

AFRICAN DEVELOPMENT BANK



Strategic Environmental and Social Assessment for Sub Projects under Integrated Agro Industrial Parks (IAIP) Support Project (Project Id: P-ET-AAG-005).

Federal Democratic Republic of Ethiopia



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Final Report

EXECUTIVE SUMMARY

i. Introduction

The Federal Democratic Government of Ethiopia has proposed the development of four ‘pilot’ IAIPs: Baeker (Western Tigray), Bulbula (Central Eastern Oromia), Bure (Southwest Amhara) and Yirgalem (Eastern SNNP). With support from the Italian Development Cooperation Agency, the UNIDO and the FAO, the GoE has conducted various studies in respect of the four sites; culminating in Master plans, Feasibility Reports and Environmental and Social Impact Assessments/Resettlement Action Plans. The aim of the Integrated Agro Industrial Parks (IAIP) Project is to attract private sectors to set up food processing plants in areas of high Agricultural production and thereby: locally, add value to Agricultural produce, link farmers to processing plants, reduce post-harvest losses and; create wealth for farmers, create jobs and drive rural economic growth in Ethiopia.

The proposed bank intervention through the present IAIP Support Project is designed to finance a set of subprojects (RTCs and waste treatment plants); and other amenities for which a funding gap has been identified. This requires a Strategic Environmental and Social Assessment tailored to manage the expected environmental and social risks of the subprojects. The SESA will provide a baseline overview of prevailing environmental and social conditions. Using this baseline, the SESA will examine alternative scenarios to assess the potential environmental and social implications of the proposed initiative and the institutional options for the monitoring and management of resulting environmental and social changes over time. The SESA will also make it possible to address in advance the cumulative environmental and social effects of numerous individual projects.

ii. Scoping

The proposed IAIP and RTC Support Project was initially screened by the AfDB and is classified as Category I Project. The four IAIP and RTC projects being implemented in Oromia (Bulbula & Shashemene), Amhara (Bure & Motta), SNNP (Yirgalem & Dilla) and Tigray (Baeker & Mai Kadra) were categorized as schedule-I projects based on the EIA procedural guidelines of the Ministry of Forest, Environment and Climate Change (MoFECC) of Ethiopia. As part of these ESIA studies for the four IAIP and RTC projects in each region, scoping exercises was conducted to determine the key sensitivities and activities that have the potential to contribute to, or cause, potentially significant impacts to environmental and socio-economic receptors and resources. Whereas some of the subprojects to be funded by the present program are going to be implemented within the IAIP and RTC project sites (e.g: Raw water treatment plants, waste water treatment plants), the others will be implemented off-site from the premises (eg: access roads, water supply mains from boreholes outside IAIPs, e.t.c). However, since the offsite infrastructure subprojects are going to be built in areas not far from the existing sites, the type of potential significant impact issues will remain similar with the others identified during the previous ESIA scoping exercise. The present SESA has benefited from the scoping reports of the IAIP and RTCs in identifying the potential significant impacts and issues for each site.

iii. Definition of the proposed program operation

The GoE, alongside many other Development Partners, is developing the four IAIPs to attract private sector investments into agro industrial parks to enhance a much-desired agricultural transformation of the country, by substituting imports to meet the new taste of a growing middle income population, create jobs, and ultimately boost exports, and reduce urban and rural poverty. Each IAIP is served by a network of Rural Transformation Centers (RTCs) ranging from 6 to 8 depending on the produce volume to

provide linkages to producers. The RTCs are located where primary processing takes place like sorting, grading, etc. before transporting the produce to the IAIPs.

The present project is designed to support the development of four Integrated Agro-Industrial Parks (IAIPs), already commenced by the Government of Ethiopia (GoE), to provide enabling infrastructure and, develop requisite agricultural value chain capacity and skills to ensure competitiveness, productivity and inclusivity in their operation. The Support Project will be implemented over five years (2019-2023) at a cost of USD 78 million (including co-financing amounts totaling USD 63 million from the European Union (EU), Korea Exim Bank and Big Win Philanthropy).

The IAIP support project includes three main components which are briefly described below.

Component 1: Infrastructure development

IAIPs will have modern infrastructure, which include roads, power, water supply and drainage, communications, sewerage and effluent treatment, administrative buildings, Market centers, residential areas, among other infrastructure. The GoE allocated SDG funds to the tune of USD 209.23 million to the Regional governments to construct the IAIPs, however; there is an increased demand for additional funds for the construction of RTCs. The construction of the pilot IAIPs are at varying stage ranging from 20 to 60% of completion in each of the four regions. The construction of the pilot RTCs are at varying stage ranging from 10 to 50% of completion in each of the four regions. The project through KEXIM/EDCF will support the construction of one additional RTC in Oromia Region.

The waste treatment plant envisaged to be constructed for the IAIPs and RTCs constitutes Domestic Sewage Treatment Plant (STP) and Industrial effluent treatment plant. Industrial Effluent Treatment Plant is based on actual effluent quality to be collected from tenants and the preferred mode of implementation is build, operate and transfer. WHO water quality standards will be followed for IAIPs and RTCs water supply. The feasibility and detail design of the waste treatment plants are expected to be finalized by October, 2018. The construction of the waste treatment plants in all the four regions will be supported through KEXIM/EDCF financing.

The potable water demand for Bulbula IAIP was estimated at 4425m³. The test well with 258m depth drilled in the IAIP compound revealed that the yield of 20 l/s with excellent recovery potential and five more wells will be drilled to meet the estimated water demand. However, the water supply to Bulbula IAIP, Oromia Region has a peculiar challenge of ground water quality that will require water treatment plant. The water quality test result shows that the total dissolved solids (TDS) and fluoride content values were beyond the acceptable limits. As a result Reverse Osmosis Treatment Technology was found to be the best option. Considering the critical need of water for operationalization of the pilot IAIP, the project through EU financing will provide support for implementation of the water treatment plant for the Bulbula IAIP.

The total estimated water demand for Baeker IAIP (6,700m³/day) will be supplied from 7 bore wells, which are already bored around the park. The project will support the remainder work of the main conveyance pipeline to connect those boreholes to the park. The project will also support the treatment of raw water from the bore well to meet the standard water quality requirements before it is distributed for use.

The IAIPs and the RTCs should be accessible to producers, transporters, and processors. The project will provide an access road to link the Yirgalem IAIP of SNNP and the Shashemene RTC of Oromia with the

nearest existing road network. The total length of access road in the identified regions will be about 4.55kms connecting the RTCs.

The project will engage one consulting firm to (i) review the adequacy of the technical design of the water supply system, treatment plant, waste treatment plant, access road and fill missing gaps, and (ii) prepare tender document for the engagement of the contractor.

Component 2: Value Chain Development, Entrepreneurship and Job Creation

This component will focus on two key areas: i) Improved capacity along the target value chains and ii) entrepreneurship and job creation. The aim is to help Ethiopia to grow its agro-industrial base through enhancing competitiveness of local producers and small and medium enterprises (SMEs), promote the development of agricultural value chains, build institutional capabilities and develop infrastructure that will attract private sector investment and the creation of markets. In addition, additional jobs are anticipated through support to young entrepreneurs.

Status of Establishment of Farmers Organization: Legally established Farmers Organizations/cooperatives/unions exist operating as autonomous, self-financing organizations in the catchment areas of the RTCs and ACs. These organizations are expected to operate, maintain (O&M) and manage the ACs in short term and RTCs in the long term and to supply in adequate quantity and quality produce to the IAIPs and RTCs including accessing inputs and other services. In order these organizations to discharge their functions, the Government will have to intensify efforts to continuously sensitize farmers, build their capacities, including registration and mapping of existing landholder farmers and strengthen the provision of extension services with appropriate skills to project target groups, particularly responding to the needs of women and youth farmers.

Component 3: Skill development

Skills Development: The Government of Ethiopia has made some progress in building skills for industries such as the textiles and leather sectors. Much more efforts are required for the agro industrial sector. The project will help set the foundations for skills development in agro processing in the country and train a minimum of 6,000 employable youth for the agro-industries.

iv. Alternative Options Considered

Consideration of site alternative for the sub-projects of the program to be implemented within the premises of the four IAIPs and RTCs appears to have been determined during the site selection process for the IAIPs and RTCs it selves. Historically, according to the project summary published by UNIDO in 2016 (UNIDO, 2016), the site selection process of the IAIPs and RTCs was made based on a set of criteria that included availability of infrastructure facilities, inter-industry linkages and triggering effect, agricultural production potential for strategic commodities, concentration of enterprises and attractiveness for investors, access to commercial and support services as well as market potential. The site selection process was undertaken by the Ministry of Industry in collaboration with the local authorities and Mahindra Consulting Engineers (MACE).

Site layout alternatives have been considered for the IAIP and RTC sites as well. Based on the findings of the initial site screening assessment, various layouts were generated by MACE and the preferred locations of the Waste Treatment Plants of the RTCs are indicated to be at the backsides of the RTC sites.

The selection of routes for the access roads linking the Yirgalem IAIP and Shashemene RTC to the main highways have been chosen to avoid and/or minimize potential impacts on public safety, displacements of

communities, as well as other physical assets due to the planned project works. Similarly the selection of routes for installation of water mains to connect boreholes with the reservoirs inside the Baeker IAIPs will be considered to minimize the impacts, by selecting the one with minimal impacts in term of disturbances to the farmlands.

The No-go option: Without the Waste treatment plants which is expected to receive and treat effluents generated, the RTCs will become a source of environmental pollution in their respective areas. The no-go option here will not leave the environment as it is, but becomes an important cause for its degradation. The currently used access roads to link the Yirgalem and Shashemene IAIP and RTC sites are marrow dirty roads that cross through neighborhoods. Without a proper link access roads that provide sufficient space to handle the movement of traffic to and from the IAIP and RTC, its daily operational activities will be highly hindered and potential traffic accidents will become a threat to public safety in the neighborhood.

v. Baseline Situation analysis

a. Baseline of the IAIP and RTC projects in Amhara Regional state

As per the 2007 census undertaken by the Ethiopian Central Statistical Agency (CSA, 2007), the Amhara Region had a population of 17,221,976, with 8,641,580 men (50.2%) and 8,580,396 women (49.8%), and where urban population made up less than 13% of the region's population. The Bure IAIP site is located within the West Gojjam Zone. The population of the West Gojjam Zone is 2,428,851 people (CSA, 2013); with an area of 13,311.94 km² (8.36% of the Amhara area), and the Zone has a population density of 158.25 people per every km².

The ISRIC database shows that the soils of Amhara IAIP site in Bure town are dominated by Ferralsols, Nitisols and Plinthosols. As per the soils classification process the Arcadia soil form was identified over 100% of the RTC site in Motta town of Amhara Region. At the Amhara IAIP site in Bure, approximately 67% of the area was used for subsistence agriculture, 31% of the site consists of permanent and seasonal wetlands, and 2% of the site was grazing land. It is noted that large portions of the seasonal wetland area is used for agriculture, especially grazing and some crop production, which varies with the seasons.

The Bure area in general and the IAIP site in particular, is located within the dry Evergreen Montane Forest and Evergreen Scrub Ecosystem. In the Bure IAIP site there are some remnants of forest vegetation, having Evergreen Montane Forest and Evergreen Scrub Ecosystem characteristics, along the streams; small rivers; and scattered patches of tree species.

b. Baseline of the IAIP and RTC projects in Tigray Region

The population in the Tigray region exceeds 5 million people. The Baeker IAIP is situated in Western Tigray Zone in Kafta Humera Woreda. The Kafta Humera Woreda has 92,167 people (CSA 2007 data) where over 67% of the total Woreda population lives in rural areas. The total Woreda population is split between 48% of women and 52% of men. With an area of 4,542.33 square kilometers, Kafta Humera has a population density of 20.29.

The ISRIC World Soils Database shows that both the Tigray IAIP site in Baeker and Mai Kadra RTC site are dominated by Luvisols, Alisols and Retisols. At the Mai Kadra RTC site 100% of the area is used for crop production. The Tigray IAIP and RTC area is mainly represented by a Combretum-Terminalia ecosystem and also other fragmented vegetation types such as Acacia spp., and riverine type vegetation.

The majority of the Tigray IAIP and RTC project area has been transformed for agricultural land use, hence only some remnant vegetation remains in the southwest part of the proposed project site where streams and the seasonal Semina River passes through the site.

c. Baseline of the IAIP and RTC projects in Oromia Region

Based on the national population data published in 2014, there are 31,153,434 people living in the Oromia region in total, where less than 16% of the region's population live in the urban areas and close to 84% lives in the rural areas. The West Arsi zone, where the Bulbula IAIP and Shashemene RTC are situated, has a population of 2,253,423 people (Government data, 2011), where 50.4% are represented by women.

The ISRIC World Soils Database shows that both the Bulbula IAIP and Shashemene RTC sites to be dominated by Andosols. At the Oromia IAIP and RTC sites 100% of the area is used for agricultural activities (grazing and crop production). The Bulbula IAIP is found at a close distance to a couple of Protected Areas; namely: the Abijata-Shala Lakes National Park (ASLNP) and Aluto Controlled Hunting Area (ACHA). The National Park and the Controlled Hunting Area are located 7 km south and 7 km east of the project site, respectively. There is no significant variation in altitude and habitat range at the Bulbula IAIP site and therefore the vegetation types of the project area are very homogenous and are categorized into transformed scattered woodland and open grassland.

d. Baseline of the IAIP and RTC projects in SNNP Region

The population of SNNP region is estimated at nearly 18 million (CSA, 2015). It is overwhelmingly rural, with only 8% living in urban areas. The Yirga Alem IAIP site falls within the Sidama administrative zone. Based on the latest population estimates, the Sidama Zone has a total population of 2,954,136 people and occupies an area of 6,538.17 km². Sidama has a population density of 451 people per 1 km². Dilla RTC is situated in the Gedeo zone. The Gedeo Zone has a total population of 847,434 people, of which 424,742 are men (50.1%) and 422,692 are women (49.9%); with an area of 1,210.89 km².

The ISRIC database shows the SNNP IAIP site to be dominated by Luvisols, Alisols and Retisols. On the other hand, the ISRIC database shows that the SNNP Dilla RTC site is covered by Vertisols. At the SNNP Yirga Alem IAIP site, 30% of the area is currently used for residential dwellings and associated subsistence agriculture, and 70% of the site is grassland. At the Dilla RTC site 75% of the area is under mixed agricultural use, including forestry and 25% is grassland.

The Yirga Alem area in general and the IAIP site in particular, are located within the Somalia-Masai Acacia-Commiphora deciduous bush land and thicket system. The Yirga Alem IAIP project site area comprises transformed woodland and open grassland. Previous assessments show that the land cover of most of the western part of Yirga Alem Area falls into the moderately cultivated category. The Dilla RTC site is characterized by open grassland and multilayer agro-forestry habitat. It consists of a large open grassland area, the remainder of the site consists of sections of plantations (Eucalyptus) as well as a large vegetated area consisting of mixed integrated farmland interspersed with small portions of natural vegetation.

vi. Environment Policy, legal and institution framework for Environmental Management

a. National Environmental Policies and legislations

An overview of the policy and legal framework and a profile of the various key institutions and their role with respect to the management of environmental and social aspects in Ethiopia are provided in the SESA. To assess the adequacy of Ethiopia's legal and regulatory framework, applicable laws and

institutions for environmental and social management are also described. The summary below provides the key environment legislations and institutions for environmental management.

