ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF TIYA MEGALITHIC WORLD HERITAGE SITE DEVELOPMENT (FINAL REPORT)

SUBMITTED
TO
ETHIOPIA SUSTAINABLE TOURISM DEVELOPMENT PROJECT (ESTDP)
BY
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October, 2014
Executive summary

Introduction

The Government of Ethiopia has in recent time given emphasis to ensuring faster and sustained development of the tourism sector. It is making relentless efforts to implement its sustainable tourism development. To this effect, The Government of Ethiopia has received IDA funds for implementation of tourism destination development in three tourism destinations namely Lalibela, Axum and Addis Ababa & its environs through the Ethiopia Sustainable Tourist Development Project (ESTDP).

The Site development project at some tourist destinations is being implemented to specifically enhance the environmental, economic and social performance by utilizing available resources in an environmentally sustainable manner. The establishment of sustainable tourism development in potentially suitable historical, cultural and archaeological sites of the country has been found as the best option to promote tourism sector development in the country. Tiya Megalithic World Heritage is one of the targeted destinations for development project.

The development objective of the proposed project is to upgrade the Megalithic World Heritage Site by developing basic tourist infrastructure, and produce physical development for improvement of tourist accommodations and develop tourist related infrastructures.

The Tiya Megalithic Site Development Project to which the ESIA study will be conducted is expected to greatly contribute in the fulfilment of the above objective.

Objectives and Methodology for the preparation of ESIA

The objective of the ESIA is:

- To inform decision makers about environmental and social impacts of the project planning phase;
- To bring into the attention of the planners and designers the magnitude of impacts;
- To identify social and environmental impacts of the proposed development project and recommended appropriate mitigation measures; and
- To prepare social and environmental management plan.
Preparation of the ESIA required review of design of the site development plan and field work for making physical observation and consultation with the relevant stakeholders.

To this effect, the consultant reviewed the existing environmental policies and legislations as well as procedures and guidelines useful to undertake the ESIA study. Furthermore, previous studies related to the project as well relevant policies and regulatory frameworks of the Ethiopian Government and other international and bilateral policies and strategies including the World Bank Safeguard Policies has been reviewed.

Consultations were also made at different levels including relevant personnel of the Ethiopia Sustainable Tourism Development Project, Southern Nations and Nationalities Peoples (SNNP) Regional Bureau of Culture and Tourism and Sodo Wereda Administration Office.

a. **Consultation at the Government level:** Meeting has been conducted with the personnel of relevant Offices and ESTDP. Such meetings were very useful in clarifying the overall objectives of the project and the required outputs and benefits the nation expects to achieve from implementing this project. The consultations made at the wereda level (Sodo Wereda) and at city level (Tiya Town) were also very important for the understanding of the ownership of the land taken for the site development and socioeconomic realities in the proposed site development area in terms of making an overall assessment on the population and settlements, livelihood, available public services and infrastructures and other social and economic activities and level of awareness of the community regarding the project.

b. **Consultations at the community level:** There are no project affected populations who will lose private farming or grazing lands as the land taken for the site development is communal grazing land. Therefore, Consultations and discussions have not been made with Project Affected People. Individual consultation has been made with the nearby community on the communal grazing land taken by the site development. Objectives of the ESIA, potential positive and negative impacts, possible mitigation measures and the Environment and Social Management Plan (ESMP) were discussed and views and opinions gathered.
The community contacted by the consultant in general supported the objectives and the archeological site development. However, they requested for the Government to arrange other communal grazing lands in replacement for the grazing land they lose due to project implementation.

**Project Description**

Tiya Megalithic Site Development project will involve the development of various tourist related services such as Gallery, Lodge, Administration Block, Restaurant and Remodelling of Existing Structures. The first phase of the Site Development Project whose ESIA study will be conducted under this assignment will comprise;

- New Museums (Archaeological and Ethnographic Blocks)
- Artisanal Production hall
- Walkways

The new Museums will be constructed outside of the stele core conservation and will be linked with the Artisanal production hall and stele by walkways.

**Potential Positive Impacts and Enhancement Measures**

The anticipated major potential positive impacts of the site development are:

- Local income generation and job creation for skilled, semiskilled and unskilled.
- Skill and knowledge transfer
- Improved access to basic service

The above positive impacts can be enhanced by the implementation of various trainings that would enable the project affected population to be engaged in the different activities of the site development.

**Potential Negative Impacts and Mitigation Measures**

- Impact on loss of income generation as a result of loss of communal grazing land.
- Impacts on Flora and Fauna
- Impacts on Sites of Archaeological and Cultural remains
- Impacts on soil
- Impacts on Health and Safety
• Air pollution and noise nuisance

Different Mitigation measures for the identified impacts like suitable construction materials, recommendable foundation depth, involvement of archaeologist, utilization of construction materials have been recommended.

Environmental and Social Management and Monitoring Plan

An ESMP has been prepared taking into consideration all negative impacts, recommending appropriate measures as well as responsible bodies and institutions for mitigation and monitoring. Most of the environmental management work during construction has been found to be the responsibility of the contractor, construction supervisor and ESTDP. During Operation, SNNP Bureau of Culture and Tourism, and the Megalithic World Heritage Site Administration will be responsible for the management of adverse impacts. Monitoring will be conducted by the Megalithic World Heritage Site Administration and Sodo Wereda Culture and Tourism Office.

In conclusion, the negative impacts of the project are far outweighed by the positive impacts. However, various mitigation measures, such as the involvement of archaeologists to recover any archaeological or cultural material that may be unearthed during construction, need to be implemented.
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## Acronyms

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<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AR</td>
<td>Authority for Research and Conservation of Cultural Heritage</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statements</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental protection Authority</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>FDRE</td>
<td>Federal Democratic Republic of Ethiopia</td>
</tr>
<tr>
<td>MEF</td>
<td>Ministry of Environment and Forest</td>
</tr>
<tr>
<td>SNNP</td>
<td>Southern Nations and Nationalities Peoples</td>
</tr>
<tr>
<td>ESTDP</td>
<td>Ethiopia Sustainable Tourism Development Project</td>
</tr>
</tbody>
</table>
1. Introduction and Background

1.1 Introduction
Environmental and social impact assessment is a tool useful to examine the environmental and social consequences of a proposed development project. It is designed to provide decision makers and stakeholders adequate information to responsibly manage the environment and minimize social consequences that are expected to result from project implementation.

In order to ensure sustainability of future development projects, it is essential to integrate environmental and social concerns into the development process. Social and environmental assessment and management have been recognized as an effective tool for the inclusion of the principles of sustainable development into development projects.

This proposed project is one of the tourism sector development at targeted destinations planned to be implemented by the Ethiopia Sustainable Tourism Development Project (ESTDP). The proposed project is aimed to develop and improve basic infrastructures and tourist facilities within Tiya Megalithic World Heritage Site. The Ethiopia Sustainable Tourism Development Project (ESTDP) has recruited environmental consultant to carry out environmental and social impact assessment(ESIA) study of the proposed site development project and the consultant has carried out the ESIA study as per the TOR provided to him. In carrying out the assignment the consultant assessed the scope of the ESIA study by completing the ‘screening form’. In this particular case the ESIA study is conducted on Tiya Megalithic World Heritage Site Development 1st Phase project activities.

The ESIA study is prepared to meet the relevant national policies, legislations and guidelines and the World Bank requirements indicated in the impact assessment proclamation.

The ESIA report has assessed the state of environment of the project site, predicted significant environmental impacts and proposed mitigation that will minimize impacts. Chapters one to four of the ESIA study report presents back ground information of the proposed project development, the policy, legal and institutional framework and the ESIA study methodology. The baseline data reflecting the current status of the physical and social environment of the project area is reflected in chapter five; identification and analysis of potential environmental and social impacts are dealt with in chapter seven. Environmental and Social management and monitoring plans are discussed in chapter nine and ten.
1.2 Project Background
It is known that Ethiopia is full of varied historical, cultural and natural attractions; it is the
possessor of nine world heritage sites and many fossils attesting that it is the cradle of
humankind; and their cultures diversified a combination which makes it suitable for tourism
development.
Considering the vast array of attractions and historical sites, the country has a huge potential for
anthropological and archeological tourism, photo and hunting safaris, bird watching, desert
mountain hiking, camping and general ecotourism. Furthermore, the increasingly number of
international organizations working out of the capital Addis Ababa has created new venture and
great potential in trade and conference tourism all over the country.
Although the country possesses vast potential in varied historical, cultural and natural attractions,
this has not been adequately protected, developed and used as tourist attraction. There is a
serious shortage in number and type of tourist facilities at existing and potential tourist
destinations and vicinities; moreover, the quality of service is poor and unsatisfactory to tourists.
Therefore, the Megalithic World heritage site seeks modern tourist related infrastructures to
widen its permanent collections such as natural, archeological and cultural heritages.
The Government of Ethiopia has received IDA funds for implementation of tourism destination
development in three tourism destinations namely Lalibela, Axum and Addis Ababa & its
environs through the Ethiopian Sustainable Tourism Development Project (ESTDP).
Tiya Megalithic World Heritage Site is one of the targeted destinations to be developed into
modern megalithic heritage site as part of the sustainable tourism development project.

1.3 Objective of the Proposed Project
To upgrade Tiya Megalithic World Heritage Site by developing basic tourist infrastructure, and
produce physical development for availing and improvement of tourist accommodations and
amenities so as to facilitate access by visitors, develop tourist related services including new
Archeological and Ethnography museums, Artisanal section and walkways to make Tiya modern
World Heritage Archeological/Megalithic Center of the country.
1.4 Objective of the ESIA Study

The proposed Tiya Megalithic World Heritage Site Development project will require preparation of fully fledged Environmental and Social Assessment (ESIA) study that will meet the requirements of the Government and the World Bank.

The main objectives of the ESIA study is to assess the potential positive and negative effects, and recommend appropriate mitigating measures that will minimize any undesirable effects expected to result from the construction and operation phases of the proposed industrial project. It also recommends assessment measures for the positive impacts. The study is aimed to ensure that the environmental and social effects of the project activities are adequately and appropriately addressed before decisions are made to implement them.

The specific objectives of the ESIA Study of Tiya Megalithic World Heritage Site Development 1\textsuperscript{st} phase project activities are:

- To ensure that direct and indirect environment and social impacts are identified and properly addressed;
- To avoid or minimize the significant adverse impacts of the proposed development projects;
- To set out environmental and social management and monitoring plan.
2. Project Description

2.1. Project Location
Tiya Megalithic site is located 80 km south of the capital, Addis Ababa in the small town of Tiya. It is a World Heritage Site registered by UNESCO in 1972. It is very accessible to any visitor destined for or passing by it, as it is a few hundred meters off the road from the main paved road of Addis Ababa - Butajira.

The Core conservation zone is properly fenced with wooden post and wire mesh enclosing and demarcating the entire archeological and megalithic /monolithic monumental of the site. The site can be accessed from the main highway through gravel access road about 0.5 km leading to the Main gate.

Tiya Megalithic site is among the most important of the roughly 160 steles archaeological sites discovered so far in the Soddo region, south of Addis Ababa. The site contains 36 monuments, including 32 carved steles covered with symbols of different types, most of which are difficult to decipher. They are the remains of an ancient Ethiopian culture whose age has not yet been precisely determined.

![Location Map of Tiya World Heritage Site](image)

*Fig-1: Location Map of Tiya World Heritage Site*
Fig-2: Satellite image of Tiya Megalithic Site Development
2.2 Project Description

The Ethiopian Sustainable Tourism Development Project (ESTDP) has made funds available for the tourism sector development at targeted destinations there by fostering project development objectives. It has made funds available for the tourism sector development at targeted destinations there by fostering project development objectives. Among the targeted destinations along Addis Ababa and its environs, the Tiya Megalithic World Heritage Site constitutes one of the intervention areas for Addis Ababa and its environs' interventions. The intent of the project is to upgrade the Tiya Megalithic World Heritage Site by facilitating access by visitors, develop tourist related services.

Hence the Ethiopian Sustainable Tourism Development Project /ESTDP/ Coordinating Unit, in collaboration with the Southern Nations and Nationalities Peoples Regional State Bureau of Culture and Tourism, employed Seleshi consult, Consulting Architects and Engineers P.L.C, consulting firm to undertake detail design for the Site Development of Tiya Megalithic Site.

According to the site plan of Tiya World Heritage Site Development designed by Seleshi Consult Consulting Architects and Engineers, it will involve the development of various tourist related services such as Archaeological and Ethnographic Museums, Artisanal Production building, Lodge, Administration Block, Restaurant, Training and conference centre, Documentation and other accessories.

The overall Site Development Project is planned to be implemented phase by phase. The first phase of the Site Development Project whose ESIA study will be conducted under this assignment will comprise only construction of Archaeological and Ethnographic Museums, Artisanal Production building and walkways.

The first phase of the development Project activities to be implemented comprises;

I. **Museum** (Archeological & Ethnographic blocks)

   The museum comprising two blocks of archeological and Ethnographic buildings will be constructed near to the world heritage core conservation area. The Archeological block, lies on 170m² area of land, comprises archeological, Preparatory and organizational sections and the Ethnographic building to be built on 170m² of area, comprises Ethnographic and Biodiversity sections. Each of the buildings will have toilets. The museum buildings have crescent shape type of buildings with cottage floor designed to represent typical Gurage traditional cottage houses. According to the design, the
reinforced concrete beam foundation of the new museums is shallow with only 30cm depth to avoid damage on buried heritage property in the area.

Table-1: Sections of the New Museums to be constructed

<table>
<thead>
<tr>
<th>No</th>
<th>Function</th>
<th>Area(m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Entrance Porch</td>
<td>56.33</td>
</tr>
<tr>
<td>2</td>
<td>Archeological Section</td>
<td>11.25</td>
</tr>
<tr>
<td>3</td>
<td>Preparatory &amp; Organizational Room</td>
<td>14.45</td>
</tr>
<tr>
<td>4</td>
<td>Toilet</td>
<td>7.5</td>
</tr>
<tr>
<td>5</td>
<td>Ethnographic Section</td>
<td>3.04</td>
</tr>
<tr>
<td>6</td>
<td>Biodiversity Section</td>
<td>14.6</td>
</tr>
</tbody>
</table>

II. Artisanal Production Block

The Artisanal Production block to be constructed outside the core site will take 276 m² of land permanently.

Table-2: Sections of the Artisanal Production Block

<table>
<thead>
<tr>
<th>No</th>
<th>Function</th>
<th>Area(m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Production hall 1</td>
<td>25.67</td>
</tr>
<tr>
<td>2</td>
<td>Production hall 2</td>
<td>28.15</td>
</tr>
<tr>
<td>3</td>
<td>Production hall 3</td>
<td>30.48</td>
</tr>
<tr>
<td>4</td>
<td>Production hall 4</td>
<td>30.45</td>
</tr>
<tr>
<td>5</td>
<td>Production hall 5</td>
<td>29.06</td>
</tr>
<tr>
<td>6</td>
<td>Production hall 6</td>
<td>29.23</td>
</tr>
<tr>
<td>7</td>
<td>Office</td>
<td>12.91</td>
</tr>
</tbody>
</table>

III. Walkways

The walkway that will link the new Museums, Artisanal building and the existing core site will have a total length of 865m and 3m wide.
Fig-3: Tiya Megalithic Development Project Site Plan (1st phase project activity)

3.1. National Policy

3.1.1 Constitution of the Federal Democratic Republic of Ethiopia
The Federal Democratic Republic of Ethiopia’s constitution Article 91 sub article 2 states that Government and all Ethiopian citizens shall have the duty to protect the country’s natural endowment, historical sites and objects. Besides, the same constitution under article 41 sub article 9 points out that the State has the responsibility to protect and preserve historical and cultural legacies and to contribute to the promotion of arts and sports. However, a lot has to be done in attaining these facts in a planned manner which can also enhance the growth and development of tourism industry.

3.1.2 Environmental Policy of Ethiopia
This policy mentioned the following regarding Cultural and Natural Heritage

- To promote the perception of heritage conservation as part of, and integrated with, Ethiopia's general social and economic development;
- To recognize that the country's heritage conservation should not be seen as the responsibility of government alone and to encourage communities to play a leading role in assessing and nominating places or items of heritage significance and in conserving them;
- To promote a sustainable heritage conservation and management program that seek to understand all the elements of the system, their interrelationships and the ways in which each contributes to social and economic development; and
- To ensure that the environment of heritage sites is so managed as to protect the landscape, the monuments, and the artifacts or the fossils as the case may be.

3.1.3 Tourism policy of Ethiopia
This policy which was endorsed by the Council of Ministers in August, 2009 gives due attention to:

- Guiding the sector in a broad based development framework,
- Developing the existing and new tourism attractions and products,
• Expanding the infrastructure and tourist services that are vital for the growth of the sector,
• Ensuring that the country benefits from the sector by being sufficiently competitive in the international tourism market, and
• Solving the serious limitations in capacity which is apparent in the industry.

3.1.4 Cultural Policy of Ethiopia
• This policy which was endorsed by the Council of Ministers in October, 1997 emphasizes on: the heritage history, fine arts, handicrafts and folk art (tales, proverbs, popular poetry, dance, songs, etc..) of the nations, nationalities and peoples of Ethiopia are collected, registered, analyzed and preserved from any form of adulteration, and that these are given equal recognition and right to develop.

The following are among the objectives of this policy.
• To enable the languages, heritage history, handicraft, fine arts, oral literature, traditional lore, beliefs and other cultural features of the various nations, nationalities and peoples of Ethiopia to receive equal recognition and respect; to preserve and conserve these and pass them over to future generations;
• To create conducive conditions to carry out scientific research on the languages, heritage history, handicrafts, fine arts, oral literature, traditional lore, beliefs and other cultural features, which as they are constitute the identity of the peoples of the various nations and nationalities; to ensure the prosperity of these cultural elements and to enhance their role in development;
• To ensure that all citizens can freely, equally and democratically participate in all cultural activities and to enable them to benefit from the sector; To enable cultural establishments to play a significant role in the country’s program to bring in peace, development and democracy;

3.1.5 Land Tenure Policy
The Constitution of the Federal Democratic Republic of Ethiopia (FDRE) states that the right to ownership of rural and urban land, as well as all natural resources, is exclusively vested in the State and People of Ethiopia. Article 40 of the Constitution indicates that land is a common
property of the Nations, Nationalities and the People of Ethiopia, and shall not be subjected to sale or to other means of transfer.

The Constitution of FDRE retained land under the control of the people and government of Ethiopia thus, prohibiting its buying and selling. Also article 4(5) of the Proclamation 94/1994 deals with provision of land for the conservation, development and utilization of state forests or protected areas. However, this can be effective only after the consultation and consent of the peasantry and subject to the assurance of their benefits.

In general, all legal provisions cited above, make rural lands the property of the People and Government of Ethiopia, and buying and selling of land is prohibited but leasing rights is allowed. Moreover, it is the right for existing land holders to be compensated fully and satisfactorily for the property on the land if it is expropriated by the state.

The Land Policy of Ethiopia strongly support that project plans must include attractive and sustainable resettlement strategies to the people who are going to be displaced as a result of the development plan, and they have to be fully convinced, compensated and have to participate in all phases of the project implementation.

3.2 Legislative Framework

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

This Proclamation (No 299/2002) aims primarily at making the EIA mandatory for categories of projects specified under a directive issued by the Ministry of Environment and Forest (MEF), formerly called EPA. The law specifies the projects and activities that will require an Environmental Impact Assessment (EIA). The proponent of the project must prepare the EIA following the format specified in the legislation. The MEF will then review the EIA and either approve the project (with or without conditions) or reject it. The Proclamation requires, among other things:

- Specified categories of projects to be subjected to an EIA and receive an authorization from the MEF or the relevant regional environmental agency prior to commencing implementation of the project.
Licensing agencies to ensure that the requisite authorization has been duly received prior to issuing an investment permit, a trade or operating license or a work permit to a business organization.

The MEF or the relevant regional environmental agencies may issue an exemption from carrying out an EIA in projects supposed to have an insignificant environmental impact.

A licensing agency may suspend or cancel a license that has already been issued where the MEF or the relevant regional environmental agency suspends or cancels environmental authorization.

To put this Proclamation into effect the MEF issued guideline Documents, which provide details of the EIA process and its requirements. According to this EIA guideline projects are categorized into three schedules:

**Schedule 1:** