop protection and production systems. This resonates well with the objectives of the TAAT program. The total land area of the Henderson research station is 2200 hectares. About 450 hectare of this land is arable and 5.6% hectares is potentially irrigable. Table 1.1 below shows the coordinates for Henderson Research Station. Figure 1 and Google image 1 below shows the location

Table 1.1: Geographical location of the Henderson Research Station

Proposed site	Province	District	Site Coordinates
Henderson Research Station	Mashonaland Central Province	Mazowe	3058.17 -17 35.393

Figure 1 Henderson Research Station Site location map



Google map 1 showing the Henderson site in Mazowe District



1.3 OBJECTIVES OF THE ESMP

The screening and scoping exercise identified a few potential negative environmental and social impacts alongside several positive impacts. There is need to ensure that the negative impacts that were identified are managed through a comprehensive and cost effective environmental and social management plan (ESMP). The purpose of this ESMP is therefore to document the negative impacts and come up with mitigation measures for the negative impacts and enhancement measures for the positive impacts that were identified. This ensures that the project benefits are maximized while its negative social and environmental impacts are avoided or minimized.

1.4 PROJECT PROPONENT AND OWNERSHIP IN ZIMBABWE

The TAAT program is being executed by the International Institute for Tropical Agriculture (IITA). In executing program, the IITA works in close collaboration with national agricultural institutions, agricultural research systems and private sector organizations. In light of this, the TAAT program in Zimbabwe is being executed in collaboration with the Department of Research and Specialist Services (DR & SS), a government research institution under the Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement. The Henderson Research Station, which is a satellite research station of the DR & SS will own and execute the project at this site.

1.5 ZIMBABWEAN INSTITUTIONAL AND LEGAL FRAMEWORK

The Environmental Management Agency (EMA) is the institution responsible for the implementation of the environmental legislation in Zimbabwe. Through the main environmental legislation, the Environmental Management Act (Chapter 20:27), the Agency administers the country's environmental and social impact assessment process. The Act makes it a requirement that all project which have the potential to cause irreversible environmental impacts be subjected to the ESIA study process prior to their implementation. Other key institutions and their mandate areas are shown in table 1.2 below

Table 1.2 Relevant Zimbabwean Legislation and the implementing institutions

Legislation and Regulations	Description and compliance requirements	Implementing Institution
Plant Pests and Diseases Act (Chapter 19:08) of 1989	<p>This Act provides for the eradication and prevention of the spread of plant pests and diseases in Zimbabwe, the prevention of the introduction into Zimbabwe of plant pests and diseases, and for matters incidental thereto.</p> <p>Of the 5 Parts of the Act, 2 are very relevant to TAAT Compact projects and should be observed. These are (a) Eradication and prevention of spread of pests and (b) Control of importation of growing media, injurious</p>	Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement.

	<p>organisms, invertebrates, and plants. The TAAT program is in line with this Act as it aims at eradicating and prevention of the spread of pests. However, it should also be implemented in such a manner that the use of pesticides does not affect other components of the environment, especially regarding mortality of non-targeted living organisms which play an important role in the ecosystem.</p>	
<p>Environmental Management Act, 2002 (Chapter 20:27)</p>	<p>The Act requires all development activities to be socially, environmentally, and economically sustainable. The essence of the Act is that should the TAAT compact activities be screened and found to have potentially significant environmental and social impacts, this triggers the need for ESIA studies to be undertaken for the projects and to get certification from the Environmental Management Agency (EMA) prior to implementation.</p> <p>Section 97 of the Act identifies the various types of projects that require ESIA studies to be undertaken before implementation. These are called “prescribed activities” and are listed under the First Schedule of the Act. Although the TAAT compact activities are not listed in the schedule, these activities have the potential to bring about unintended negative environmental and social impacts hence due caution must be taken prior to their implementation. The screening process for the TAAT program becomes important as it is the means through which the risks associated with its implementation can be assessed and an appropriate decision made on which E & S tool is most suitable for dealing with the potential risks.</p>	<p>Environmental Management Agency (EMA)</p>
<p>Environmental Management Act Chapter 20:27, (Hazardous Substances, Pesticides, and other Toxic Substances) Regulations, 2007</p>	<p>These regulations are made under Environmental Management Act (Chapter 20:27). Since chemical are used to eradicate invasive pests such as the Fall Armyworm, the TAAT program should comply with these regulations. The Regulations prohibit the use of pesticides, herbicides, fungicides, and any toxic substance for commercial agriculture without a permit issued by EMA.</p>	<p>Environmental Management Agency (EMA)</p>
<p>Statutory Instrument (SI) 144 of 2012. Regulations on Pesticides</p>	<p>Under the Pesticide Regulations, all pesticides have to go through thorough screening and have to be registered before importation and use in the country. The Plant Protection Institute of the Department of Research and Specialist Services (DR&SS) administers pesticide registration and has the mandate to oversee importation and testing of all pesticides (Mujati, 2011). The</p>	<p>Environmental Management Agency (EMA)</p>

	regulations prohibit the use of pesticides other than the purpose for which they are registered for.	
Seeds Act (Chapter 19:13) 1971, revised 2001; Seeds (Amendment) Regulations 1971; Seed Regulations and Seeds (Certification Scheme) Notice 2000	Zimbabwe regulates the seed sector through these regulations. Seed Services is an arm of the Government within the DR&SS, which is the primary regulatory authority for seeds. Seed Services has a regulatory mandate to protect seeds and plant varieties, provide seed certification and laboratory services, and administer sanitary and phyto-sanitary (SPS) matters. The National Variety Release Panel (NVRP), with members appointed by the Minister of Agriculture, Mechanization, and Irrigation Development, has the final approval on all varieties released to market.	Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement.
Water Act (Chapter 20:24) of 1998	If TAAT compact project is to expand to districts and proposes to use irrigation systems for its activities, it implies that the program has to apply for a permit at Catchment Councils for the use of water. Although the agricultural activities may not require one to have a permit for discharging pollutants in the water bodies, excessive and prolonged use of pesticides may result in diffuse pollutants contaminating nearby water sources. Water quality must be maintained at all times to maintain good biological diversity and human health.	Zimbabwe National Water Authority (ZINWA)

1.6 INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

IITA is the Executing Agency for the TAAT Program. In this capacity, the IITA will sign memorandum of understanding (MoU) and implementation agreements with each of the lead centers/institutions for the various initiatives within the Program. IITA will act through a Program Management Unit (PMU) composed of staff competitively recruited with the responsibility to manage the whole Program and report to the AfDB.