Environment Policy of Ethiopia: The first comprehensive statement of Environmental Policy of Ethiopia was approved by the Council of Ministers in April 1997. The policy is aimed at guiding sustainable social and economic development of the country through the conservation and sustainable utilization of the natural, man-made, and cultural resources and the environment at large. The Environmental Policy provides a number of guiding principles that require adherence to the general principles of sustainable development.

Environmental Impact Assessment Proclamation (Proclamation No. 299/2002): The proclamation is an effective means of harmonizing and integrating environmental, economic, cultural, and social considerations into the planning and decision-making processes, thereby promoting sustainable development. Moreover, it serves as a basic instrument in bringing about administrative transparency and accountability, to involve the public and the communities in particular, in the planning and execution of development programs that may affect them and their environment. The objective of undertaking the assessment study is to ensure the impacts of a development project and the incorporation of mitigating measures for the adverse significant impacts. The proclamation makes EIA mandatory for development projects included in the schedules indicated in the procedural guidelines.

Proclamation to Provide for the Establishment of Environmental Protection Organs (Proclamation No. 295/2002): The first objective of this proclamation is to assign responsibilities to separate organizations for environmental development and management activities on one hand, and environmental protection, regulations, and monitoring on the other, which is instrumental for the sustainable use of environmental resources. The second objective is to establish a system that fosters coordinated but differentiated responsibilities among environmental protection agencies at federal and regional levels in Ethiopia. The Ministry of Environment, Forest and Climate Change of Ethiopia (MoEFCC) has been bestowed with, among others, the powers and duties to coordinate activities to ensure that the environmental objectives provided under the constitution and the basic principles set out in the Environmental Policy of the country are realized.

Proclamation 295/2002 requires regional states to establish or designate their own regional environmental agencies. As a result, at the regional level, there are environmental bureaus to implement environment-related issues including the preparation of policies, legal framework, and directives within their respective regions. Relating to EIA specifically, Proclamation 299/2002 gives regional environmental agencies the responsibility to evaluate EIA reports of projects that are licensed, executed, or supervised by regional states and that are not likely to generate interregional impacts.

b. African Development Bank integrated Safeguard System

The AfDB adopted the Integrated Safeguard System (ISS) as a tool for identifying risks, reducing development costs and improving project sustainability. The ISS promotes best practices in these areas but also encourages greater transparency and accountability and protects the most vulnerable communities. The bank has now adopted five Operating Safeguards (OSs) to achieve the goals and the optimal functioning of the Integrated Safeguards System (ISS). These OSs are:

- **Operation Safeguard 1:** Environmental and Social Assessment: this is an overarching safeguard of determining a projects environmental and social category and the resulting environmental and social assessment requirements.

- **Operational Safeguard 2:** Involuntary resettlement land acquisition, population displacement and compensation: this consolidates policy commitments and requirements contained in the Bank's policy on involuntary resettlement, and incorporates a number of refinements designed to improve the operational effectiveness of those requirements.
- **Operational Safeguard 3:** Biodiversity and ecosystem services: this seeks to conserve biological diversity and promote the sustainable use of natural resources with a focus on integrated water resources management in operational requirements.
- **Operational Safeguard 4:** Pollution prevention and control, hazardous materials and resource efficiency: this covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting. The Bank's new screening tool for climate change risk helps in screening and categorising a project in terms of its vulnerability to the risks of climate change.
- **Operational Safeguard 5:** Labour conditions, health and safety: this relates to workers conditions, rights and protection from abuse or exploitation.

The IAIP support program has been assigned a category 1 by the African Development Bank in line with the guidelines within the bank's ISS because the cumulative potential environmental and social impacts associated with the construction and operation phase of the works which the Bank intends providing funding for, could be significant and irreversible. Furthermore some of the project works (provision of access roads and installation of water supply pipelines) could potentially result in the displacement of farmers and their livelihood support farm lands.

Table 1: Africa Development Bank – Applicable Operational Safeguard Policies

Operational Safeguard	Triggered?	Explanation
<i>OS 1: Environmental and Social Assessment</i>	Yes	The Program will finance a variety of sub-projects that will consist of infrastructures including construction of link access roads, installation of off-site water supply mains to connect boreholes from long distances, building waste water treatment plants, RTCs, and water treatment plants e.t.c. The cumulative environmental and social risks associated with these kinds of subprojects can be significant. It is therefore possible that the sub-projects may fall into Category 1. Thus ESIA's and Environmental Management Plans (EMP) will be prepared as necessary, in line with the SESA, once the exact design and locations of the sub-projects have been identified.
<i>OS 2: Involuntary resettlement land acquisition, population displacement and compensation:</i>	Yes	Field assessment observations on the possible sites for the infrastructure projects to be supported by the program indicated that most of the sites are either currently inhabited by settlers or are farmlands on which seasonal or perennial crops grow. Thus there will be involuntary resettlements to be carried to free the sites and right of ways from its current occupants or farmers. Depending on the number of resettlers from each site, Resettlement Action Plans (RAPs) will be prepared as necessary once the exact design and locations of subprojects have been identified.
<i>OS 3: Biodiversity, renewable resources and ecosystem services:</i>	No	The sub-projects to be supported by the program are likely to be implemented in areas away from natural or critical habitats. This is especially true for those sub-projects which will be implemented

		within the existing IAIPs.
<i>OS 4: Pollution prevention and control, hazardous materials and resource efficiency:</i>	Yes	The residual impacts of sub-projects to be supported by the program may have the potential to affect the environment and human health if that do not meet applicable environmental standards during construction and operations.
<i>OS 5: Labour conditions, health and safety</i>	Yes	The construction and operational phases of the sub-projects to be supported by the program will involve the recruitment of temporary and permanent labor and staff members. Thus observance of health and safety aspects will become essential.

Operational Safeguards (OS) 1 on Environmental Assessment have been triggered because the component activities have the potential to generate significant environmental and social impacts to identified receptors within its area of influence. Operational Safeguard (OS2) has also been triggered because it could displace households and farmers from their settlements and farmlands. OS 4 on Pollution Prevention and Hazardous Substances is triggered since construction and operation will involve use and disposal of different types of wastes including hazardous materials. OS 5 on Labor, Working Conditions, Occupational Health and Safety is applicable since the construction and operation phases will involve a significant number of construction and operation workers.

vii. Environmental and Social Impacts of sub-projects of the program

Implementation of the sub-projects of the program is likely to cause both potential positive and negative environmental and social impacts. These impacts can be direct or indirect. The combined effects of sub-projects under the IAIP and RTCs and other projects activities in the area can also result in the occurrence of cumulative impacts. The following sections will identify the likely potential and adverse impacts of the sub-projects in general.

a. Potential Positive impacts

Job/employment Creation: One of the important potential positive impacts of the sub-projects of the IAIP support program is the creation of temporary and permanent as well as direct and indirect employments for semi-skilled and skilled persons. In addition to the direct employments the sub-projects will also create indirect employment opportunities by creating local demand for goods and services throughout the life cycle of the sub-projects.

Impacts on the local and national economy: In the wider context, the successful implementation of the IAIP and RTC development program of the GoE in the selected regions of the country will have a positive contribution to the economic development of the country by modernizing and transforming the agriculture sector. These positive impacts of the program will also cascade down to the local economy of the pilot IAIP and RTC areas, whereby the farmers producing input raw materials will benefit from the improved market and value chain to be created for their produce.

b. Potential negative impacts

Impacts on terrestrial vegetation: The risks of site preparation and clearance activities for the four IAIP and RTC sites under construction was addressed by the ESIA study carried and its mitigations proposed in the ESMP. However, the risk of site preparation and clearance of sub-projects to be implemented off-site will need to be addressed as that will likely affect the terrestrial vegetation in the project areas.

Impacts on soil and land use: Excavation works will remove top soils of the fertile farm lands and enhance erosion. It will also cause a change in soil's original structure through soil compaction. The land used for building roads and RTC will undergo permanent changes as the land use will change from farming to the infrastructures. The right of way for the water supply main is likely to traverse through large farm fields and the impact of top soil removal and soil compactions are going to be important.

Potential impacts of noise and air quality: The movement of construction machinery and vehicles on dry, dusty and dirty roads will create dust re-suspension which will affect residential receptors located along the site route and boundary. Gaseous emissions from construction equipments, machineries and vehicles may create a risk to community health along the site route of the sub-projects. Noise, which can result from a variety of onsite civil work activities, may also pose a nuisance risk to the neighborhoods around the project sites.

Potential impacts on surface and ground water: Surface and ground water resources existing around sub-project sites can be affected due to uncontrolled release of solid and liquid wastes. Release of oil and grease contaminants from earth moving equipments and vehicles, sewage and other wastewaters from RTCs operational activities, and hazardous wastes may likely end up in the surface and ground waters and will pose a risk of water contamination/pollution. On the other hand, excess abstraction of the ground waters may pose the risk of lowering of groundwater levels.

Waste management impacts: The sub-projects are likely to generate solid and liquid wastes during construction and operation phases. Construction waste consisting of excavation material, input packaging materials, debris and other domestic solid waste generated by workers would create risk to the environment and public health unless properly managed. During operational phases the waste treatment plants may result in the formation of residual sludge waste which may need to be disposed off safely. Other solid wastes expected from the operations of the RTCs include remnants of fruits and vegetables and animal wastes from the collection, storage and pre-processing sections. All these solid and liquid wastes should be disposed off in environmentally sound manner to avoid risks to environment and community health around the sub-project site.

Land acquisition and involuntary resettlement: The right of way for the access roads, installation of water supply mains from boreholes and sites for building the new RTC in Oromia consists of farm fields covered by perennial and seasonal crops and residential settlements. The exact type and number of properties and households to be affected by each of the sub-projects is not yet determined except in some cases where the compensation payout process is commenced by the Local authorities in collaboration with the regional IPDCs. However, there is a clear indication that implementation of the sub-projects to be carried off-site from the IAIPs and RTCs are going to pose a risk of physical displacement to the households and properties found inside the right of way which will have a long term irreversible negative impact.

Impacts on public safety and security: The construction and operation phase activities of sub-projects is likely to cause an increase to the volume of traffic movement around the IAIP and RTCs. Considering the location of some of the RTCs which is generally close to town settlements, the potential risk for traffic accidents could be anticipated to occur. This in turn will pose potential safety and security risks in the local area. The impact is likely to occur during the construction and operation phases with rare frequency.

Impacts on community health: Although it is currently difficult to determine the additional number of workers that will be employed during construction phase of the sub-projects, there will be potential for increasing the workforce as a result of subproject implementation. As a consequence the potential risk for the workforce to introduce and/or increase the rate of spread of communicable diseases including STDs in the subproject area is anticipated to increase. This in turn will create a potential strain on medical facilities in the local area. The impact is likely to be limited to the local settlements.

viii. Summary of stakeholder engagement

As part of the SESA preparation process, consultations were carried with representatives of the main regional Industrial Parks Development Corporation (IPDC) stakeholders in the four regions (i.e. Oromia, SNNP, Amhara and Tigray). The stakeholder consultations were carried from October 2 -13, 2018 in Addis Ababa, Hawassa, Bahirdar and Baeker cities and towns with the respective IPDC officials of the regions. Site visits and assessment mainly on the RTCs and IAIPs under construction including Shashemene, Dilla, Motta and Mai kadra RTCs as well as Yirgalem and Baeker IAIPs were also conducted.

During the stakeholder consultation, the views and opinions of the regional IPDCs with regard to the envisaged IAIP Support project was received. The existing institutional capacities and experiences for environmental management within the regional IPDCs were also discussed. The following summarizes the main findings of the stakeholder consultation meetings;

- In terms of the envisaged funding support program by the AfDB for the development of the IAIP and RTCs, the IPDCs highly welcome the initiative and appear to be suggesting a range of sub-projects for which they have shortage of funding. These include support for development of new RTC sites in addition to the once under construction, development of wastewater treatment plants and e.t.c. During the meetings it was expressed that the regional IPDCs are currently engaged in clearing the sites for the new RTCs by paying out compensations to the PAPs in collaboration with the local woreda and city administrations. This includes the new suggested Bale Robe RTC site in Oromia region, where the Oromia IPDC stated it has paid out compensation to the PAPs to clear the site from the PAPs.
- Despite the commencement of the construction of the various infrastructures of the RTCs and IAIPs, none of the regions have started building the Wastewater treatment plants and raw water treatment units. It was expressed that the construction of these facilities was generally delayed due to a couple of reasons: shortage of funding and lack of expertise at the regional IPDCs.
- The institutional capacity for environmental management in the IPDCs is evolving. Structurally, almost all of the four IPDC offices in SNNP, Amhara, Tigray and Oromia regions have included a Directorate for Environment and Social Safeguards at head office level in their organizational structure. Moreover, the SNNP, Amhara and Tigray IPDCs have employed or assigned 2, 2 and 1 staff members to the Directorate respectively. The directorates appear to be under staffed as compared to the manpower allocation in the organizational structure and that limits their capacity. The Oromia IPDC is reported to be in the process of recruiting employees for the directorate. As the IAIP and RTCs are under construction, there are currently no branch offices or environment staff deployed at site level to implement ESMPs and monitor environmental performances in all the IAIP and RTCs. This is periodically done by the staff of the environment directorate at the

head office. However, it was noted during the meetings in Hawassa and Bahirdar that environmental staff will be deployed at the IAIP level to serve as branch offices in the future.

- It was noted that, as new directorates established in recent times, the environment and social safeguard directorates of all the four regional IPDCs has weak capacity and experience in environmental management. These environment directorates of the IPDCs will need to be strengthened further with manpower and training. The need for technical assistance, capacity building training on good practices of environmental planning in general and on the tools for environmental and social compliance of projects (ESIA, RAP, Environmental performance monitoring & audit, environmental reporting, e.t.c) was frequently requested during the consultation meetings held in all the four regional IPDCs.
- It was also noted during the consultation meetings that there is a general lack of awareness with regard to the AfDB environmental and social sustainability requirements both at the Regional IPDCs and the Federal Ministry of Industry. There is a need for creating awareness and training on AfDB environmental and social requirements, procedures, and associated guidelines to be followed during implementation of sub-projects.

ix. Environmental and Social Management Plan (ESMP)

The SESA has developed an ESMP to manage the residual environmental and social impacts associated with the project development works following identification and analysis of all the potential environmental and social impacts. The ESMP contains mitigation measures developed in line with the hierarchy of mitigation with their associated cost, names of the responsible implementing units/agencies, monitoring indicators and reporting frequencies to assess both compliance and performance. The detailed ESMP table is found in chapter nine of the main text.

x. Institutional Capacities and Strengthening plan

The implementation of ESMP and other environmental management measures of the sub-projects are dependent on the capacity of the implementing agencies in environmental management. In order to ensure this, capacity building for Ministry of Industry, IPDC, regional EPAs, supervision consultants and contractors and the other stakeholders will need to be provided. A comprehensive training plan will need to be designed which aims at enhancing capacity of relevant stakeholder agencies. These training and capacity building activities will be developed and implemented by professional agencies with adequate experience in imparting such training programs. The resources for implementing the training program will be allocated from the respective component of the Project and will be co-ordinate by the Environmental and Social Safeguards Directorate of the Ministry of Industry. The main areas for action are:

Providing technical assistance: In order to strengthen the existing environmental and social management systems in the IPDCs there is a need to provide a technical assistance by deploying an experienced environment and social specialist at the project implementing unit (PIU).

Development of environmental and social screening guidelines: It is known that the environmental planning activities for sub-projects start by carrying out environmental and social screening. Therefore, there will be a need to develop an environmental and social screening guideline that will be applied by all IPDCs in the four regions. Preparation of the screening guideline will also be an addition to enhance the environmental management capacities of the IPDCs.

Providing training and awareness raising: The capabilities of the responsible institutions to successfully prepare and implement the various environmental and social action plans for the proposed

subprojects are limited. As a result training for the staffs of the environment and social safeguard directorate of the MoI and IPDCs is required to address these shortcomings. There is also a need to conduct awareness raising workshops to the management and operational staffs of IPDC, construction supervision consultants, and contractors to create awareness on the National and AfDB environmental and social sustainability requirements, interpretation of operational policies of the Bank and associated procedures as well as project specific ESMPs which need to be complied with during construction and operation phases.

xi. Budget for the implementation of ESMP

The breakdown of estimated costs for putting the SESA into operation is provided in the table below. Costs related to the required mitigation measures for sub projects are not set out in the budgets presented here. These will be assessed and internalized by the relevant IPDCs as part of the overall investment project cost.

No.	Item	Estimated budget (USD)	Remark
1	Technical Assistance (Recruitment of E&S Specialists at (PIU)	48,000	2000 USD per month for two years
2	Training and awareness raising	40,000	Lump sum
3	Development of environmental and screening guideline	15,000	Lump sum
4	Preparation of site specific E&S impact assessment and RAP reports	300,000	25000 per ESIA with a total of 9 subprojectESIAs and 25000 per RAP with a total of three RAPs in the program
5	Implementation Monitoring of ESMPs and RAPs	160,000	20,000 per year per IPDC for a total of 4 regional IPDCs for two years.
Total estimated budget		563,000	

Estimated budget for SESA implementation

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Acronyms

ADB	African Development Bank
CSA	Central Statistics Agency
ESIA	Environmental and Social Impact Assessment
FAO	Food and Agriculture Organization
GoE	Government of Ethiopia
IAIP	Integrated Agro Industrial Parks
IPDC	Industrial Parks Development Cooperation
ISRIC	International Soil Reference and Information System
MACE	Mahindra Consulting Engineers
MoFECC	Ministry of Forest, Environment and Climate Change
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
RTC	Rural Transformation Centre
SESA	Strategic Environmental and Social Assessment
SDG	Sustainable Development Goals
SNNPR	Southern Nations, Nationalities and Peoples Region
STP	Sewage Treatment Plant
TDS	Total Dissolved Solids
UNIDO	United Nations Industrial Development Organization
USDA	United States Department of Agriculture
WRB	World Reference Base Classification System

1. INTRODUCTION

The Federal Democratic Government of Ethiopia has proposed the development of four ‘pilot’ IAIPs: Baeker (Western Tigray), Bulbula (Central Eastern Oromia), Bure (Southwest Amhara) and Yirgalem (Eastern SNNP). With support from the Italian Development Cooperation Agency, the UNIDO and the FAO, the GoE has conducted various studies in respect of the four sites; culminating in Master plans, Feasibility Reports and Environmental and Social Impact Assessments/Resettlement Action Plans. The aim of the Integrated Agro Industrial Parks (IAIP) Project is to attract private sectors to set up food processing plants in areas of high Agricultural production and thereby: locally, add value to Agricultural produce, link farmers to processing plants, reduce post-harvest losses and; create wealth for farmers, create jobs and drive rural economic growth in Ethiopia.

Each IAIP will be served by a network of Rural Transformation Centers (RTCs) which provides linkages between processors in IAIPs to producers and raw material supply. RTCs are geographic clusters of infrastructure and services, though on a smaller scale than IAIPs. The RTC will provide integrated services to rural communities within a 100-kilometer radius of the proposed IAIP site. Farmers and farmer groups deliver their produce and receive agricultural inputs. At the RTCs, agricultural produce is collected, sorted, stored and may undergo primary processing before onward transport to an IAIP. The Ethiopian IAIP Programme therefore consists of modern agro ecosystems where farmers, processors, produce buyers, marketing institutions, exporters, research institutions, academic institutions, industrial bodies and government can engage in a seamless manner, for sustainable agro-business development. The GoE has already made funding available to Regions where these 4 pilot IAIPs are located and development work has commenced on the construction of operations buildings, factory buildings, warehouses, low voltage power connections, water provision, access and internal roads, perimeter fencing in all IAIPs and at least one RTC for each IAIP.

The proposed bank intervention through the present IAIP Support Project is designed to finance a set of subprojects (RTCs and waste treatment plants); and other amenities for which a funding gap has been identified. This requires a Strategic Environmental and Social Assessment tailored to manage the expected environmental and social risks of the subprojects. The SESA will provide a baseline overview of prevailing environmental and social conditions. Using this baseline, the SESA will examine alternative scenarios to assess the potential environmental and social implications of the proposed initiative and the institutional options for the monitoring and management of resulting environmental and social changes over time. The SESA will also make it possible to address in advance the cumulative environmental and social effects of numerous individual projects.

2. SCOPING

The proposed IAIP and RTC Support Project was initially screened by the AfDB and is classified as Category I Project. The four IAIP and RTC projects being implemented in Oromia (Bulbula & Shashemene), Amhara (Bure & Motta), SNNP (Yirgalem & Dilla) and Tigray (Baeker & Mai Kadra) were categorized as schedule-I projects based on the EIA procedural guidelines of the Ministry of Forest, Environment and Climate Change (MoFECC) of Ethiopia. Consequently full ESIA and RAP studies were carried for all the four IAIPs and RTCs in each region and full fledged ESIA and RAP reports consisting of ESMPs were prepared. The ESIA and RAP reports were submitted to the MoFECC for review and approval and were finally approved by MoFECC. As part of these ESIA studies for the four IAIP and RTC projects in each region, scoping exercises was conducted to determine the key sensitivities and activities that have the potential to contribute to, or cause, potentially significant impacts to environmental and socio-economic receptors and resources.

Whereas some of the subprojects to be funded by the present program are going to be implemented within the IAIP and RTC project sites (e.g: Raw water treatment plants, waste water treatment plants), the others will be implemented off-site from the premises (eg: access roads, water supply mains from boreholes outside IAIPs, e.t.c). However, since the offsite infrastructure subprojects are going to be built in areas not far from the existing sites, the type of potential significant impact issues will remain similar with the others identified during the previous ESIA scoping exercise. The present SESA has benefited from the scoping reports of the IAIP and RTCs in identifying the potential significant impacts and issues for each site.

3. DEFINITION OF THE PROPOSED PROGRAM OPERATION

3.1 Project Overview

Seventeen (17) agro-industrial growth corridors with corresponding IAIPs were identified that will process the agricultural raw materials that are produced in the corridors/catchment areas. Out of the seventeen, four pilot IAIP locations have been selected in the regions of Amhara (Bure), Oromia (Bulbula), SNNP (Yirgalem), and Tigray (Baeker). The remaining 13 IAIPs are planned to be developed in a second phase. The GoE, alongside many other Development Partners, is developing the four IAIPs to attract private sector investments into agro industrial parks to enhance a much-desired agricultural transformation of the country, by substituting imports to meet the new taste of a growing middle income population, create jobs, and ultimately boost exports, and reduce urban and rural poverty. Each IAIP is served by a network of Rural Transformation Centres (RTCs) ranging from 6 to 8 depending on the produce volume to provide linkages to producers. The RTCs are located where primary processing takes place like sorting, grading, etc. before transporting the produce to the IAIPs.

Through aggregating produce from several farms into one location, IAIPs and RTCs are able to link smallholder farmers to large agricultural value chains. The linkage will be facilitated by the Aggregation Centers (ACs) to interface smallholder farmers with the demand side of the food chain; and to provide the required quality and quantity produce to agro-industries (the major constraint affecting food processors in Ethiopia). The ACs are planned to be built one per Woreda. The four pilot IAIPs are expected to attract more than 400 local and foreign agro-processors and create more than 400,000 direct jobs in addition to the farmers residing in the catchment areas. The direct beneficiaries of the RTCs and ACs that will be developed by the Bank are estimated at 537, 298. The location of ACs will be selected in a consultative manner with demand driven approach.

The present project is designed to support the development of four Integrated Agro-Industrial Parks (IAIPs), already commenced by the Government of Ethiopia (GoE), to provide enabling infrastructure and, develop requisite agricultural value chain capacity and skills to ensure competitiveness, productivity and inclusivity in their operation. The Support Project will be implemented over five years (2019-2023) at a cost of USD 78 million (including co-financing amounts totaling USD 63 million from the European Union (EU), Korea Exim Bank and Big Win Philanthropy).

3.2 Main Components of the project

3.2.1 Component I: Infrastructure development support

a. IAIP Development:

IAIPs will have modern infrastructure, which include roads, power, water supply and drainage, communications, sewerage and effluent treatment, administrative buildings, Market centers, residential areas, among other infrastructure. Specialized infrastructure consists of cold storage units, quarantine facilities, quality control labs, quality certification centers, raw material storage and central processing centers. All the physical infrastructures of the pilot IAIPs in the four regions are in the process of implementation by the Government. The GoE allocated SDG funds to the tune of USD 209.23 million to the Regional governments to construct the IAIPs, however; there is an increased demand for additional funds for the construction of RTCs. The construction of the pilot IAIPs are at varying stage ranging from 20 to 60% of completion in each of the four regions.

b. Rural Transformation Centres (RTC) Development:

The RTCs are established to serve as primary processing centers of raw material collected from the aggregation points in the catchment areas of 100 Km radius of the pilot IAIP. The Rural Transformation Centres include warehouses, input supply, sorting, grading, extension services, pre-processing activities and microfinance. A typical design of an RTC infrastructure and utilities exist for the four regions. The construction of the pilot RTCs are at varying stage ranging from 10 to 50% of completion in each of the four regions. The project through KEXIM/EDCF will support the construction of one additional RTC in Oromia Region.

c. Waste Treatment Plant:

The waste treatment plant constitutes Domestic Sewage Treatment Plant (STP) and Industrial effluent treatment plant. Sewage treatment is the process of removing contaminants from wastewater, comprising of storm run-off, domestic sewage and primary treated effluent. It includes physical, chemical and biological processes to remove various contaminants. The planned Domestic Sewage Treatment Plant has a capacity of 2000m³/day modular type for IAIPs and 1000M³/day for RTCs. The industrial water demand estimates are 8382m³/day for IAIPs and 1110m³/day for RTC's. Industrial Effluent Treatment Plant is based on actual effluent quality to be collected from tenants and the preferred mode of implementation is build, operate and transfer. WHO water quality standards will be followed for IAIPs and RTCs water supply. The feasibility and detail design of the waste treatment plant are expected to be finalized by October, 2018. The construction of the waste treatment plants in all the four regions will be supported through KEXIM/EDCF financing.

d. Water Treatment Plant:

In general, the potable water demand for Bulbula IAIP was estimated at 4425m³. The test well with 258m depth drilled in the IAIP compound revealed that the yield of 20 l/s with excellent recovery potential. Five more wells will be drilled to meet the estimated water demand in addition to the test well. However, the water supply to Bulbula IAIP, Oromia Region has a peculiar challenge of ground water quality that will require water treatment plant. The water quality test result shows that the total dissolved solids (TDS) and fluoride content values were beyond the acceptable limits. As a result Reverse Osmosis Treatment Technology was found to be the best option. Considering the critical need of water for operationalization of the pilot IAIP, the project through EU financing will provide support for implementation of the water treatment plant for the Bulbula IAIP.

e. Water Supply System:

Construction of water storage reservoirs of Baeker IAIP of Tigray is made of concrete structures with a capacity of 200m³ elevated reservoir for non-potable water; 400m³ elevated reservoir; 5000m³ ground level reservoir both for potable water and 1250m³ ground level for non-potable water. In addition it includes 2 pump houses (20mx8m each) with pumping arrangements for both potable and non-potable water reservoirs. The total estimated water demand for Baeker IAIP (6,700m³/day) will be supplied from 7 bore wells, which are already bored around the park. The project will support the remainder work of the main conveyance pipeline to connect those boreholes to the park. The project will also support the treatment of raw water from the bore well to meet the standard water quality requirements before it is distributed for use. Some of the activities to be done include ground improvements for the water treatment plant area, construct a chemical rooms, cascade aerator, clarified water tank, flash mixer, pump rooms, raw water collection tank with capacity of 1000m³, and security cabin for the treatment plant area.

f. Access Road:

The IAIPs and the RTCs should be accessible to producers, transporters, and processors. The project will provide an access road to link the Yirgalem IAIP of SNNP and the Shashemene RTC of Oromia with the nearest existing road network. The total length of access road in the identified regions will be about 4.55kms connecting the RTCs. This will improve evacuation of the produce, access to input supply and provision of other social services necessary for the livelihood of farmers in the project site in particular and the surrounding areas in general.

g. Consultancy services:

The project will engage one consulting firm to (i) review the adequacy of the technical design of the water supply system, treatment plant, waste treatment plant, access road and fill missing gaps, and (ii) prepare tender document for the engagement of the contractor.

h. Access to Land:

Land in Ethiopia belongs to the Government. The Government offered about 290 ha for the pilot IAIPs and 10ha for RTCs of developed land to anchor private tenants in each of the four regions. In addition, allocated a variable size undeveloped land to large-scale manufacturers who wish to undertake construction depending on their needs. Flexibility for both lease and land ownership options are made available by the government.

3.2.2 Component II: Value Chain Development, Entrepreneurship and Job Creation

Value Chain Development, Entrepreneurship and Job Creation: This component will focus on two key areas: i) Improved capacity along the target value chains and ii) entrepreneurship and job creation. The aim is to help Ethiopia to grow its agro-industrial base through enhancing competitiveness of local producers and small and medium enterprises (SMEs), promote the development of agricultural value chains, build institutional capabilities and develop infrastructure that will attract private sector investment and the creation of markets. In addition, additional jobs are anticipated through support to young entrepreneurs.

Status of Establishment of Farmers Organization: Legally established Farmers Organizations/cooperatives/unions exist operating as autonomous, self-financing organizations in the catchment areas of the RTCs and ACs. These organizations are expected to operate, maintain (O&M) and manage the ACs in short term and RTCs in the long term and to supply in adequate quantity and quality produce to the IAIPs and RTCs including accessing inputs and other services. In order these organizations to discharge their functions, the Government will have to intensify efforts to continuously sensitize farmers, build their capacities, including registration and mapping of existing landholder farmers and strengthen the provision of extension services with appropriate skills to project target groups, particularly responding to the needs of women and youth farmers.

3.2.3 Component III: Skill development

Skills Development: The Government of Ethiopia has made some progress in building skills for industries such as the textiles and leather sectors. Much more efforts are required for the agro industrial sector. The project will help set the foundations for skills development in agro processing in the country and train a minimum of 6,000 employable youth for the agro-industries.

4. ALTERNATIVE OPTIONS CONSIDERED

The proposed program is going to support the implementation of subprojects that will be carried within the existing premises of the four pilot IAIPs and RTCs under construction. These subprojects include the installation of Waste treatment plant for the four RTCs and Water treatment plants for selected two IAIPs. The implementation of other subprojects to be supported goes beyond the boundary limits of the four pilot IAIPs and RTCs. For example the construction of link access roads and installation of water mains to connect boreholes with the reservoirs inside the IAIPs will partially take place outside of the IAIP and RTC sites.

Consideration of site alternative for the sub-projects of the program to be implemented within the premises of the four IAIPs and RTCs appears to have been determined during the site selection process for the IAIPs and RTCs it selves. Historically, according to the project summary published by UNIDO in 2016 (UNIDO, 2016), the site selection process of the IAIPs and RTCs was made based on a set of criteria that included availability of infrastructure facilities, inter-industry linkages and triggering effect, agricultural production potential for strategic commodities, concentration of enterprises and attractiveness for investors, access to commercial and support services as well as market potential. The original number and location of alternative potential sites identified for the IAIP is unknown while it has been indicated that about 26, 24, 11 and 15 initial sites were identified for the location of 7,8, 6 and 8 sites following assessment of RTCs in Amhara, Oromia, SNNP and Tigray regions respectively. This process was undertaken at a high level and little documentation exists on the process and methods used to determine the most preferred sites. The site selection process was undertaken by the Ministry of Industry in collaboration with the local authorities and Mahindra Consulting Engineers (MACE).

Site layout alternatives have been considered for the IAIP and RTC sites as well. Following site selection, a site survey was undertaken to determine the sites opportunities and constraints. Based on the findings of the initial site screening assessment, various layouts were generated by MACE for the IAIP and RTCs and assessed based on efficiency. Accordingly, the preferred locations of the Waste Treatment Plants of the RTCs are indicated to be at the backsides of the RTC sites.

The selection of routes for the access roads linking the Yirgalem IAIP and Shashemene RTC to the main highways have been chosen to avoid and/or minimize potential impacts on public safety, displacements of communities, as well as other physical assets due to the planned project works. Similarly the selection of routes for installation of water mains to connect boreholes with the reservoirs inside the Baeker IAIPs will be considered to minimize the impacts, by selecting the one with minimal impacts in term of disturbances to the farmlands.

4.1 The No-go option

Without the Waste treatment plants which is expected to receive and treat effluents generated, the RTCs will become a source of environmental pollution in their respective areas. Raw and untreated sewage and effluents from the collection and semi-processing chambers of the RTCs will become the source of surface and ground water pollution. Release of offensive odors will create nuisance to the communities around the RTCs and will affect the environment and public health. The no-go option here will not leave the environment as it is, but becomes an important cause for its degradation.

The absence of water supply and water treatment facilities will generally adversely affect the production processes of the IAIP, RTCs and its quality. Public and workers health will also be affected as a result of consumption of untreated water.

The currently used access roads to link the Yirgalem and Shashemene IAIP and RTC sites are marrow dirty roads that cross through neighborhoods. Its capacity to handle the traffic inflow during construction and operation of the IAIP and RTCs is far from adequate and it is a source of high concern for public safety due to possible traffic accidents to the communities. Thus without a proper link access roads that provide sufficient space to handle the movement of traffic to and from the IAIP and RTC, its daily operational activities will be highly hindered and potential traffic accidents will become a threat to public safety in the neighborhood.

5. BASELINE SITUATION ANALYSIS

The description of the baseline environment is essential in that it represents the conditions of the environment before the construction of the sub projects of the program. The description of the baseline environment therefore provides a description of the current or status quo environment against which environmental impacts of the proposed sub project can be assessed and future changes monitored.

5.1 Baseline of the IAIP and RTC projects in Amhara Regional state

As per the 2007 census undertaken by the Ethiopian Central Statistical Agency (CSA, 2007), the Amhara Region had a population of 17,221,976, with 8,641,580 men (50.2%) and 8,580,396 women (49.8%), and where urban population made up less than 13% of the region's population. 983,768 households were recorded in the Region, which results in an average 4.3 persons to a household, with urban households having on average 3.3 and rural households 4.5 people. 91% of the regional population is made of the Amhara people who speak the languages belonging to the Semitic group (Amharic). The main ethnic groups in the region are: Amhara (91%), Agaw/Awi (3.5%), Oromo (2.6) and others. The Bure IAIP site is located within the West Gojjam Zone. The population of the West Gojjam Zone is 2,428,851 people (CSA, 2013) (14% of the total Regional population); with an area of 13,311.94 km² (8.36% of the Amhara area), and the Zone has a population density of 158.25 people per every km². A total of 480,255 households were counted in this Zone, which results in an average of 4.39 persons to a household.

The ISRIC database shows that the soils of Amhara IAIP site in Bure town are dominated by Ferralsols, Nitisols and Plinthosols. Using the United States Department of Agriculture Soil Texture Triangle (USDA, 1939), which is widely used world-wide, the soil of the site would, on average, be classified as a clay soil (USDA, 1939). These have an average particle size distribution of 18% sand, 21% silt and 61% clay. Ferralsols are red and yellow weathered soils whose colors result from an accumulation of metal oxides, particularly iron and aluminum (from which the name of the soil group is derived). Tree crops such as oil palm, rubber, or coffee are suitable, but pasture is often their main agricultural use. Nitisols are deep, strongly weathered, well-drained tropical soils with a clay-rich subsurface horizon made up of angular, blocky structural elements that easily crumble into polyhedric pads with shiny faces. Plinthosols are defined by a subsurface layer containing an iron-rich mixture of clay minerals (chiefly kaolinite) and silica that hardens on exposure into ironstone concretions known as plinthite. The impenetrability of the hardened plinthite layer, as well as the fluctuating water table that produces it, can restrict the use of these soils to grazing or forestry, although the hardened

plinthite has value as subgrade material for roads or even as iron ore (the iron oxide content can be as high as 80 percent by mass).

As per the soils classification process the Arcadia soil form was identified over 100% of the RTC site in Motta town of Amhara Region. This soil is characterized by a Vertic A horizon over unspecified lower horizons. Using the WRB classification system, the soils could be described as Vertisols. These are soils in which there is a high content of expansive clay known as montmorillonite that forms deep cracks in drier seasons or years. Vertic and Vertisol soils clearly describe the same type of soils.

At the Amhara IAIP site in Bure, approximately 67% of the area was used for subsistence agriculture, 31% of the site consists of permanent and seasonal wetlands, and 2% of the site was grazing land. It is noted that large portions of the seasonal wetland area is used for agriculture, especially grazing and some crop production, which varies with the seasons.

The Bure area in general and the IAIP site in particular, is located within the dry Evergreen Montane Forest and Evergreen Scrub Ecosystem. The evergreen scrubland vegetation occurs in the highlands of Ethiopia either as an intact scrub (i.e. in association with the dry evergreen montane forest) or usually as secondary growth after deforestation of the dry evergreen montane forest. The Dry Evergreen Montane Forest and Evergreen Scrubland vegetation's are the characteristic vegetation types of this ecosystem. In the Bure IAIP site there are some remnants of forest vegetation, having Evergreen Montane Forest and Evergreen Scrub Ecosystem characteristics, along the streams; small rivers; and scattered patches of tree species. Most parts of the proposed IAIP project area have been transformed for agricultural land some time ago. Hence only little remnant dry land and wetland vegetation remains mainly within the central portion of the proposed IAIP site, where streams, wetlands and seasonal rivers are located.

In the case of Motta RTC, the entire project site was transformed for agricultural land some time ago. Hence only little remnant dry land vegetation remains on the site which is mainly dominated by weedy vegetation, which has emerged as a result of continuous farming practices.

5.2 Baseline of the IAIP and RTC projects in Tigray Region

The population in the Tigray region exceeds 5 million people. The Baeker IAIP is situated in Western Tigray Zone in Kafta Humera Woreda. The Kafta Humera Woreda has 92,167 people (CSA 2007 data) where over 67% of the total Woreda population lives in rural areas. The total Woreda population is split between 48% of women and 52% of men. With an area of 4,542.33 square kilometers, Kafta Humera has a population density of 20.29, which is less than the Zone average of 28.94 persons per square kilometer; 30,234 or 32.80% are urban inhabitants. A total

of 23,449 households were counted in this Woreda, resulting in an average of 3.93 persons to a household, and 22,259 housing units. Two largest ethnic groups reported in West Tigray Zone were the Tigray (92.28%), and Amhara (6.48%); all other ethnic groups made up 1.24% of the population. Tigrinya is spoken as a first language by 87%, and Amharic by 12.18%; the remaining people spoke other languages.

The ISRIC World Soils Database shows that the Tigray IAIP site in Baeker is dominated by Luvisols, Alisols and Retisols. The mixed mineralogy, high nutrient content, and good drainage of Luvisols make them suitable for a wide range of agriculture, from grains to orchards to vineyards. Luvisols are technically characterised by a surface accumulation of humus overlying an extensively leached layer that is nearly devoid of clay and iron-bearing minerals. Retisols are similar to Luvisols in that they have a clay illuviation horizon, but also contain a bleached, coarser-textured soil material into the illuviation horizon forming a net-like pattern (FAO, 1998). Alisols are strongly acid, generally unproductive soils, with accumulated high activity clays in their subsoils. They contain few nutrients and therefore need fertilizer, and do not have much surface coherence so are easily eroded. Oil palm, cotton, and maize are crops suitable to be grown on Alisols, though most crops require very intensive fertilisation for long-term success (Dahlgren et al., 2016). At the Tigray IAIP site, the majority of the usable land is under crop production.

The ISRIC database shows the Mai Kadra RTC site to be dominated by Luvisols, Alisols and Retisols, as described above. At the Mai Kadra RTC site 100% of the area is used for crop production.

The Tigray IAIP and RTC area is mainly represented by a Combretum-Terminalia ecosystem and also other fragmented vegetation types such as Acacia spps., and riverine type vegetation. The Combretum-Terminalia ecosystem is characterised by Combretum spp., and Terminalia spp., such as: *Oxytenanthera abyssinica*, *Boswellia papyrifera*, *Anogeissus lieocarpa*, *Sterospermum kuntianum*, *Lonchocarpus laxiflorus*, *Albizia malacophylla*, *Terminalia brownie*, *Combretum molle*, and *Combretum aculeatum*. These are small trees with fairly large deciduous leaves, which often occur with the lowland bamboo- *Oxytenanthera abyssinica*. The understory is a combination of herbs and grasses. The majority of the Tigray IAIP and RTC project area has been transformed for agricultural land use, hence only some remnant vegetation remains in the southwest part of the proposed project site where streams and the seasonal Semina River passes through the site. Scattered patches of tree species are found in some parts of the proposed project site. No wetland was recorded and the site is dominated by dryland, weedy vegetation.

5.3 Baseline of the IAIP and RTC projects in Oromia Region

Based on the national population data published in 2014, there are 31,153,434 people living in the Oromia region in total, where less than 16% of the region's population live in the urban areas and close to 84% lives in the rural areas. 51% of the total region's population is represented by men and the remaining 48% is represented by women. With 353,690 square kilometres (km²) of land area, Oromia represents the largest regional State. The West Arsi zone has a population of 2,253,423 people (Government data, 2011), where 50.4% are represented by women. The majority of the Zone population reside in rural areas (85.5%). 47.6% of the population are children of 0-14 years old, and 49% of the population are between 15 and 65 years old.

The ISRIC World Soils Database shows that the Oromia IAIP site to be dominated by Andosols. These have an average particle size distribution of 68% sand, 26% silt and 6% clay, which works out as an average texture classification of a Sandy Loam soil (USDA, 1939). Andosols are defined by their iron or aluminium chemistry and are typically soils of active volcanic areas, but can also be found outside active volcanic regions when environmental conditions favour their formation. According to the preliminary geotechnical assessment undertaken for the Oromia IAIP study (MACE, 2016), the Oromia IAIP site comprised soils that exhibited silty sands with a 60cm - 1m deep brown, loose silty sand layer overlying a non-plastic silty/sandy layer comprising gravel from volcanic ash deposits to a depth of 2m. At the Oromia IAIP site, 100% of the area is used for agricultural activities (grazing and crop production).

The ISRIC database shows that the Shashemene RTC site to be dominated by Andosols, as described above. According to the preliminary geotechnical assessment undertaken for the Oromia study (MACE, 2016), the Shashemene RTC site comprises soils that exhibited silty sands with a 60cm-1m deep brown, loose silty sand layer overlying a non-plastic silty/sandy layer comprising gravel from volcanic ash deposits to a depth of 2m. At the Shashemene RTC site 100% of the area is used for agricultural activities (grazing and crops).

There is no significant variation in altitude and habitat range at the Bulbula IAIP site and therefore the vegetation types of the project area are very homogenous and are categorized into transformed scattered woodland and open grassland. From site investigations it is evident that the site has been transformed by agricultural activities including growing of crops and grazing for livestock. The scattered woodland areas are characterized by *Acacia seyal*, *Acacia tortilis*, *Acacia Senegal* and *Balanites aegyptiaca*. Along the edge of the abandoned and present cultivation areas of crops mainly maize, *Opuntia cactus* and *Euphorbia tirucalli* have been used as enclosures and thus predominantly occur. The grassland areas are dominated by *Cynodon dactylon*, *Hypharrenia spp.* and *Pennisetum plicatulum*. The Bulbula IAIP is found at a close distance to a couple of Protected Areas; namely: the Abijata-Shala Lakes National Park

(ASLNP) and Aluto Controlled Hunting Area (ACHA). The National Park and the Controlled Hunting Area are located 7 km south and 7 km east of the project site, respectively.

Local informants indicated that the IAIP area is located within the home range of Warthog (*Phacochoerus africanus*), Aardvark (*Orycteropus afer*), Common Jackal (*Canis aureus*), Bat-eared Fox (*Otocyon megalotis*), Wild Cat (*Felis sylvestris*), Abyssinian Hare (*Lepus habessinicus*) and Crested porcupine (*Hystrix cristata*). The IAIP area is also a location for a considerable number of species of birds. The dominant bird species in the area include Ruppell's Long-tailed Starling (*Lamprotornis pururopterus*), Superb Starling (*Lamprotornis superbus*), White-browed Sparrow weaver (*Plocepasser mahali*), Northern Masked Weaver (*Ploceus taeniopterus*), Fan-tailed Raven (*Corvus rhipidurus*), Emerald-spotted Wood Dove (*Turtur chalcospilos*), Ring-necked Dove (*Streptopelia capicola*), Spur-winged Plover (*Vanellus spinosus*), Gabar Goshawk (*Melierax gabar*) and Augur Buzzard (*Buteo augur*).

5.4 Baseline of the IAIP and RTC projects in SNNP Region

The population of SNNP region is estimated at nearly 18 million; amounting to around a fifth of the country's population (CSA, 2015). It is overwhelmingly rural, with only 8% living in urban areas. The SNNP Region has a population density of 136 persons per 1 km², and the population is growing at 2.9% per annum (Bureau of Finance and Economic Development, 2014). The region has 3,110,995 households, which results in an average of 4.8 persons to a household (data for the SNNP region), with urban households having on average 3.9 and rural households 4.9 people. The Yirga Alem IAIP site falls within the Sidama administrative zone. Based on the latest population estimates, the Sidama Zone has a total population of 2,954,136 people, of which 1,491,248 are men (50.5%) and 1,462,888 women (49.5%); and occupies an area of 6,538.17 km². Sidama has a population density of 451 people per 1 km². A total of 592,539 households were recorded in this Zone, which results in an average of 4.99 persons to a household (CSA, 2016). Dilla RTC is situated in the Gedeo zone. The Gedeo Zone has a total population of 847,434 people, of which 424,742 are men (50.1%) and 422,692 are women (49.9%); with an area of 1,210.89 km². Gedeo has a population density of 699.84 per 1km². Sidamo is spoken as a first language by 94.23% of the inhabitants, 2.14% speak Amharic, and 2.07% Oromiffa; the remaining 1.56% spoke all other primary languages reported. Gedeo is spoken as a first language by 86.82%, 5.82% speak Amharic and 4.12% speak Oromiffa; the remaining 3.24% spoke all other primary languages reported.

The ISRIC database shows the SNNP IAIP site to be dominated by Luvisols, Alisols and Retisols. The combination of Luvisols, Alisols and Retisols works out at an average particle size distribution over the site of 45% sand, 21% silt and 34% clay. Using the United States Department of Agriculture Soil Texture Triangle (USDA, 1939), which is widely used world-

wide, the soil of the site would, on average, be classified as a Sandy Clay Loam. The mixed mineralogy, high nutrient content and good drainage of Luvisols make them suitable for a wide range of agriculture, from grains to orchards to vineyards. Luvisols are technically characterized by a surface accumulation of humus overlying an extensively leached layer that is nearly devoid of clay and iron-bearing minerals. On the other hand, the ISRIC database shows that the SNNP Dilla RTC site is covered by Vertisols. The Vertisols have an average particle size distribution of 21% sand, 24% silt and 56% clay, which work out as an average texture classification of a clay soil. At the SNNP Yirga Alem IAIP site, 30% of the area is currently used for residential dwellings and associated subsistence agriculture, and 70% of the site is grassland. The site consists of large open grassland areas, utilized predominantly for grazing with isolated areas ploughed for crop production, as well as plantations of (non-indigenous) Eucalyptus and other crops interspaced with areas of mixed vegetation. The site is considered highly disturbed due to the agricultural activities taking place. At the Dilla RTC site 75% of the area is under mixed agricultural use, including forestry and 25% is grassland.

The Yirga Alem area in general and the IAIP site in particular, are located within the Somalia-Masai Acacia-Commiphora deciduous bush land and thicket system. The Yirga Alem IAIP project site area comprises transformed woodland and open grassland. The woodland is largely dominated by Eucalyptus spp. surrounded by Ficus sycomorus, Cordia Africana, Croton macrostachys, and Euphorbia candelabrum with the undergrowth of Coffee arabica and Vernonia amygdalina and Ananas comosus. Aloe vera, Agave sisalana and Euphorbia tirucalli are also planted along the degraded areas and edge of abandoned cultivation areas to prevent erosion and mark the boundary of plots. In some patchy areas, Podocarpus falcatus and Millettia ferruginea also occurs. The dominant grass species include Cynodon dactylon, Hyparrhenia rufa and Chrysopogon spp. The forested areas, in the vicinity of the site, are characterised by Ficus sycomorus, Ficus vasta, Erythrina brucei and Maesa lanceolata with undergrowth of Arundo donax, Vernonia amygdalina and Cyperus and Typha species. Even though no water birds count was conducted along this particular area, some water birds such as Egyptian Goose (Alopochen aegyptiacus), Hamerkop (Scopus umbretta), Sacred Ibis (Threskiornis aethiopicus) and Grey Heron (Ardea melanocephala) were reported to inhabit in the area (Adugna and Bogale, 2015). Previous assessments show that the land cover of most of the western part of Yirga Alem Area falls into the moderately cultivated category.

The Dilla RTC site is characterized by open grassland and multilayer agro-forestry habitat. It consists of a large open grassland area, the remainder of the site consists of sections of plantations (Eucalyptus) as well as a large vegetated area consisting of mixed integrated farmland interspersed with small portions of natural vegetation. The vegetated area comprises crops grown at varying levels which include pineapples, coffee, bananas, mangos, avocados.

The native woody species occupying the upper layer of the agro-forestry habitat include *Ficus sycomorus*, *Ficus sur*, *Cordia Africana*, *Croton macrostachys* and *Erythrina brucei*. The middle layer is mainly constituted by *Coffee arabica*, *Ensete ventricosum*, *Prunus persica*, *Musa spp.* and *Vernonia amygdalina*.

The Yirga Alem IAIP is believed to provide habitats and it is a potential home range for about eight species of larger mammals of wild animals. The dominant bird species in the project area are Silvery-cheeked Hornbill (*Bycanistes brevis*), Egyptian Goose (*Alopochen aegyptiacus*), Fan-tailed Raven (*Corvus rhipidurus*), Village Weaver (*Ploceus cucullatus*) and various species of raptors.

6. ENVIRONMENT POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT.

This section provides an overview of the policy and legal framework and a profile of the various key institutions and their role with respect to the management of environmental and social aspects. To assess the adequacy of Ethiopia's legal and regulatory framework, applicable laws and institutions for environmental and social management are described in this section. The discussion below provides a list of the key relevant environment legislations and key institutions that are in charge of the implementation.

6.1 The Constitution of the Federal Democratic Republic of Ethiopia

The current constitution of the Federal Democratic Republic of Ethiopia came into force in August 1995. It sets out the supreme law of Ethiopia, providing basic and comprehensive principles and guidelines for environmental protection and management in the country. Sustainable development and environmental rights are presented in Articles 43, 44, and 92 of the Constitution.

Article 43- The Right to Development

- The Peoples of Ethiopia as a whole, and each Nation, Nationality and People in Ethiopia in particular have the right to improved living standards and to sustainable development.
- Nationals have the right to participate in national development and, in particular, to be consulted with respect to policies and projects affecting their community.

Article 44- Environmental Rights

- All persons have the right to a clean and healthy environment.
- All persons who have been displaced or whose livelihoods have been adversely affected as a result of State programs have the right to commensurate monetary or alternative means of compensation, including relocation with adequate State assistance.

Article 92- Environmental Objectives

- Government shall endeavour to ensure that all Ethiopians live in a clean and healthy environment.
- The design and implementation of programs and projects of development shall not damage or destroy the environment.
- People have the right to full consultation and to the expression of views in the planning and implementations of environmental policies and projects that affect them directly.
- Government and citizens shall have the duty to protect the environment.

Article 42 - Rights of Labor

Article 42(2) stipulates that “workers have the right to a healthy and safe work environment,” obliging an employer (be it government or private) to take all necessary measures to ensure that workplaces are safe, healthy, and free of any danger to the well-being of workers.

Article 92 - Consultation

Article 92(3) focuses on public consultation and participation by stressing that “People have the right to full consultation and to the expression of views in the planning and implementation of environmental policies or projects that affect them directly.” Article 92(4) states that government and citizens shall have the duty to protect the environment.

6.2 Environment Policy of Ethiopia

The first comprehensive statement of Environmental Policy of Ethiopia was approved by the Council of Ministers in April 1997 and was based on the policy and strategic findings and recommendations of the Conservation Strategy of Ethiopia. The policy is aimed at guiding sustainable social and economic development of the country through the conservation and sustainable utilization of the natural, man-made, and cultural resources and the environment at large. The overall policy goal is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made, and cultural resources and the environment as a whole to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. The Environmental Policy provides a number of guiding principles that require adherence to the general principles of sustainable development. In particular, it is needed to ensure that the Environmental Impact Assessment (EIA)

- Considers impacts on human and natural environments;
- Provides for early consideration of environmental impacts in project and Program design;
- Recognizes public consultation processes as essential to effective management;
- Includes mitigation and contingency plans;
- Provides for auditing and monitoring; and
- Is a legally binding requirement.

The GoE has recently initiated updates to the Environmental Policy of Ethiopia. The technical committee under MoEFCC was formalized to be in charge of updating the National Environmental Policy to fill gaps identified in addressing climate change and other environmental issues.

6.3 Ethiopia’s Climate-resilient Green Economy Strategy

The GoE has initiated the Climate-Resilient Green Economy (CRGE) initiative to protect the country from the adverse effects of climate change and to build a green economy that will help realise its ambition of reaching middle-income status before 2025.

Ethiopia’s green economy plan is based on the following four pillars:

- Improving crop and livestock production practices for higher food security and farmer income while reducing emissions

- Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks
- Expanding electricity generation from renewable sources of energy for domestic and regional markets
- Leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings

6.4 Environmental Legislations

6.4.1 Environmental Impact Assessment Proclamation (Proclamation No. 299/2002)

The proclamation is an effective means of harmonizing and integrating environmental, economic, cultural, and social considerations into the planning and decision-making processes, thereby promoting sustainable development. Moreover, it serves as a basic instrument in bringing about administrative transparency and accountability, to involve the public and the communities in particular, in the planning and execution of development programs that may affect them and their environment. The objective of undertaking the assessment study is to ensure the impacts of a development project and the incorporation of mitigating measures for the adverse significant impacts. The law and associated guidelines clearly define

- Why there is a need to prepare EIAs;
- What procedure is to be followed to implement EIA;
- The depth of environmental impact studies;
- Which projects require full EIA studies;
- Which projects need partial or no EIA studies; and
- To whom the report must be submitted.

There are plans to review the EIA Proclamation in the current fiscal year to update and improve it. The most challenging part is the actual implementation of the provision, which needs continuous attention. Guidelines have been developed to support this process.

6.4.2 Environmental Pollution Control Proclamation (Proclamation No. 300/2002)

This proclamation is aimed at eliminating or, when not possible, to mitigate pollution as an undesirable consequence or social and economic development activities. It has also an objective of protecting the environment and safeguarding of human health, as well as maintaining the biota and the aesthetic value of the environment. The proclamation, among others, has considered control of pollution; management of hazardous waste, chemical and radioactive substances; management of municipal wastes; the importance and need to respect environmental standards; and punitive and incentive measures.

6.4.3 Prevention of Industrial Pollution Regulation (Proclamation 159/2008)

As a follow-up to Proclamation No. 300/2002, a regulation to prevent industrial pollution was developed by the Federal Environmental Protection Authority to ensure compatibility of

industrial development with environmental conservation. This proclamation includes comprehensive industrial pollution standards for a range of industrial and mining activities.

6.4.4 Water Resources Management Proclamation (197/2000)

The purpose of the proclamation is to ensure that the water resources of the country are protected and utilized for the highest social and economic benefits of the people of Ethiopia, to follow up and supervise that they are duly conserved, ensure that harmful effects of water are prevented, and that the management of water resources is carried out properly.

6.4.5 Solid Waste Proclamation (Proclamation 513/2007)

This proclamation aims to promote community participation to prevent adverse impacts and enhance benefits resulting from solid waste management. It provides for preparation of solid waste management action plans by urban local governments.

6.4.6 Environmental Impact Assessment Procedural Guidelines Series (Series 1 and 2)

To facilitate the implementation of Environmental Impact Assessment Proclamation (Proclamation 299/2002), the then Environmental Protection Authority had formulated four procedural guidelines—Review Guideline Series 1: Guidelines for Review Approach; Review Guideline Series 2: Guidelines for Contents and Scopes of Report; Review Guideline Series 3: Checklist of Environmental Characteristics; and Review Guideline Series 4: Review Criteria. These widely applied draft EIA guidelines are currently under review to enhance the documents in light of the experiences gained so far and to publish it for official use after endorsement by MoEFCC. Review Guideline Series 1 and 2 will be elaborated to a certain extent here and any further updates made to the documents will apply after official publication of the reviewed guidelines.

- ***Directive No.2/2014 (2006 EC) -Directive on issuing “professional competence certificate to consultants and firms providing service in Environmental Impact Assessment, Environmental Audit and Climate Change fields’***

The directive has been issued by MoEFCC and was brought into force in the last three to four years. It has become an important milestone in the development of the EIA system in Ethiopia. The directive stipulates that EIA and Environment Audits should be conducted by professional consultants and firms that are registered and certified for their competence by the Ministry of Environment. EIAs and environment audits prepared by unregistered and certified firms will not be eligible for review and approval. The regional EPFCCs have also started applying the stated directive of MoEFCC. Directive No.2/2014 is also among the guidelines put under review by MoEFCC and is being updated.

- ***Environmental Guideline and Management Plan***

EIA Guideline, July 2000.The EIA Guideline document provides essential information covering the following elements:

- Environmental assessment and management in Ethiopia
- EIA process

- Standards and guidelines
- Issues for sector EIA in Ethiopia covering agriculture, industry, transport, mining, dams and reservoirs, tanneries, textiles, hydropower generation, irrigation projects, and resettlement
- Annexes that
 - Identify activities requiring a full EIA, partial measure, or no action;
 - Contain sample forms for application; and
 - Provide standards and guidelines for water and air.

EIA Procedural Guideline (draft), November 2003. This guideline outlines the screening, review, and approval process for development projects in Ethiopia and defines the criteria for undertaking an EIA.

Guideline for Environmental Management Plan, May 2004. This outlines measures for preparation of an Environmental Management Plan (EMP) for proposed developments in Ethiopia and institutional arrangements for implementation of EMPs.

6.5 Social Regulations and Policies

6.5.1 Land Use

All land in Ethiopia is considered public property. The 1975 Proclamations of Public Ownership of Rural Land 31/1975 and Urban Land 1975 abolished the 1960 Constitutional Decree that recognized private ownership of land. Ownership of land is now vested in the State and Ethiopian citizens have only a usufruct right over the land.

The 1995 Constitution, Article 40(1), 40(2), 40(4), 40(5), and 40(7), includes legal frameworks that protect citizens' rights to private property and sets conditions for expropriation of such property for state or public interests. Regarding immovable property built on land, the Constitution states that every citizen shall retain full right to immovable property built on the land and to improvements s/he brings about on the land by her/his labor or capital. Hence, the State owns all land, but citizens have a usage right and full ownership of developments and improvements built on State land. This includes the right to alienate developments, to remove them, or claim compensation for expropriation of property. Article 44 of the Constitution reiterates the right of displaced persons to financial or alternative means of compensation including relocation with adequate state assistance.

According to Article 13(2) and, Article 40(3), land is public property and cannot be subject to sale or other means of transfer or exchange. Article 40(5) recognizes the right of farmers to land and right of pastoralists to free land for grazing and cultivation. Article 40(6) recognizes the right of private investors to the use of land on the bases of payment arrangement established by law. The Constitution stipulates that the state has the power to expropriate land in the interest of the public by paying compensation in advance commensurate to the value of the expropriated property, Article 40(8).

Based on the framework provided by the Constitution, three proclamations were issued: (a) Proclamation 455/2005 - Expropriation of Land Holdings for Public Purposes and Payment of Compensation; (b) Proclamation 456/2005 - Rural Land Administration and Land Use; and (c) Proclamation No. 721/2011 - Urban Land Lease Proclamation.

Proclamation 455/2005 - Expropriation of Land Holdings for Public Purposes and Payment of Compensation. This is the general condition for which land and property can be expropriated for public purpose and defines the basic principles and considerations for compensating a person whose landholding is expropriated.

Proclamation 456/2005 - Rural Land Administration and Land Use. This regulates use and administration of rural land and recognizes farm, pastoral, semi-pastoral, and communal landholdings. The proclamation requires that rural landholders expropriated for federal projects must be compensated based on federal compensation laws or, if displaced for regional projects, they must be compensated according to regional regulations.

Proclamation No. 721/2011 - Urban Land Lease Proclamation. This is a law which prioritizes the interest of urban centers to ensure sustainable urban development and equitable benefits by defining and detailing procedures and principles to enhance land delivery and to capture value of land.

The Council of Ministers Regulations No. 135/2007- Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purpose. The regulations provide the formula/methodology for assessing compensation or replacement of expropriated assets.

6.5.2 Labor and Working Conditions

➤ Constitution of the Federal Democratic Republic of Ethiopia (FDRE)

Article 42(2) of the FDRE Constitution states that “workers have the right to a healthy and safe work environment,” signifying the fundamental obligations of an employer/government to take all necessary measures to ensure that workplaces are safe, healthy, and free of any danger to the well-being of workers.

Freedom of association is one of the constitutional rights enshrined in the Ethiopian Constitution and the labor law. It is also a core right for all workers and a prerequisite for social dialogue and collective bargaining.

➤ Ratified ILO Conventions

Ethiopia has ratified 22 ILO Conventions. Twenty-one are still in force, including 8 Fundamental Conventions that protect freedom of association and the right to organize and prohibit forced labor, child labor, and discrimination. The country has also ratified a Governance (Priority) Convention on tripartite consultations (C. 144), and 12 Technical Conventions, including a convention on occupational safety and health (C.155). Ethiopia’s Labor Proclamation is partly modeled on the ILO’s Convention on Labor Inspections (No.81), which provides a useful overview of the government’s commitment on labor inspections.

Ethiopia has had a regulation on OHS since the 1940s. MoLSA is the state organ that regulates workers' safety and health in workplaces, both private and state-owned. MoLSA and its regional networks have an organizational structure lined to the periphery. Ethiopia is one among the many countries from around the world that have adopted ILO Convention No 155 of 1981 in 1991 which resulted in two major regulations: Labor Proclamation No. 377/ 2003 and Labor Proclamation No. 515/2007 on public civil servants.

➤ **The Labor Law**

Ethiopia has issued proclamations in the effort to improve employment relations and outcomes, prevent child labor exploitation, and maintain proper OHS. The Labor Proclamation No. 377/2003 have detailed provisions pertaining to workers' suspension and protects their rights. Besides, there are other labor-related proclamations such as the provisions of the Employment Exchange Service Proclamation (Proclamation No. 632/2009) and the Right to Employment of Persons with Disability (Proclamation No. 568/2008) enacted to govern the relations between employers and employees.

Proclamation 377/2003 is also the prevailing law protecting public and workers safety. The proclamation covers health and safety at work, harmonious industrial relations and minimum workplace standards, and addresses workplace vulnerability. Article 92–93 of the proclamation define obligation of employers and employees in a workplace including assignment of safety officers and health committee.

The Labor Proclamation mandates employers to protect OHS and create better working environment for their workers. Article 92 states that “An employer shall take the necessary measure to safeguard adequately the health and safety of the workers...” The proclamations have details about the safety and health of workers.

The 2005 Occupational Health and Safety Directive, developed as a follow up to the Labor Proclamation, provide guidance on the establishment of OHS committees in public and private organizations.

➤ **FDRE National Occupational Safety and Health Policy and Strategy**

The National Policy and Strategy on OHS was endorsed by the FDRE Council of Ministers in July 2014. The OHS policy and strategy was prepared to implement the rights of labor as stipulated in Article 42(2) of the Constitution and also implement the requirements of International Conventions on Occupational Health and Safety (No.155) to which Ethiopia is a signatory. The overall objective of the national OHS policy and strategy is to avoid, prevent, or minimize occupational and health hazards by providing effective OHS services in all working places and thereby contribute to the socioeconomic development of the country.

The guiding principles of the national OHS policy and strategy are stated as follows:

- (a) OHS services are basic rights of workers.
- (b) Occupational Safety and Health services are necessary in all working places.
- (c) Occupational accidents and health hazards can be prevented.

- (d) Tripartite and bipartite cooperation and coordination are key instruments for the national OHS policy and strategy implementation.

The specific objectives of the national OHS policy and strategy include the following:

- (a) To ensure availability and accessibility of OHS services in all economic activities including in the informal work sectors;
- (b) To prevent OHS hazards by establishing tripartite and bipartite consultation and coordination mechanisms;
- (c) To establish OHS systems that pay attention to those workers who seek special assistance (for example, women, youth, persons with disabilities, HIV patients, and so on); and
- (d) To protect environment and public and workers' health by preventing the release of pollutants from the workplaces.

The strategy of the national OHS policy includes

- (a) Establishing an effective and accessible work conditions inspection mechanism that is focused on prevention of non-compliances;
- (b) Formulating and implementing national regulations and standards on OHS and updating and improving it periodically;
- (c) Integrating and implementing OHS protection principles in all national development plans;
- (d) Establishing control and inspection mechanism that ensure prevention of occupational and health hazards to workers and impacts on the environment from occurring due to import, use or disposal of machineries, raw materials, or chemicals in workplaces;
- (e) Establishing a mechanism to ensure OHS services are provided in the private sector; and
- (f) Establishing a mechanism to ensure provision of advices and technical support on OHS are provided.

The national OHS policy and strategy is applicable to all types of workplaces and economic activities in Ethiopia.

6.5.3 Building Proclamation

Building Proclamation No.624/2009 and Regulation No. 243/2011 serves to protect the safety of the public and workers in the construction sector. Articles 31 and 36 state the precautionary measures to be taken during construction and necessary facilities required by persons with disabilities in public buildings. A detailed implementing direction is issued in Directive 5/2011 by the (former) Ministry of Urban Development and Construction. The Ministry of Construction (then part of the Ministry of Urban Development, Housing, and Construction) and MoLSA signed a Memorandum of Understanding (2012) to implement Proclamation No. 624/2009 in an integrated manner to prevent an onsite accident and ensure accessibility for persons with disabilities.

6.5.4 Vulnerable Groups including Gender

➤ Social Protection Policy.

In November 2014, the GoE approved a Social Protection Policy that lays out a vision for social protection in Ethiopia. The policy identifies five key strategic focus areas: (a) social safety nets; (b) livelihood and employment promotion; (c) social insurance; (d) access to health, education, and other social services; and (e) addressing violence, abuse, and neglect and providing legal protection and support. Overall, the policy commits the government to move beyond the partial and fragmented provision of social protection to establish a social protection system. The policy also provides a framework for the coordination and provision of social protection services in Ethiopia. It defines the roles and responsibilities of the government at the federal, regional, and local levels in managing the social protection system to progressively fulfill the constitutional rights of citizens. The policy defines the vulnerable people to include children, older people, people with disabilities, and the chronically ill.

➤ Gender

The constitution (Article 43) provides a foundation for the recognition and protection of women's rights and guarantee equal rights with men. The constitution stipulates providing special attention to women to remedy the historical legacy of inequality and discrimination Ethiopian women have endured. Women have the right to full consultation, the formulation of national development policies, and the designing and execution of projects particularly those affecting the interests of women. Women's right to acquire, administer, control, and use and transfer property, and rights to equality in employment, promotion, pay, and transfer of pension entitlements are clearly stated in the constitution. The state shall enforce the rights of women including elimination of the influences of harmful customs and practices that oppress or cause bodily or mental harm to women.

The National Policy on Ethiopian Women (1993) underlines key issues like improving working and health conditions for women; protecting women from harmful traditional practices; empowering women in education and property rights, especially land rights; and engaging them in decision making. It also underlines the need to draw on women's knowledge, skills, and labor for the overall development of the country. The policy requires and emphasizes that government policy, laws, regulations, plans, programs, and projects should:

- Ensure participation of women in the formulation of government policies, laws, regulations, programs, and projects that directly or indirectly benefit and concerns women;
- Support and encourage participation and involvement of women in implementation and decision-making processes; and
- Guarantee equal access of men and women to the country's resources.

The GoE has recognized the need for establishing special program and affirmative action to improve the economic status of women in Ethiopia. Major policy changes have been made to integrate gender dimension in development intervention. Affirmative action has been taken to

enhance women's access and control over productive resources such as the revision of credit rules and the establishment of rural credit systems to reach marginalized grassroots women. The formulation of gender indicators in development projects and programs are some of the examples of gender-sensitive intervention. On the other hand, the institutionalization of gender in all government development programs eventually allows women to benefit from development interventions at all levels.

The Gender Mainstreaming Strategy and Guideline (2010) is to be implemented at policy, program, and project level by government and development partners to ensure the outcomes of development are shared equally between men and women and both men and women enjoy equal opportunities, status, and recognition.

The ratification of the Family Law and amendments made to the criminal code significantly fight abuses committed against women and children. Proclamation No. 377/2003 gives special attention to women and young workers. The proclamation provides protection for women in general and pregnant women in particular from hard work and long hours. The law clearly states that women should not be discriminated against with regard to employment and payment on bases of her sex.

6.6 Main Risk Management Institutions

6.6.1 Overview

The following sections summarize the roles and responsibilities of institutions involved in environment and social management in Ethiopia. Identification of institutional roles and responsibilities considers potential environmental implications of supported activities. The following points shall be noted when assessing respective institutions:

It is worth considering that, in general, all government institutions in Ethiopia have varying strengths and weaknesses that may affect the implementation of Program goals. A clear strength is that institutions of the government are present from federal level right through to regional and zonal levels in every region. Weaknesses can include skills and capacities but also have clear political economy dimensions.

6.6.2 Proclamation to Provide for the Establishment of Environmental Protection Organs (Proclamation No. 295/2002)

The first objective of this proclamation is to assign responsibilities to separate organizations for environmental development and management activities on one hand, and environmental protection, regulations, and monitoring on the other, which is instrumental for the sustainable use of environmental resources. The second objective is to establish a system that fosters coordinated but differentiated responsibilities among environmental protection agencies at federal and regional levels.

6.6.3 The Ministry of Environment, Forest, and Climate Change (MoEFCC)

According to Proclamation 916/2015, MoEFCC has been bestowed with, among others, the following powers and duties:

- Coordinate activities to ensure that the environmental objectives provided under the constitution and the basic principles set out in the Environmental Policy of the country are realized
- Establish a system for evaluation and decision making in accordance with the EIA Proclamation, the impacts of implementation of investment programs and projects on environment before approvals of their implementation by the concerned sectoral licensing organ or the concerned regional organ
- Coordinate actions on soliciting the resources required for building a CRGE in all sectors and at all regional levels, as well as provide capacity-building support and advisory services
- Establish an environmental information system that promotes efficiency in environmental data collection, management, and use
- Enforce and ensure compliance with the EIA Proclamation which currently is being implemented through delegated authority provided to sector ministries
- Review EIAs and monitor the implementation of EIA recommendations which is also in part being implemented through delegated authority provided to sector ministries
- Regulate environmental compliance and develop legal instruments that ensure the protection of the environment
- Ensure that environmental concerns are mainstreamed into sector activities
- Coordinate, advise, assess, monitor, and report on environment-related aspects and activities

Sector environment units. The other environmental organs stipulated in the Environmental Protection Organs Establishment Proclamation (295/2002) are ‘Sector Environmental Units’ which have been established in some of the line ministries, including MoI. These sector environment units have the responsibility of coordinating and implementing activities in line with environmental protection laws and requirements (Article 14, Proclamation 295/2002).

Article 13 of the EIA Proclamation 299/2002 requires that public instruments undertake EIA. To this end, Sector Environment Units play an important role in ensuring that EIA is carried out on projects initiated by their respective sector institution. However, capacity of these units is limited.

Delegated authority. MoEFCC has delegated authority to sector institutions to ensure implementation of EIAs in their sector and to undertake EIA reviews. For instance, the Ministry of Industry, Agriculture, Mining as well as the Ministry of Water, Energy, and Irrigation are responsible for ensuring that an EIA is undertaken on their sectoral projects and to review the EIA. This delegation has been communicated to the sector ministries through an official letter sent by the Federal EPA.

6.6.4 Regional Environment Protection Forest and Climate Change Authorities

At the regional level, there are environmental bureaus to implement environment-related issues including the preparation of policies, legal framework, and directives within their respective regions.

Proclamation 295/2002 requires regional states to establish or designate their own regional environmental agencies. The regional environmental agencies are responsible for coordination formulation, implementation, review and revision of regional conservation strategies, as well as environmental monitoring, protection, and regulation. Relating to EIA specifically, Proclamation 299/2002 gives regional environmental agencies the responsibility to evaluate EIA reports of projects that are licensed, executed, or supervised by regional states and that are not likely to generate interregional impacts. Regional environmental agencies are also responsible for monitoring, auditing, and regulating implementation of such projects. The institutional standing of regional environmental agencies varies among regions. In some regions, they are established as separate institutions, while in others they are within Regional Sector Bureaus (for example, Bureau of Agriculture).

6.6.5 Zonal and Woreda level Environmental, Forest, and Climate Change Authorities

It was noted that institutional structure at regional, zonal, and woreda level vary from region to region. In some regions, the environmental organs are embodied within the Environmental Protection and Land Use Administration Bureaus, whereas others have kept the same stand-alone structure as the national level, that is, the Environment, Forest and Climate Change Authority. In both arrangements, the roles and responsibilities of the local environmental organs are the same. There are safeguards documents for the review and clearance and monitoring of environmental management, as delegated by the regional bureau only for category B projects. However, the existing capacity to manage the environmental safeguards at the local level is very limited and required a capacity development program to improve the existing capacity in these matters. Among others, the responsibilities of zonal- and Woreda-level environmental organs are to

- Coordinate activities to ensure that the basic principles set out in the Environmental Policy of the country are realized;
- Establish a system for evaluation and decision making, in accordance with the EIA Proclamation, the impacts of implementation of investment programs, and projects on environment before approvals of their implementation by the concerned sectoral licensing organ or the concerned regional organ;
- Enforce and ensure compliance with the EIA Proclamation which currently is being implemented;
- Review EIAs and monitor the implementation of EIA recommendations;
- Regulate environmental compliance that ensure the protection of the environment;
- Ensure that environmental concerns are mainstreamed into sector activities; and
- Coordinate, advice, assess, monitor, and report on environment-related aspects and activities.

6.6.6 Ministry of Labor and Social Affairs/Regional Labour and Social Affairs Bureaus

MoLSA has the responsibility to ensure harmony between employers and employees, maintain employees' health and safety at workplace, improve working conditions and environment, promote efficient and equitable employment services, and maintain developmental social welfare of citizens. Implementing OHS, public safety, social welfare protection activities and prevention of child labour are also among the mandates, roles, and responsibilities of MoLSA. Overall, the ministry shall have the following powers and duties:

- Encourage and support workers and employers to exercise their rights to organize and collective bargaining
- Encourage the practice of participating in bilateral forums between workers and employers and tripartite forums including the government
- Establish efficient labour dispute settlement mechanisms
- Issue and follow up the implementation of OHS standards
- Create conducive conditions for the provision of efficient and equitable employment services, determine conditions for the issuance of work permit to foreigners, issue such permits and incorporation with the relevance bodies, supervise compliance therewith, and regulate the provision of foreigners' employment services to Ethiopians
- Undertake studies on (un-)employment in the formal and informal sectors as well as occupational classifications
- Register workers' and employers' unions established at national level
- Register workers' unions and collective agreement relating to federal public enterprise situated in cities accountable to the federal government, and carry out labour inspection services in such enterprises; provide conciliation services to amicably settle labour disputes arising between employers and employees
- In cooperation with the concerned stakeholders, undertake and facilitate the implementation of studies on ensuring and improving social well-being of citizens in particular, on:
 - enabling conditions for persons with disabilities to benefit from equal opportunities and full participation
 - care to the elderly and the encouragement of their participation
 - prevention of social problems and rehabilitation services

Regional governments have established a bureau/agency responsible to implement the national vision and set mission of the ministry. Woreda and town administrations have offices whose responsibility is investigation and supervision of establishment (manufacturing plants) to ensure that all stakeholders are adhering to Proclamation 377/2003. Ensuring rights and interest of persons with disabilities and the elderly is included in policies and laws of federal and regional governments and are mainly the duty of the ministry. By the same token, even though the implementation of the National Social Protection Strategy is a consorted effort of all government organs, the responsibility mainly falls on the ministry.

In addition to MoLSA, the Ministry of Construction is responsible for ensuring public and workers' safety at construction sites. Regional governments have adopted different approaches to establish a body responsible for the construction sector, as a department within the bureau of urban development, housing, and construction (Amhara region) or an independent bureau of construction (Oromia region). All Local Government Units visited have offices/core processes of construction reflecting regional structures.

Nationally, 537 labor inspectors were available in 2017 and 46,800 enterprises had been inspected (about 67 percent); the inspection plan up to 2020 notes 95,000 enterprises to be inspected. The inspection activity is being done every 90 days. The national level of labor inspection is 35.6 percent; the low figure is a consequence of a lack of labor inspection services manpower in relation to the large number of enterprises.

6.7 African Development Bank Integrated Safeguard System

The Bank under its Environmental and Social Assessment Procedures (ESAP) defines SESA as an instrument that assesses environmental and social influences associated with a proposed policy, strategy, plan, or program, particularly those targeting a specific region (regional ESA) or a sector (sector specific ESA). At the project identification phase, the screening exercise focuses on the environmental and social dimensions of a project to categorize it in one out of four categories comprising: (1) Category 1 projects which are those that are likely to have the most severe environmental and social impacts and require a full ESIA; Category 2 projects which are likely to have detrimental and site-specific environmental and social impacts that can be minimised by the application of mitigation measures included in an ESMP; Category 3 shall not induce any adverse environmental and social impacts and do not need further ESA action; and Category 4 projects involve investment of Bank's funds through Financial Intermediaries (FIs) in subprojects that may result in adverse environmental or social impacts.

The AfDB adopted the Integrated Safeguard System (ISS) as a tool for identifying risks, reducing development costs and improving project sustainability. The ISS promotes best practices in these areas but also encourages greater transparency and accountability and protects the most vulnerable communities. The AfDB ISS builds on the two previous safeguard policies, Involuntary Resettlement (2003) and Environment (2004), and on three cross-cutting policies and strategies: Gender (2001), the Climate Risk Management and Adaptation Strategy (2009) and the Civil Society Engagement Framework (2012). The bank has now adopted five Operating Safeguards (OSs) to achieve the goals and the optimal functioning of the Integrated Safeguards System (ISS). These OSs are:

- **Operation Safeguard 1:** Environmental and Social Assessment: this is an overarching safeguard of determining a projects environmental and social category and the resulting environmental and social assessment requirements.
- **Operational Safeguard 2:** Involuntary resettlement land acquisition, population displacement and compensation: this consolidates policy commitments and requirements contained in the Bank's policy on involuntary resettlement, and incorporates a number of refinements designed to improve the operational effectiveness of those requirements.

- **Operational Safeguard 3:** Biodiversity and ecosystem services: this seeks to conserve biological diversity and promote the sustainable use of natural resources with a focus on integrated water resources management in operational requirements.
- **Operational Safeguard 4:** Pollution prevention and control, hazardous materials and resource efficiency: this covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting. The Bank's new screening tool for climate change risk helps in screening and categorising a project in terms of its vulnerability to the risks of climate change.
- **Operational Safeguard 5:** Labour conditions, health and safety: this relates to workers conditions, rights and protection from abuse or exploitation.

The program has been assigned a category 1 by the African Development Bank in line with the guidelines within the bank's ISS because the cumulative potential environmental and social impacts associated with the construction and operation phase of the works which the Bank intends providing funding for, could be significant and irreversible. Furthermore some of the project works (provision of access roads and installation of water supply pipelines) could potentially result in the displacement of farmers and their livelihood support farm lands.

Table 1: Africa Development Bank – Applicable Operational Safeguard Policies

Operational Safeguard	Triggered?	Explanation
<i>OS 1: Environmental and Social Assessment</i>	Yes	The Program will finance a variety of sub-projects that will consist of infrastructures including construction of link access roads, installation of off-site water supply mains to connect boreholes from long distances, building waste water treatment plants, RTCs, and water treatment plants e.t.c. The cumulative environmental and social risks associated with these kinds of subprojects can be significant. It is therefore possible that the sub-projects may fall into Category 1. Thus ESIA's and Environmental Management Plans (EMP) will be prepared as necessary, in line with the SESA, once the exact design and locations of the sub-projects have been identified.
<i>OS 2: Involuntary resettlement land acquisition, population displacement and compensation:</i>	Yes	Field assessment observations on the possible sites for the infrastructure projects to be supported by the program indicated that most of the sites are either currently inhabited by settlers or are farmlands on which seasonal or perennial crops grow. Thus there will be involuntary resettlements to be carried to free the sites and right of ways from its current occupants or farmers. Depending on the number of resettlers from each site,

		Resettlement Action Plans (RAPs) will be prepared as necessary once the exact design and locations of subprojects have been identified.
<i>OS 3: Biodiversity, renewable resources and ecosystem services:</i>	No	The sub-projects to be supported by the program are likely to be implemented in areas away from natural or critical habitats. This is especially true for those sub-projects which will be implemented within the existing IAIPs.
<i>OS 4: Pollution prevention and control, hazardous materials and resource efficiency:</i>	Yes	The residual impacts of sub-projects to be supported by the program may have the potential to affect the environment and human health if that do not meet applicable environmental standards during construction and operations.
<i>OS 5: Labour conditions, health and safety</i>	Yes	The construction and operational phases of the sub-projects to be supported by the program will involve the recruitment of temporary and permanent labor and staff members. Thus observance of health and safety aspects will become essential.

Operational Safeguards (OS) 1 on Environmental Assessment have been triggered because the component activities have the potential to generate significant environmental and social impacts to identified receptors within its area of influence. Operational Safeguard (OS2) has also been triggered because it could displace households and farmers from their settlements and farmlands. OS 4 on Pollution Prevention and Hazardous Substances is triggered since construction and operation will involve use and disposal of several types of wastes including hazardous materials. OS 5 on Labor, Working Conditions, Occupational Health and Safety is applicable since the construction and operation phases will involve a significant number of construction and operation workers.

7. ENVIRONMENTAL AND SOCIAL IMPACTS OF SUB-PROJECTS OF THE PROGRAM

Implementation of the sub-projects of the program is likely to cause both potential positive and negative environmental and social impacts. These impacts can be direct or indirect. The combined sub-projects under the IAIP and RTCs and other projects activities in the area can also result in the occurrence of cumulative impacts. Though the general layouts and sites for some of the subprojects are identified at this stage of the program preparation, the detail designs and exact locations of sites have not yet been done. Thus it will not be possible at the moment to establish an accurate and complete matrix of these impacts. When sub-project designs and exact sites are prepared, the environmental and social assessment of the sub-projects will determine the significant impacts and propose the most appropriate mitigation measures to address the negative impacts. The following sections will identify the likely potential and adverse impacts of the sub-projects in general.

7.1 Potential Positive impacts

i. Job/employment Creation

One of the important potential positive impact of the sub-projects of the program is the creation of temporary and permanent as well as direct and indirect employments for semi-skilled and skilled persons. These employment opportunities are going to be created both during construction and operation phases of the sub-projects. In addition to the direct employments the sub-projects will also create indirect employment opportunities by creating local demand for goods and services throughout the life cycle of the sub-projects. Local businesses will provide these goods and services (e.g. catering for the workers camp, office-related supply opportunities and services such as cleaning, etc.).

ii. Impacts on the local and national economy

In the wider context, the successful implementation of the IAIP and RTC development program of the GoE in the selected regions of the country will have a positive contribution to the economic development of the country by modernizing and transforming the agriculture sector. These positive impacts of the program will also cascade down to the local economy of the pilot IAIP and RTC areas, whereby the farmers producing input raw materials will benefit from the improved market and value chain to be created for their produce.

7.2 Potential negative impacts

i. Impacts on terrestrial vegetation

Whereas some sub-projects to be supported by the program are going to be carried within the present four IAIP and RTC sites under construction, other sub-projects such as the new RTC development, access road e.t.c will be carried off-site. The risks of site preparation and clearance activities for the four IAIP and RTC sites under construction was addressed by the ESIA study

carried and its mitigations proposed in the ESMP. However, the risk of site preparation and clearance of sub-projects to be implemented off-site will need to be addressed as that will likely affect the terrestrial vegetation in the project areas.

ii. Impacts on soil and land use

The construction activities of sub-projects are likely to affect the soil in several ways. The surface profile of the sites will be changed to create a platform for the buildings and roads. Excavation works will remove top soils of the fertile farm lands and enhance erosion. The construction activities will also cause a change in soil's original structure through compaction. These are important negative impacts during implementation of sub-projects such as access road development and water supply main installation. The right of way for the water supply main is likely to traverse through large farm fields and the impact of top soil removal and soil compactions are going to be important. The land used for building roads and RTC will undergo permanent changes as the land use will change from farming to the infrastructures.

iii. Potential impacts of noise and air quality

Bare surfaces and soil stockpiles pose the risk for high amounts of dust creation. The movement of construction machinery and vehicles on dry, dusty and dirty roads will create dust re-suspension which will affect residential receptors located along the site route and boundary. Gaseous emissions from construction equipments, machineries and vehicles will increase particulate and gaseous concentrations in the ambient air and may create a risk to the community along the site route and boundary of the sub-projects. Noise, which can result from a variety of onsite civil work activities, may also pose a nuisance risk to the neighborhoods around the project sites. These risks can impact the surrounding air quality, disrupting the amenity value of an area and potentially impacting community health (e.g. further aggravating respiratory illnesses).

iv. Potential impacts on surface and ground water

Surface water resources existing around sub-project sites can be affected due to uncontrolled release of solid and liquid wastes. Release of oil and grease contaminants from earth moving equipments and vehicles, sewage and other wastewaters from RTCs operational activities, and hazardous wastes may likely end up entering the surface water resources around the subproject sites and will pose a risk of surface water contamination/pollution. There will also be a risk of contamination of groundwater resources from contaminated surface water runoff or subsurface leakages from underground chemical storage and/or effluent systems. On the other hand, excess abstraction of the ground waters may pose the risk of lowering of groundwater levels.

v. Waste management impacts

The sub-projects are likely to generate solid and liquid wastes during construction and operation phases. Construction waste consisting of excavation cart away material, construction input packaging materials, debris and other domestic solid waste generated by workers would create

risk to the environment and public health unless properly managed. Stockpiling of excavation soils, waste rubble and excess materials on improper places may cause the shift of natural water drainage courses.

During operational phases the waste treatment plants may result in the formation of residual sludge waste at the end of the waste treatment process which needs to be disposed off safely. On the other hand, the water treatment plants may undertake periodic change of filter resins which need to be disposed off safely. Other solid wastes expected from the operations of the RTCs include remnants of fruits and vegetables and animal wastes from the collection, storage and pre-processing sections. All these solid and liquid wastes should be disposed off in environmentally sound manner to avoid risks to environment and community health around the sub-project site.

vi. Land acquisition and involuntary resettlement

Subprojects such as water treatment units and waste water treatment plants are going to be installed within the existing IAIP and RTC sites. The land acquisition and involuntary resettlement impacts of the four IAIP and RTC sites were fully addressed and its mitigation measures proposed in the ESMP and RAP reports prepared for each of the sites. The right of way for the access link roads, installation of water supply mains from boreholes and sites for building the new RTC in Oromia consists of farm fields covered by perennial and seasonal crops and residential settlements. The exact type and number of properties and households to be affected by each of the sub-projects is not yet determined except in some cases where the compensation process is started by the Local authorities in collaboration with the regional IPDCs. However, there is a clear indication that implementation of the sub-projects to be carried off-site from the IAIPs and RTCs are going to pose a risk of physical displacement to the households and properties found inside the right of way which will have a long term irreversible negative impact.

vii. Impacts on public safety and security

There are a number of safety related issues that are likely to arise during the construction stage of the sub-project. These include traffic accidents. The construction and operation phase activities of sub-projects is likely to cause an additional incremental increase to the volume of traffic movement around the IAIP and RTCs. Considering the location of some of the RTCs which is generally close to town settlements, the potential risk for traffic accidents between vehicles (vehicle vs. vehicle) and vehicle versus non motorized transport (vehicle/NMT) could be anticipated to occur. Also the interaction between community members with the increased project traffic from the construction phase onwards may increase the risk of traffic accidents. This in turn will pose potential safety and security risks in the local area. The impact is likely to occur during the construction and operation phases with rare frequency.

viii. Impacts on community health

Although it is currently difficult to determine the additional number of workers that will be employed during construction phase of the sub-projects, there will be potential for increasing the workforce as a result of subproject implementation. As a consequence the potential risk for the

workforce to introduce and/or increase the rate of spread of communicable diseases including STDs in the subproject area is anticipated to increase. This in turn will create a potential strain on medical facilities in the local area. The impact is likely to be limited to the local settlements.

8. SUMMARY OF STAKEHOLDER ENGAGEMENT

As part of the SESA preparation process, consultations were carried with representatives of the main regional Industrial Parks Development Corporation (IPDC) stakeholders in the four regions (i.e. Oromia, SNNP, Amhara and Tigray). The stakeholder consultations were carried from October 2 -13, 2018 in Addis Ababa, Hawassa, Bahirdar and Baeker cities and towns with the respective IPDC officials of the regions. Site visits and assessment mainly on the RTCs and IAIPs under construction including Shashemene, Dilla, Motta and Mai kadra RTCs as well as Yirgalem and Baeker IAIPs were also conducted.

During the stakeholder consultation, the views and opinions of the regional IPDCs with regard to the envisaged support program was received. The existing institutional capacities and experiences for environmental management within the regional IPDCs were also discussed. The following summarizes the main findings of the stakeholder consultation meetings;

- In terms of the envisaged funding support program by the AfDB for the development of the IAIP and RTCs, the IPDCs highly welcome the initiative and appear to be suggesting a range of sub-projects for which they have shortage of funding. These include support for development of new RTC sites in addition to the once under construction, development of wastewater treatment plants and e.t.c. During the meetings it was expressed that the regional IPDCs are currently engaged in clearing the sites for the new RTCs by paying out compensations to the PAPs in collaboration with the local woreda and city administrations. This includes the new suggested Bale Robe RTC site in Oromia region, where the Oromia IPDC stated it has paid out compensation to the PAPs to clear the site from the PAPs.
- Despite the commencement of the construction of the various infrastructures of the RTCs and IAIPs, none of the regions have started building the Wastewater treatment plants and raw water treatment units. It was expressed that the construction of these facilities was generally delayed due to a couple of reasons: shortage of funding and lack of expertise at the regional IPDCs.
- The institutional capacity for environmental management in the IPDCs is evolving. Structurally, almost all of the four IPDC offices in SNNP, Amhara, Tigray and Oromia regions have included a Directorate for Environment and Social Safeguards at head office level in their organizational structure. Moreover, the SNNP, Amhara and Tigray IPDCs have employed or assigned 2, 2 and 1 staff members to the Directorate respectively. The directorates appear to be under staffed as compared to the manpower allocation in the organizational structure and that limits their capacity. The Oromia IPDC is reported to be in the process of recruiting employees for the directorate. As the IAIP and RTCs are under construction, there are currently no branch offices or environment staff deployed at site level to implement ESMPs and monitor environmental performances in all the IAIP and RTCs. This is periodically done by the staff of the environment directorate at the head office. However, it was noted during the meetings in Hawassa and Bahirdar that

environmental staff will be deployed at the IAIP level to serve as branch offices in the future.

- It was noted that, as new directorates established in recent times, the environment and social safeguard directorates of all the four regional IPDCs has weak capacity and experience in environmental management. These environment directorates of the IPDCs will need to be strengthened further with manpower and training, The need for technical assistance, capacity building training on good practices of environmental planning in general and on the tools for environmental and social compliance of projects (ESIA, RAP, Environmental performance monitoring & audit, environmental reporting, e.t.c) was frequently requested during the consultation meetings held in all the four regional IPDCs.
- It was also noted during the consultation meetings that there is a general lack of awareness with regard to the AfDB environmental and social sustainability requirements both at the Regional IPDCs and the Federal Ministry of Industry. There is a need for creating awareness and training on AfDB environmental and social requirements, procedures, and associated guidelines to be followed during implementation of sub-projects.

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The SESA has developed an ESMP to manage the residual environmental and social impacts associated with the project development works following identification and analysis of all the potential environmental and social impacts. The ESMP contains mitigation measures developed in line with the hierarchy of mitigation with their associated cost, names of the responsible implementing units/agencies, monitoring indicators and reporting frequencies to assess both compliance and performance.

Potential environmental & social impacts	Proposed mitigation measures	Responsible for implementing the mitigation measures	Responsible for monitoring the implementation of mitigation measures	Time Horizon	
				Mitigation	Monitoring
Site clearing, leveling and excavation works will remove top soils of the fertile farm lands and enhance erosion.	<ul style="list-style-type: none"> -Demarcate the area to be stripped clearly, so that the contractor does not strip beyond the demarcated boundary. -Top soil stripped should be stockpiled for rehabilitation. -The topsoil should be uniformly spread onto the rehabilitated areas and care should be taken to minimize compaction that would result in soil loss and poor root penetration. -Access and haul roads should have gradients or surface treatment to limit erosion, and road drainage systems should be provided. -Terracing, slope reduction, runoff velocity limitation and the installation of appropriate drainage should be incorporated into the site management plan to limit soil erosion. -Soil stockpiles should be revegetated to protect the soils against erosion. -Pre-defined, essential road routes should be clearly demarcated and adhered-to on site to restrict soil compaction to certain areas. -Vehicles should not drive on soil when it is wet to avoid further soil compaction. -Soils must not be stripped when they are wet as this can lead to compaction and loss of structure. - Once soil is well-compacted, little further damage or rehabilitation can be done. 	<ul style="list-style-type: none"> - IPDC / Site supervision consultants - Construction Contractor 	<p>IPDC Environment Safeguard unit</p> <p>Regional environment agencies</p>	Construction phase	Construction phase

Potential environmental & social impacts	Proposed mitigation measures	Responsible for implementing the mitigation measures	Responsible for monitoring the implementation of mitigation measures	Time Horizon	
				Mitigation	Monitoring
Site clearing and leveling works will remove terrestrial vegetation	<ul style="list-style-type: none"> -Maximum effort is to be made to retain natural vegetation in all parts of the proposed project area. -Plant indigenous trees in open spaces /green buffer areas. - Educate on how to maintaining remnant vegetation and the importance the habitat plays in stabilizing the microclimate of the proposed project site and surrounding areas 	<ul style="list-style-type: none"> - IPDC Site representatives/ Site supervision consultants - Construction Contractor 	<ul style="list-style-type: none"> -Regional environment agencies - IPDC safeguard Unit 	During construction and operation phase	During construction and operation phase
Movement of heavy duty machineries, vehicles and other equipments will increase particulate and gaseous concentrations, and create noise nuisance affecting residential receptors along the site route and boundary.	<ul style="list-style-type: none"> -Dust suppression by water spraying, or other suitable means, in dry seasons, particularly in the areas close to sensitive residential and community receptors. -Plan activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance. -Information regarding construction activities should be provided to all local communities. -When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible; -Using noise control devices, such as temporary noise barriers and deflectors for high impact activities, and exhaust muffling devices for combustion engines; - Ensuring equipment is well-maintained to avoid additional noise generation; 	<ul style="list-style-type: none"> - IPDC / Site supervision consultants - Construction Contractor 	<ul style="list-style-type: none"> -Regional environment agencies - IPDC safeguard Unit 	During construction phase	During construction phase

Potential environmental & social impacts	Proposed mitigation measures	Responsible for implementing the mitigation measures	Responsible for monitoring the implementation of mitigation measures	Time Horizon	
				Mitigation	Monitoring
Surface water resources existing around sub-project sites could be affected due to uncontrolled release of solid and liquid wastes	<ul style="list-style-type: none"> -Establish proper waste management, especially liquid effluents so as not to pollute the recipients such as streams and seasonal rivers that pass in close proximity to the project areas; - Provide sufficient temporary ablution facilities for staff so they do not relieve themselves in the fields. - Provide segregated waste receptacles within the construction camp. - Provide dedicated bins for hazardous waste, located on hard standing within the construction camp. -Placement of drip trays under vehicles and relevant equipment when stationary; -Fuel, lubricant and waste oil storage, dispensing and operating facilities must be designed and operated in a way to prevent contamination of water. 	<ul style="list-style-type: none"> - IPDC / Site supervision consultants - Construction Contractor 	<ul style="list-style-type: none"> - Regional environment agencies - IPDC safeguard Unit 	During construction and operation phase	During construction and operation phase

Potential environmental & social impacts	Proposed mitigation measures	Responsible for implementing the mitigation measures	Responsible for monitoring the implementation of mitigation measures	Time Horizon	
				Mitigation	Monitoring
Construction waste consisting of excavation cart away material, construction input packaging materials, debris and other domestic solid waste generated by workers would create risk to the environment and public health unless properly managed.	<ul style="list-style-type: none"> - Provide segregated waste receptacles within the construction camp. - Provide dedicated bins for hazardous waste, located on hard standing within the construction camp. - All staff must be responsible to keeping all food and packaging waste on them to be disposed of at the waste bins within the construction camp. - Provide sufficient temporary ablution facilities for staff so they do not relieve themselves in the fields. - Ensure that the construction and operation waste to be generated during excavations and related activities are disposed in officially permitted places. - Vehicles hauling dirt or other construction debris from the site shall cover any open load with a tarpaulin or other secure covering to minimize dust emissions and dropping of debris. - Operate a clean site policy. 	<ul style="list-style-type: none"> - IPDC / Site supervision consultants - Construction Contractor 	<ul style="list-style-type: none"> -Regional environment agencies - IPDC safeguard Unit 	During construction and operation phase	During construction and operation phase
Land acquisition and involuntary resettlement	<ul style="list-style-type: none"> -Land acquisition and any displacement impacts by the sub-projects will be carried out in compliance with Ethiopian law and AfDB Operational Safeguard 2- Involuntary Resettlement (OS2). -The respective regional IPDCs will seek to avoid physical displacement where possible, and to minimize economic displacement. - Impacts on land and livelihoods shall be compensated. -Any affected standing crops will be compensated at current market value to make sure that farmers to do lose harvest; 	<ul style="list-style-type: none"> - IPDC - Local Woreda and/or City Administrations 	<ul style="list-style-type: none"> -Regional Environment Agencies - IPDC safeguard Unit 	Before construction phase	Before and through construction phase

Potential environmental & social impacts	Proposed mitigation measures	Responsible for implementing the mitigation measures	Responsible for monitoring the implementation of mitigation measures	Time Horizon	
				Mitigation	Monitoring
Impacts on public safety and security	<p>-The project site is to be fenced, while any activities outside the main footprint are to be appropriately signposted. This will help ensure that accidents associated with new infrastructure will be minimized.</p> <p>-Traffic Management Plans which will need to be prepared by Contractors during the construction phase will further minimize the potential risk of accidents, injuries and near misses.</p> <p>-The project Health, Safety and Security Management Plan is to be provided to, and implemented by, all Contractors and subcontractors.</p>	<p>- IPDC / Site supervision consultants</p> <p>- Construction Contractor</p>	<p>- Woreda or City Police station (Traffic Management and Control Unit)</p> <p>- IPDC safeguard Unit</p>	During construction and operation phase	During construction and operation phase
Impacts on community health	<p>- As part of the induction process for new employees and workers, the Contractors are to provide training for all workers on the transmission routes and common symptoms of communicable diseases. This training will be supported by an ongoing awareness campaign (posters located in common areas within the camp). These measures can help reduce the potential for workers to unknowingly transmit communicable diseases.</p> <p>- The workers camp is to include an internal first-aid ward and medical staff being present at the camp which to some extent will help to minimize the interaction between the workforce (particularly temporary construction workers) and local residents.</p>	<p>- IPDC / Site supervision consultants</p> <p>- Construction Contractor</p>	<p>- Woreda or City Labor & Social Affairs Office.</p> <p>- Woreda or City Health Office.</p> <p>- IPDC safeguard Unit</p>	During construction and operation phase	During construction and operation phase

10. INSTITUTIONAL CAPACITIES AND STRENGTHENING PLAN

The implementation of ESMP and other environmental management measures of the sub-projects are dependent on the capacity of the implementing agencies in environmental management. In order to ensure this capacity building for MoI, IPDC, regional EPAs, supervision consultants and contractors and the other stakeholders will need to be made to ensure that environment management activities for the sub-projects are carried out. The capacity building will enhance the subproject's Environmental management by allowing real application of the critical practices such as the following:

- a. *Basic practices*: screening impacts, scoping assessments, planning mitigation options, public consultation to assess feasibility and acceptability of options;
- b. *Environment*: project design to minimize environmental impacts and social disruption; restoration of drainage patterns, land use etc; including mitigation measures in contracts; management of impacts during construction and operation, monitoring of effectiveness of measures;
- c. *Monitoring*: Monitoring environmental performance, reporting, supervision use of various formats during implementation and operation phase, documentation, complaint response, record keeping and other procedures;

A comprehensive training plan will need to be designed which aims at enhancing capacity of relevant stakeholder agencies and with the following objectives.

- Identify, prepare, implement & manage environmental aspects of sub-projects;
- Ensure that the agencies have the capacity to assist in preparing sub-project proposals, mitigation plans; and
- Ensure that the implementing agencies have the capacity to appraise, approve and supervise the implementation of subprojects; and training plans will be prepared accordingly.

These training and capacity building activities will be developed and implemented by professional agencies with adequate experience in imparting such training programs. The resources for implementing the training program will be allocated from the respective component of the Project and will be co-ordinate by the Environmental and Social Safeguards Directorate of the Ministry of Industry. The main areas for action are:

i. Providing technical assistance

In order to strengthen the existing environmental and social management systems in the IPDCs there is a need to provide a technical assistance by deploying an experienced environment and social specialist at the project implementing unit (PIU). The purpose of the environmental and social specialist at the PIU will be to provide technical assistance to IPDCs on environmental planning during subproject implementation, to provide overall guidance and coordination

towards compliance with National and AfDB environmental requirements and disclosure procedures, as well as to provide technical guidance on environmental performance monitoring and reporting.

ii. Development of environmental and social screening guidelines

It is known that the environmental planning activities for sub-projects start by carrying out environmental and social screening. The absence of uniform environmental and social screening procedures that combines the national requirements with AfDB requirements may result in creation of variations in sub-project categorization decisions by the IPDCs. Therefore, there will be a need to develop an environmental and social screening guideline that will be applied by all IPDCs in the four regions. Preparation of the screening guideline will also be an addition to enhance the environmental management capacities of the IPDCs.

iii. Providing training and awareness raising

The capabilities of the responsible institutions to successfully prepare and implement the various environmental and social action plans for the proposed subprojects are limited. As a result training for the staffs of the environment and social safeguard directorate of the MoI and IPDCs is required to address these shortcomings. The training will need to focus on good environmental management practices including methodologies for preparations of environmental and social screening reports, ESIA, RAP, Environmental performance monitoring & audit, environmental reporting, e.t.c based on the MoEFCC and AfDB requirements. There is also a need to conduct awareness raising workshops to the management and operational staffs of IPDC, construction supervision consultants, and contractors to create awareness on the National and AfDB environmental and social sustainability requirements, interpretation of operational policies of the Bank and associated procedures as well as project specific ESMPs which need to be complied with during construction and operation phases.

11. BUDGET FOR THE IMPLEMENTATION OF ESMP

The breakdown of estimated costs for putting the SESA into operation is provided in the table 2 below. This includes the costs of providing the capacity building and training set out in Chapter 10. Costs related to the required mitigation measures for sub projects are not set out in the budgets presented here. These will be assessed and internalized by the relevant IPDCs as part of the overall investment project cost. It is extremely difficult to estimate the proportion of project costs that can be expected to be devoted to mitigation measures. However, a rough rule of thumb is that they should be expected to cost between 2% and 5% of the total project cost. Moreover, compensation and resettlement costs will be borne by the IPDCs themselves and is not included here.

Table 2: Estimated budget for SESA implementation

No.	Item	Estimated budget (USD)	Remark
1	Technical Assistance (Recruitment of E&S Specialists at (PIU)	48,000	2000 USD per month for two years
2	Training and awareness raising	40,000	Lump sum
3	Development of environmental and screening guideline	15,000	Lump sum
4	Preparation of site specific E&S impact assessment and RAP reports	300,000	25000 per ESIA with a total of 9 subproject ESIAs and 25000 per RAP with a total of three RAPs in the program
5	Implementation Monitoring of ESMPs and RAPs	160,000	20,000 per year per IPDC for a total of 4 regional IPDCs for two years.
Total estimated budget		563,000	

12. ANNEXES

Annex 1: List of stakeholders Contacted

No.	Name	Institution	Responsibility	Contact details (Cell phone)
1.	Ato Gebremichael Gebrekidan	Ministry of Industry	Director, Environment Climate Change and Industry Zone Directorate	0929 133 370
2.	Ato Getachew	Ministry of Industry	Expert, Environment Climate Change and Industry Zone Directorate	0910 843 429
3	Ato Chemedad Dendena	Ministry of Industry	Director, Agro – Industry Development Support	0960 222 853
4	Ato Zinabu Mekonen	UNIDO	IAIP - Expert	0911 474 569
5	Ato Kefyalew Tullu	Oromia Region IPDC	Chief Executive Officer (CEO) of Oromia IPDC	0966 783 650
6	Ato Teshome Nuguri	Oromia Region IPDC	Director, Project & Research Planning Director	
7	Ato Andualem Gadissa	MH Consult (Oromia IPDC, Supervision Consultancy)	Shashemene RTC Site Supervisor	0920 688 000
8	Ato Ibssa Desisa	MH Consult (Oromia IPDC Supervision Consultancy)	Shashemene RTC Site Supervisor	0913 159 663
9	Ato Fekadu Wodajo	MH Consult (Oromia IPDC Supervision Consultancy)	Shashemene RTC Site Supervisor	0922 579 511
10	Ato Natnael Million	SNNPR IPDC	Deputy General Manager of IPDC	0930 774 897
11	Ato Shiferaw Bekele	SNNPR IPDC	Environmental and Social Safeguard Directorate, Director	0916 100 054
12	Ato Gashaw Workeneh	Amhara Region IPDC	Deputy General Manager of IPDC	0918 784 256
13	Ato Yehunew Abebe	Amhara Region IPDC	Director, Environment and Social Safeguard Directorate	0918 784 256
14	Ato Guesh	Tigray Region IPDC	Deputy General Manager	0930 468 862
15	Ato Abraha Biemnet	Tigray Region IPDC	Senior Environmentalist	0923 038 719
16	Ato Birhanemeskel Gebru	Tigray Region IPDC	Site Supervisor/ Architect	0914 750 673

Annex 2: Photo log of site visit of the IAIPs and RTCs



Plate 1: Partial view of the development activities in Shashemene RTC (Oromia Region)



Plate 2: Partial view development activities in Yirgalem IAIP and its access roads (SNNPR)



Plate 3: Partial view of development activities in Dilla RTC Site (SNNPR)



Plate 4: Partial view of Borehole, right of way farm, and development activities in Baeker IAIP (Tigray Region)



Plate 4: Partial view of development activities in Mai Kadra RTC (Tigray Region)