National partners will be responsible for technology campaigns within their own countries. The national partner in Zimbabwe is the Department of Research and Specialist Services (DR & SS). The DR & SS will develop and deploy mechanisms for reaching out to farmers and other stakeholders with the proven technologies and technological packages, working with the available and most active national institutions and farmer organizations countrywide.

1.7 DEVELOPMENT FINANCIAL INSTITUTIONS ENVIRONMENTAL AND SOCIAL REQUIREMENTS

The TAAT program is funded by the African Development Bank (AfDB). The IITA requires that the TAAT program be executed in line with the requirements of the AfDB's Integrated Safeguards System (ISS). The ISS consists of the following safeguards

1.7.1 The AfDB's Integrated Safeguards System (ISS)

The AfDB requires that its Operational Safeguards (OSs), an integral component of the Bank's Integrated Safeguards System (ISS) be complied with and integrated as a basis for addressing environmental and social issues in all activities it funds. These OSs aim to ensure that all investments made are environmentally and socially sustainable. The following OSs that are triggered by the proposed TAAT activities were examined and a reflection on how the program will comply with the operational safeguards was made:

i. Operational safeguard 1 – Environmental and social assessment

The objective of this overarching Operational Safeguard (OS), along with the OSs that support it, is to mainstream environmental and social considerations— including those related to climate change vulnerability—into Bank operations and thereby contribute to sustainable development in the region.

The specific objectives are to:

- Mainstream environmental, climate change, and social considerations into Country Strategy Papers (CSPs) and Regional Integration Strategy Papers (RISPs);
- Identify and assess the environmental and social impacts and risks— including those related to gender, climate change and vulnerability—of Bank lending and grant-financed operations in their areas of influence;
- Avoid or, if avoidance is not possible, minimise, mitigate and compensate for adverse impacts on the environment and on affected communities;
- Provide for stakeholders' participation during the consultation process so that affected communities and stakeholders have timely access to information in suitable forms about Bank operations, and are consulted meaningfully about issues that may affect them;
- Ensure the effective management of environmental and social risks in projects during and after implementation.

TAAT Program activities are likely to have impacts on the biophysical and human environment in the various sites of implementation and will therefore be subject to environmental assessment in accordance with this OS and national legislation. This OS classifies the Bank's investments into four categories: Category 1: Bank operations likely to cause significant environmental and social impacts (Environmental and Social Impact Assessment (ESIA) with ESMP); Category 2: Bank operations likely to cause less undesirable environmental and social effects than Category 1 (appropriate ESIA with ESMP); Category 3: Bank operations with negligible environmental and social risks (this category does not require an environmental and social assessment). The TAAT Program has been categorised as Category 2 under the Environmental and Social Management Framework. As such, its activities will fall into categories 2 and 3.

ii. Operational Safeguard 3 – Biodiversity, renewable resources and ecosystem services.

This Operational Safeguard (OS) outlines the requirements for borrowers or clients to identify and implement opportunities to conserve and sustainably use biodiversity and natural habitats, and observe, implement, and respond to requirements for the conservation and sustainable management of priority ecosystem services. The three program sites in Zimbabwe have been cleared of vegetation long back. However, there is still risk to biodiversity especially related to the use of agrochemicals in the program hence the need for program activities to be in line with this OS. Measures will need to be put in place to ensure that the TAAT program activities do not work against the objectives of this OS.

iii. Operational safeguard 4 – Pollution prevention and control, hazardous materials, and resource efficiency.

This OS outlines the main pollution prevention and control requirements for borrowers or clients to achieve high quality environmental performance, and efficient and sustainable use of natural resources, over the life of a project. The specific objectives are to:

- Manage and reduce pollutants resulting from the project—including hazardous and non-hazardous waste—so that they do not pose harmful risks to human health and the environment.
- Set a framework for efficiently using all of a project’s raw materials and natural resources, especially energy and water. This OS draws on and aligns Bank operations with existing international conventions and standards related to pollution, hazardous materials and waste, and related issues. It also requires compliance with internationally accepted environmental standards, particularly the World Bank Group Environmental Health and Safety (EHS) Guidelines.

This safeguard ties in well with the local environmental legislation that require sustainable management of hazardous substances. Agricultural chemicals used in the program will be managed in line with the requirements of this OS.

Operational safeguard 5 – Labour conditions, health and safety

Labour is one aspect of a country’s most important assets in the pursuit of poverty reduction and economic growth. The TAAT program is expected to result in an increase in labour requirement in the agricultural sector. This is a positive impact which contributes to economic growth. The OS highlights the need to respect workers’ rights as an important aspect of developing a strong and productive workforce. This OS outlines the main requirements for borrowers or clients to protect the rights of workers and provide for their basic needs. The specific objectives are to:

- Protect workers’ rights;
- Establish, maintain, and improve the employee– employer relationship;

- Promote compliance with national legal requirements and provide supplementary due diligence requirements where national laws are silent or inconsistent with the OS;
- Align Bank requirements with the ILO Core Labour Standards, and the UNICEF Convention on the Rights of the Child, where national laws do not provide equivalent protection;
- Protect the workforce from inequality, social exclusion, child labour, and forced labour; and
- Establish requirements to provide safe and healthy working conditions.

Compliance with this Operational Safeguard is guaranteed by many local statutes including the Constitution of Zimbabwe which defines the bill of rights, the Labour Relations Act that ensures fair conduct between the employers and employees and the National Social Security Act which requires the establishment of safe working environment and full compensation of employees for work related injuries. Implementation of the TAAT program will be in line with the requirements of this OS.

The IITA also requires that and applicable statutory requirements for the host country, in this case Zimbabwe's Environmental Management Act (Chapter 20:27) as read with Statutory Instrument 7 of 2007 be complied with during the project implementation phase. Both the ISS and the Zimbabwean environmental legislation recognize the fact that implementation of any project or program, irrespective of its benefit to society at large, often comes with unintended negative environmental and social risks and impacts. These negative aspects must be identified and avoided or at least mitigated in order to make the program environmentally and socially sustainable. This is the essence of this ESMP.

2 PROJECT DESCRIPTION

2.1 INTRODUCTION

The overall goal of the TAAT program is to improve agriculture as a business across Zimbabwe's farming areas by deploying agricultural technologies, improving productivity, increasing technologies within priority commodities which include wheat, rice, maize, sorghum, millet, orange-fleshed sweet potato, high iron bean, aquaculture, small livestock as well as the value chain for each of the priority commodities. To achieve this, Phase 2 of the TAAT program will be undertaken at 3 sites in Zimbabwe namely the Department of Research and Specialist Services (DR & SS) Head Office in Harare, Gwebi testing Centre and Henderson Research Station. These sites will act as incubation centers from where knowledge will be disseminated to farmers across Zimbabwe. This ESMP is for the Henderson Research Station site where the fall army work and maize compact will be implemented.

2.1.1 Project status

The TAAT Phase 2 is currently at the planning stage. The program sites have been screened in line with the requirements of the African Development Bank's environmental and social requirements. A screening and scoping report for the three sites in Zimbabwe was prepared and approved by the Bank, paving way for the preparation of this ESMP. The ESMP will be disclosed on the Bank's website as well as in Zimbabwe through the DR and SS's website and in the print media. This will provide stakeholders with information about the program and to provide comments if they so wish. Once this process is completed, implementation of the program will commence.

2.1.2 Process description

2.1.2.1 The site and proposed activities

The Henderson site has been used for agricultural activities over many years. It lies within a very productive agricultural belt which is part of the country's breadbasket. The landscape is gently undulating with an average slope of about 1%, making it very suitable for the TAAT project

The Henderson Research Station site will host trials on maize seed treated with pesticides such as Fortenza Duo for controlling Fall armyworm and other pests which affect maize crop. Activities will include the following:

- Land preparation;
- Sowing;
- Weeding
- Application of pesticides to control pests
- Application of fertilizers;

- Harvesting

These activities are sources of impacts on the biophysical and human environment.

The land belongs to Henderson Research Station owned by the Department of Research and Specialist Services (DR & SS). There are no risks associated with land ownership.

2.1.3 Construction activities

The project does not involve any construction works. No physical structures will be built on site. The project only makes use of arable land on which project activities will be undertaken. This land is already available and does not require any clearing since the site has been under crop production for many years.

2.1.4 Waste management during all project phases

The project is not expected to generate any significant amounts of waste. The major waste expected will be packaging materials which come with the seeds as well as containers for insecticides and herbicides used in the process. Due caution will be taken to ensure that such waste is disposed in a sustainable manner. The developer will ensure that waste from the project is accounted for and does not end up being disposed into the environment. If any of the containers are to be given out to local people, they should be educated on how to treat such containers in order to disinfect them before they are put to use.

2.2 Project implementation schedule

The project entails crop production on a seasonal basis. Table 2.1 below shows the project implementation schedule for the first season. Once the project starts running, some of the activities shown will not need to be repeated when the project goes into subsequent seasons

Figure 2.1 Implementation schedule

Month Activity	Aug.2 022	Sept. 2022	Oct. 2022	Nov. 2022	Dec. 2022	Jan. 2023	Feb. 2023	Mar. 2023	Apr. 2023	May 2023	June 2023	July 2023
Establish a project management team and assessment of project site												
Land preparation												
Receiving of seeds, herbicides, and pesticides												
Planting												
Tending of crops												
Harvesting												

3 ENVIRONMENTAL AND SOCIAL BASELINE

3.1 INTRODUCTION

This chapter provides a brief description of the environmental and social baseline conditions in and around the Henderson site in Mazowe. The site has been used for crop research over many years. It is ready for the proposed activity, with no land clearing required.

3.2 BASELINE DATA ACQUISITION APPROACHES AND METHODS

3.2.1 Data acquisition

Information used to prepare this document was acquired through two main methods, namely

- i) Desk studies
- ii) Field studies

3.2.1.1 Desk studies

Desk studies included review of available literature on the IITA and its activities. Website searches were done which yielded information on the TAAT program and its objectives. Literature on the TAAT phase 1 was reviewed, most of which was obtained from staff at the DR & SS Head Office. Desk studies also covered a review of the relevant policies and legislation, including the AfDB's Integrated Safeguards System.

3.2.1.1 Field studies

Field work was undertaken to Henderson Research Station in the Company of relevant staff from the Henderson site. The site was assessed in terms of its vegetation, soil and the neighborhood. Special attention was on the environmental parameters which may be affected the most when the TAAT program is implemented. Most of the information used in the screening report and this ESMP came from field studies.

Field studies also entailed meetings with local people during which the project scope was explained to them while they also had the opportunity to seek clarifications on the project and how it will be implemented.

3.3 DESCRIPTION OF THE BIOPHYSICAL ENVIRONMENT

3.3.1 The physical environment

The project site is bound by broken hills. The dominant landforms are low-lying pediments between the Iron Mask Range in the west and the Blue Granite Hills in the east. The Iron Mask Range runs in an approximately NE to SW direction, and in the southwest, consists of a single, narrow range with steep sides and a very narrow summit from 1550 to 1640

metres in height. The slope is gently undulating with an angle less than 1% and elevation is about 1,280m above sea level. The landscape makes the site very suitable for crop production.

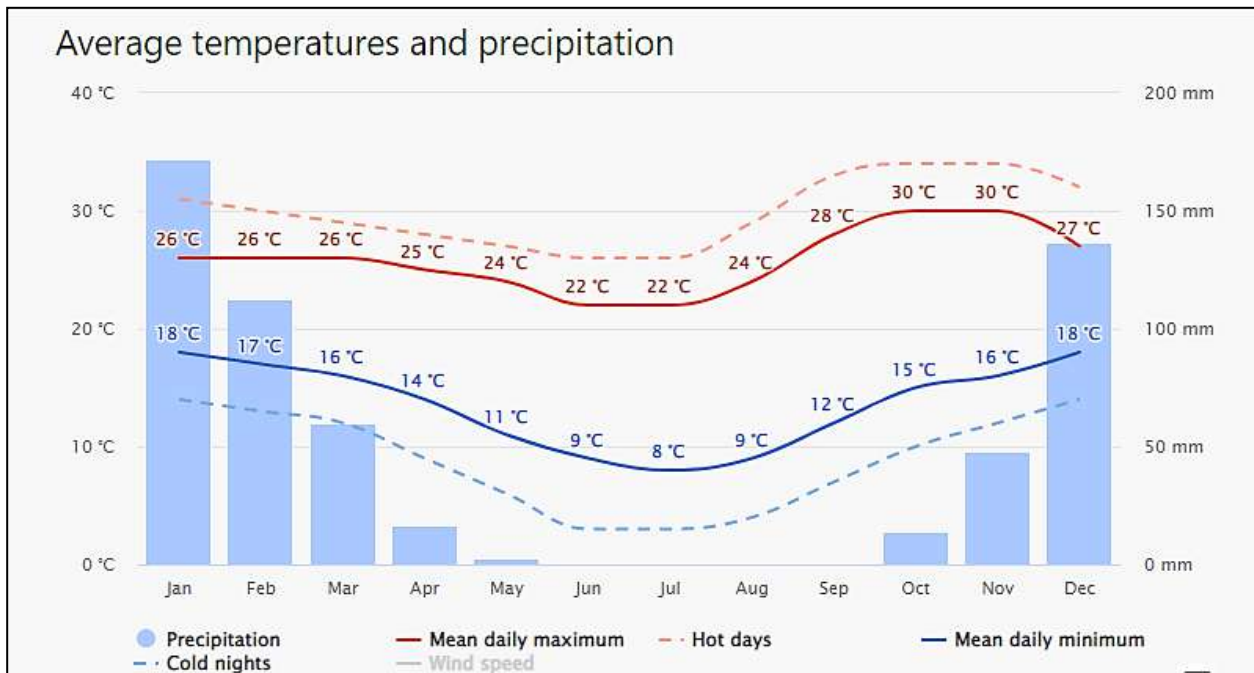
3.3.1.1 Climatic conditions

The Henderson Research Station, barely 40km from Harare, falls in the same climatic zone as Harare. The site, like the rest of the country, experiences a sub-tropical climate which is subject to maritime influence from the Mozambican channel, mid continental Botswana upper high pressure and volatile, warm moist conditions of the intertropical convergence zone. It falls under agro-ecological region IIa. This region receives an average annual rainfall of about 880 mm.

3.3.1.2 Rainfall and temperature

The rainy season usually begins mid-November and ends around end of March. This is followed by a cool dry winter season which stretches from April to mid-August, with September, October and November being the hottest months. Temperatures rarely go above 35°C during the hot season and below 7°C during the cold winter season, making the region a conducive one for agricultural activities. Figure 3.1 below shows the average monthly temperature and rainfall characteristic for Harare and its surroundings

Figure 3.1: Monthly average temperature and rainfall for Henderson Research Station



3.3.1.2 Ambient air

The Henderson site is in the middle of a farming region, far away from the polluting industries of Harare. Ambient air quality is generally good.

3.3.1.3 Traffic status

The site is on the highway linking Harare and the mining town of Bindura, about 75km to the north. The highway is a very busy road, where traffic volumes at times is quite heavy. There are people who commute between Harare and Bindura every weekday, making the road a very busy one during the week.

3.3.1.4 Soils and geology

The geology of the area is very mixed, but in general, the soils around the site of the profile can be said to be derived from in-situ sediments of the pediment Iron Mask Series and fine-grained quartz-felspathic meta volcanics (Thierfelder and Wall, 2012). These parent materials contain a high proportion of silt-sized particles. The residual material in the soil is derived from the metamorphic sedimentary and the soil has a silty texture. The soils are red loam and well drained due to low clay composition moderate silt content. The uppermost horizon of the profile, from 0 to 2 cm, is composed of moderately decomposed organic matter, derived mainly from grass species.

3.3.1.5 Surface water

The Henderson Research Station site falls within the catchment of the Mazowe River. The Mazowe Dam in the vicinity is an important surface water body whose water is used for crop irrigation. It is also the sources of water for the small farming settlement, Mazowe. Between the Iron Mask Range and the Blue Granite Hills is the Dasura River which feeds into nearby Mazowe dam.

3.3.1.6 Land uses and vegetation

The main land use in the area is agricultural crop and livestock production at the research institute. Current land uses at the site include semi-natural grassland, irrigation and rainfed crop production and cattle production.

In terms of vegetation, apart from weeds synonymous with crop fields, the rich reddish well drained and stable loams soils promote the growth of pristine vascular and herbaceous vegetation on the foothills surrounding the Henderson site and along the Dasura River which feeds into Mazowe dam. The vegetation mainly consists of miombo montane woodland which is characterized by *Brachystegia boemi* and *Jalbernadia Globiflora* on the foothills and area used as pastureland. The vegetation is not going to be under threat from TAAT program activities since the target site is open land which has been in use for over 6 decades for crop experimental activities. The most predominant grass species is *Hyperaemia* spp. among other grass and weeds species.

3.3.1.7 Wildlife

The project area is not home to significant wildlife population. Common fauna include chacma baboons, hare, vervet monkeys, steenbok and duiker are common mammals. The area also inhabits a wide spectrum of terrestrial and arboreal bird species. Birds such as francolins, doves, quelea and guineafowls feed on grain crops.

3.4 THE SOCIO-ECONOMIC ENVIRONMENT

3.4.1 Administrative systems

Administratively the project area falls under Mazowe Rural District Council. Mazowe is one of the 7 districts in Mashonaland Central Province.

3.4.2 Land uses and economic activities

Mazowe District is one of the affluent rural district councils in the country. Its economy is driven by two key sectors namely agriculture and mining

3.4.2.1 Agriculture

Mazowe district falls under agro-ecological region IIA. Agriculture is a key sector, buoyed by annual rainfall ranging between 750 and 1000mm. This natural rainfall is good enough to sustain rainfed subsistence farming practiced mainly in the district's communal areas. The district also boasts some of the country's most productive commercial farms including the famous citrus farms which play an important role in sustaining the national economy.

3.4.2.2 Mining

Apart from farming, Mazowe is famous for its mineral resources, especially gold. Formal mines alongside illegal mining are livelihood sources for many families in the district. The proposed project site is surrounded by several gold mines. Many people in the area also make a living as alluvial gold panner along the Mazowe River.

4. POTENTIAL IMPACTS AND MITIGATION MEASURES

4.1 INTRODUCTION

This section examines the potential environmental and social impacts associated with the implementation of the project at the Henderson Research Station site. It also provides measures aimed at mitigating negative impacts while enhancing the positive ones. Broadly, implementation of the fall army work and maize compact project activities at the Henderson Research Station is set to benefit Zimbabwean farmers and the country at large considering the importance of the agricultural sector to the county. However, since the project activities entail the storage and use of agrochemicals as well as disposal of containers or packaging materials, there are associated social and environmental risks which require monitoring and management.

Potential environmental and social impacts and risks of the TAAT program activities have been identified based on the following AfDB operational safeguards:

- OS 3: Biodiversity, renewable resources, and ecosystem services
- OS 4 Pollution prevention and control, hazardous materials, and resource efficiency
- OS 5: Working Conditions, health, and safety

4.2 Environmental and Social Impacts Associated with Project Activities

The Henderson site will host the fall army worm and maize compact. As is the case with most agricultural activities, the project entails the use of various pesticides and other agrochemicals. Generally, these technologies are an integral component of modern agriculture and are used to protect crops, treat grain and to eradicate the pests that transmit plant diseases. It has been estimated that globally nearly \$38 billion is spent on pesticides each year (Pan-Germany, 2012). Ideally, the applied pesticides should only be toxic to the target pests, should be biodegradable and eco-friendly. (Rosell et al., 2008). Unfortunately, this is rarely the case as most of the pesticides are non-specific and may kill the non-targeted organisms that are useful to ecosystem. It has been estimated that only about 0.1% of the pesticides reach the target organisms and the remaining bulk contaminates the surrounding environment which includes water, air, soil and both fauna and avifauna species. The anticipated environmental and social impacts are shown in tables 4.1 (negative impacts) and 4.2 (positive impacts) below;

Table 4.1: Potential Negative Environmental and Social Impacts – Henderson site

Anticipated Environmental/social Impacts	Proposed Mitigation and Management Measures
Potential increase in respiratory diseases for exposed people	<ul style="list-style-type: none"> - Using protective equipment (PPE) - Observing the waiting period after spraying crops - Educating staff on non-harmful methods of using pesticides - Raising awareness among staff on how to handle agro chemicals - Proper disposal of chemical containers and packaging materials
Poisoning of livestock and wild animals	<ul style="list-style-type: none"> - Ensuring that program activities are undertaken in secured places where livestock and wildlife do not stray into - Ensuring that chemical dosage is strictly in compliance with manufacturers application instructions and dosage levels
Mortality in non target insects, vertebrates and invertebrates and micro-organisms	<ul style="list-style-type: none"> - Application of correct quantities of chemicals - Monitoring the response of soil microbial communities and various enzymatic activities to pesticide exposure in order to reduce their deleterious effects - A careful screening of pesticide effects on soil microflora should be done well before their field applications.
Water resources pollution	<ul style="list-style-type: none"> - Avoiding pest resurgence -a dose-dependent or sub-lethal dose - Weeding mechanically - Using biological control methods where and when possible - Considering integrated Pest Management (IPM) approach for controlling pests designed to have minimal environment disturbance - Applying multi-disciplinary research and farmer incentives to encourage the adoption of innovative IPM strategies essential for development of sustainable maize-based cropping systems. - Promoting use of biorational pesticides/ from natural origins
Health and Safety	<ul style="list-style-type: none"> - Supply adequate and effective Personal Protective Equipment (PPE) to all people working with the chemicals - Awareness raising

Table 4.2: Potential Positive Socio-economic Impacts

Anticipated Environmental/social Impacts	Enhancement measures
Creation of employment opportunities	- Enhancing the positive impact by maximizing employment opportunities. Where feasible, manual labour can be used for the program activities instead of mechanised methods in order to employ more people
Potential for promoting gender balance	- Involve more women in training and deliberately establish demo plots for women and women groups
Reduction of malnutrition and poverty	- Use of maize varieties that guarantee harvests hence reducing food insecurity
Increased crop yields	- Encourage as many farmers as possible from around Henderson Research Station to adopt the technologies through adverts in electronic and print media, demonstrations, road shows and field days showcasing the success stories
Introduction of new climate change resistant crop varieties,	- Encourage as many farmers as possible to adopt the technologies through adverts in electronic and print media, demonstrations, road shows and field days showcasing the success stories
Expansion of irrigation infrastructure	- Positive impacts in which the Government must provide more funding towards irrigation infrastructure expansion to enable more farmers to benefit from TAAT improved maize varieties which require irrigation infrastructure
Promotion of intensive use of land for economic growth	- Explore opportunities for increasing land under irrigation

The potential negative impacts are largely associated with the use of insecticides and herbicides. These impacts can be mitigated effectively through following the instructions for use of the chemicals. The positive impacts associated with the project are numerous and have the potential to transform the agricultural sector in the country and ensure that it contributes significantly to the country's GDP.

5. ENVIRONMENTAL AND SOCIAL MANAGEMENT PROGRAMME (ESMP)

5.0 INTRODUCTION

This section presents the Environmental and Social Management Programme (ESMP) which will be used to monitor and manage the anticipated impacts associated with implementation of the fall army worm and maize compact at Henderson Research Station. The ESMP presents the impacts as identified in the report and presents the framework through which the impacts will be monitored and managed. The mitigation measures suggested in this report, and any that may be developed during the project implementation phase, must be strictly adhered to.

5.1 Institutional arrangements for ESMP implementation

The cross-cutting issues in the project will be addressed by supporting existing structures rather than developing new interventions. The project will build local skills and build capacity to monitor impacts associated with the TAAT program in general

Key institutional players in the project will include the following

(a) Government Ministries and Departments

- Henderson Research Station staff involved in the program
- Ministry of Agriculture, specifically the Department of Research and Extension Services (AGRITEX) which has the mandate to train farmers on agronomic practices
- Ministry of Women Affairs, Gender and Community Development, which is expected to ensure that the project is gender responsive
- Zimbabwe National Water Authority (ZINWA) which oversees the use of water for irrigation and other commercial purposes
- Ministry of Health and Child Care which may be required in the event of people getting sick as a result of exposure to agro chemicals
- Environmental Management Agency (EMA) which has the mandate for ensuring that the natural environment is protected and safe for everyone
- District Administrator's office

(b) Community representatives and capacity building requirements

Henderson Research Station falls under the jurisdiction of a rural district council, it is important to involve local people since ultimately, they will benefit from the project. The local Chief and the Councillor should be involved. They will have a say in who among the local community should be involved in the project, especially when it comes to capacity building.

The table 5.1 below shows the capacity building requirements and estimated costs

Table 5.1: Environmental and social capacity building requirements

Cost items	Beneficiary	Number	Estimated cost (USD)
Induction workshop	All institutions involved in project monitoring at the Henderson Research Station site, including representatives of the local communities	1	800
Training of TAAT programme officers at the Henderson	Staff of the Henderson Research Station involved in the project	1	4,000
Quarterly report back meetings	All institutions involved in project monitoring including representatives of the local communities	4	2,000 (500 each/quarter)
Total			6,800

5.2 Monitoring and reporting

Monitoring and reporting are the responsibilities which will be left to an independent consultant. He/she will assess the program's adherence to the ESMP as well as identifying and reporting on any issues which may not have been captured in the ESMP. In this task, the independent consultant will be assisted by the various ESMP implementation team members who will be drawn mainly from Government Ministries and Civil organizations that are represented in the respective project areas. Ultimately the independent environmental consultant will be required to prepare quarterly monitoring reports for the attention of the Henderson and IITA. Such reports will also be availed to the AfDB and the Environmental Management Agency (EMA).

5.3 ESMP Disclosures

The ESMP will be disclosed through the following means

- Publication on the AfDB and IITA websites
- Publication locally through the DR &SS website
- Community meetings in the project area

Stakeholders will be requested to send their comments or views through emails, telephone calls or visiting the Henderson Research Station offices. Local people can send their views through local leadership.

5.4 ESMP Implementation schedule and cost estimates

Table 5.1 shows the Henderson ESMP, its implementation, and the estimated implementation costs.

Table 5.1: Environmental and Social Management Plan- DR &SS Site, Harare

Component	Anticipated Environmental/social Impacts	Source of Impact	Mitigation/Enhancement	Implementation cost (USD)	Implementing Agency/Actor
Employment	Creation of employment opportunities Positive impact	More jobs created in crop fields for clearing, sowing, weeding, pest control activities and harvesting.	- Enhancing the positive impact by maximizing employment opportunities. Where feasible, manual labour can be used for the program activities instead of mechanised methods.	3,000 for meetings	Henderson Research Station/Independent Environmental Expert/TAAT program officials
Gender and empowerment	Potential for promoting gender balance and empowerment of women Positive impact	Project activities which are gender inclusive.	- Empowerment programs and training should consider women and women groups	5,000 for meetings	Henderson Research Station/Independent Environmental Expert/TAAT program officials
Nutrition	Reduction of malnutrition and poverty Positive impact	Implementation of project activities	Promoting the growing of growing of the maize	7,000 for province side travelling for Henderson Research Station project staff	Independent Environmental Expert/TAAT program officials
Yields	Improved maize yields Positive impact	Adoption of TAAT approved agricultural technologies including improved varieties of maize	Encourage the growing of tested maize seed varieties	Included above	Independent Environmental Expert/TAAT program officials

Climate change and vulnerability	Introduction of new varieties of maize that are adapted to prevailing climatic conditions Positive impact	Improved maize seed provided under the TAAT programme	Encourage as many farmers as possible to adopt the technologies through adverts in electronic and print media, demonstrations, road shows and field days showcasing the success stories	3,000	Independent Environmental Expert/TAAT program officials
Air pollution	Degradation of air quality in and around the Henderson Research Station Negative impact	Aerial spraying of pesticides and herbicides	Using appropriate PPE Applying pesticides when weather is not windy	5,000 for PPE	Independent Environmental Expert/TAAT program officials
Surface and ground water resources	Pollution of water resources Negative impact	- Application of herbicides, pesticides and chemical fertilizers	- Dispose hazardous waste in proper disposal facilities - educate employees on to apply the correct amounts of herbicides and chemicals	5,000 covering cost of disposal	Independent Environmental Expert
Human health and well being	Health risks to employees and local people Negative impact	Use of herbicides, pesticides and chemical fertilizers	- Provide employees with appropriate PPE and insist of use of the equipment when at work - Awareness workshops to educate employees on safe handling of harmful chemicals	2,000 costs of workshops	Independent Environmental Expert
Total cost of ESMP implementation					30,000-00

5.5 Adherence to the ESMP

The ESMP must be implemented and strictly adhered to in order to ensure that the negative impacts are kept in check while the positive ones are maximized.

6. STAKEHOLDERS' CONSULTATION

6.0 INTRODUCTION

This section presents the results of a stakeholder consultation exercise that was carried with respect to the Henderson Research Station site. The consultation process provided insights into what ordinary people in and around the proposed programme site think about the programme ahead of commencement. However, given that Henderson is a Government Research Centre which is protected and therefore not easily accessible to ordinary people except when they specifically have business at the centres, most of the interviewees were not aware of the role of the Research Station hence could not understand why the programme is being confined to the centre.

6.1 Context and objectives

The stakeholder consultation process was undertaken with the following objectives

- Providing local people with information about the propose fall army worm and maize compact at Henderson Research Station
- To empower local people and enable them to make an informed decision on whether they welcome the programme or not
- To give local people an opportunity to reflect on the potential environmental and social impacts which can arise from the implementation of the programme
- To help stakeholders to appreciate the range of mitigation measures available for the negative impacts and discuss scope for enhancing the positive ones
- To discuss gender issues and ensure gender mainstreaming before, during and after project implementation

6.2 Methodology for conducting public consultations

Stakeholder consultations were undertaken in two stages. The first stage involved meetings with the TAAT Programme Officials, and these were held at the DR &SS site in Harare. The second phase involved consultations with local people in the project area, with a meeting of local people being held at the Blue Ridge shop just outside Henderson Research Station.

6.3 Results of the Stakeholder Consultation Process

6.3.1 Meetings with TAAT Programme Officials

To kick start the study and the consultation process, meetings were held with the TAAT Programme Officials, who are all based at the DR & SS Head Office in Harare. The meetings were held as shown in table 6.1 below

Table 6.1 Consultations with TAAT Programme Officials

Name of Official	Date of meeting	Issues discussed
Ms Shylet Tsenedza	14 February 2022	Discussion on the High Iron Bean Compact, the planning being made for implementing the Compact activities. She also took the Consultant to a demonstration plot at the DR & SS site in Harare
Dr Claid Mujaju	15 February 2022	Dr Mujaju provided a background of the research activities of the DR & SS as a technical arm of the Ministry of Lands, Agriculture and Rural Resettlement. He provided the overall implementation arrangements for the TAAT programme in Zimbabwe.
Mr Shingirayi Nyamutukwa	17 February 2022	The Fall Army Worm initiatives that have been undertaken and the challenges encountered. He described preparatory works being done for the TAAT programme on the Maize Compact and Fall Army Worm.
Mr Shumirai Muhera	18 February 2022	The fall army worm control activities which the DR & SS has undertaken at the DR & SS demonstration site in Harare and at Henderson Research Station.
Dr Dumisani Kutuywayo	24 February 2022	Overview of the Wheat Compact and the readiness to implement it.

Meetings with the TAAT Programme Officials were followed immediately by consultation with local people around the site.

6.3.2 The Henderson Research Station Meeting

Consultation was undertaken on 1 April 2022 at the nearby Blue Ridge shop where local people buy groceries from.

Venue	Dates	Attendance		
		Males	Females	Total
Blue Ridge Shop	1 April 2022	8	0	8

The meeting was attended by a total of 8 individuals from the area. Unfortunately, there were no female participants

The meeting kicked off by providing background information about the TAAT programme which all the participants had never heard about. The Consultant outlined the objectives of the Programme and how it will be implemented. The participants were then asked to identify what they considered would be the potential negative environmental and social impacts of the programme. The following were identified by the participants as the key environmental impacts:

- Chemical pollution of the soil because of use of chemicals
- Death of non-targeted insects

Positive impacts identified were as follows

- Increased crop yields and food security
- Employment opportunities

Figure 6.1 shows the signed attendance register



Consultancy Services for TAAT Program Environmental and Social Screening Study - Zimbabwe

Stakeholder Consultation - Attendance Register

TAAT Site: Henderson Research Station

Meeting venue: Blue Ridge Shop

Date: 1 April 2022

Name	Sex	I.D Number	Email/phone number	
Mofsi Kwangwira	M	15-133527K15	+263 773267157	Chue
CALTON MHTSHI	M	75-336516R25	+263 77536502	Chue
Chris Chapsna	M	63-2116481P45	+263 735594056	Chue
Desire Blumhira	M	42-1782571X42	+263 775377629	Wera
Lovenore Sara	M	48-092423H48	+263 775618994	Wera
Silas Sibanda	M	59-052363A71	+263 775288365	Wera
Victor Katiya	M	63-1287564771	+262 772645556	Wera
Munyadzi Marimbe	M	27-091927X27	+263 77482854	Wera

Figure 6.1 List of Participants at the Henderson Research Station Consultation Meeting

7.0 GRIEVANCE REDRESS MECHANISM

7.0 Introduction

The purpose of the Grievance Redress Mechanism (GRM) is to outline how grievances associated with the implementation of the TAAT project at the Henderson site will be handled. The GRM helps in the process of identifying, assessing, resolving, and monitoring of grievances brought by people or organizations affected by projects supported by the AfDB. Grievances could be from individual stakeholders, stakeholder groups and/or organizations. Timely redress of such grievances is vital in ensuring successful implementation of the project and is in line with industry best practices.

7.1 Scope

A grievance is defined as a complain, an issue, concern, problem, or claim brought by an individual stakeholder, an organization, or a community group against a project or its implementers. These complaints may be perceived, or actual issues of concern related to health, safety, environmental and social risks and adverse impacts emanating from implementation of the TAAT program at the Henderson site in Mazowe. Aggrieved parties can seek recourse through the AfDB's Independent Review Mechanism (IRM).

7.2 Application

The GRM provides guidance on how to receive, register, assess and resolve grievances. The main objectives of the mechanism are to:

- ☞ Provide a transparent and credible process to all parties for resolving grievances, resulting in outcomes that are fair and effective
- ☞ Build trust as an integral component of broader community relations; and
- ☞ Enable identification of new issues and trends, facilitating corrective and preemptive action

7.3 AfDB Grievance Redress Mechanism Approach

In terms of the AfDB's GRM, any group of two or more people in the country or community who feel aggrieved by the way a Bank funded project is implemented is afforded an opportunity to be heard. The individual or community may feel that a Bank funded project has disadvantaged them or is negatively affecting them. In such circumstances, the Bank's GRM provides recourse for the aggrieved parties to file a complaint against the project

7.2.1 Filing a grievance

In filing a grievance, the following information is required

- ☞ A reference to the project, stating all the relevant facts including the harm suffered by or threat to the affected parties;

- ☞ How the parties have been or are likely to be materially and adversely affected by the Bank Group's act or omission, and what rights or interests of the parties were directly affected;
- ☞ When requesting a compliance review, an explanation of how Bank Group policies, procedures or contractual documents were violated;
- ☞ An indication if there has been any previous communication between the affected parties and the Bank Group concerning the issue (s) raised in the request;

7.2.2 Documents required

- Relevant correspondence with Bank Group staff, if any;
- A description of the location of the affected parties or area affected by the project; and
- Any other evidence supporting the request.

7.3.3 Request format and submission

Requests must be submitted in writing, dated and signed by the Requestors and contain their names, contact addresses and an address to which correspondence shall be sent (if different from the Requestors' address (es)). The Requestors and any other interested persons may, however, request that their identities be kept confidential, and if so, the reasons for such confidentiality;

Requests must be sent to the Director of the **Compliance Review and Mediation Unit (BCRM)**, African Development Bank Group (AfDB)

Compliance Review and Mediation Unit (CRMU) - AfDB

BP 1387 Abidjan 01, Cote d'Ivoire

Immeuble du Centre de Commerce International d'Abidjan (CCIA) - Avenue Jean Paul II |, 14th Floor

BCRM_info@afdb.org (link sends e-mail)

Tel: +225 27 20 26 20 56 (CRMU Front Office)

Source: Extracted from <https://www.afdb.org/en/independent-review>

7.4 Appointment of members of Grievance Redress Committees

For purposes of administering the GRM at the project level, the following members shall constitute the team

- Official from the Henderson
- Representative of the local community, in this case the Chief and Councilor for the area
- Representative from a civil society organization working in the area

- Representative from the Ministry of Agriculture, which is the parent Ministry for the DR & SS
- Representative from the TAAT Program

A quorum is reached when there are at least 4 members from this group. Once there is a quorum, the committee can execute business at hand.

7.5 Grievance settling procedure

Table 7.1 presents the summary of the GRM to be adopted

Table 7.1 GRM procedure

PROCESS	DESCRIPTION	TIME
1. Identification of Grievance	-Phone, fax, letter, email or verbal submission to project site officials or TAAT/IITA officials	1 day
2. Grievance logged and acknowledged by project staff	-Record grievance on grievance form and log on grievance database -Receipt of grievance acknowledged through appropriate communication medium and to be recorded in writing	Within 2 - 3 days
3. Grievance investigation and development of a response	-Grievance Manager convenes meeting of the Grievance Redress Team - If necessary, the team conducts site visits and carries out discussions with other stakeholders -Cause additional information to be availed -Identify further action required	Within 14 days after receipt of grievance and up to a maximum of 30 days depending on the nature of the grievance
4. Communication of response	-Response provided to complainant including, if necessary, an indication of additional time and resources required to solve the grievance	Within 14 days after receipt of grievance and up to a maximum of 30 days depending on the nature of the grievance
5. Complainant response	-Confirm with the complainant that the grievance can be closed or determine what follow-up is necessary -If the grievance can be closed a grievance sign off is required.	Within 30 days
6. Close grievance	-Record final sign off of the grievance according to significance	Up to 4 weeks depending on significance

	-If grievance cannot be closed return to step 3 to reassess or recommend if third party arbitration is necessary	
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To comply with the AfDB requirements, the TAAT program will apply the above grievance redress procedure for handling any complaints which may be made against the program. Its effective application will help to enhance the project’s social sustainability.

7.6 Resourcing of the GRM

The GRM will need to be capitalized to ensure that funds are always available to deal with complaints brought in by stakeholders. Such funds will be required for purposes of compensating stakeholders who would have won their cases. This enhances the project’s sustainability.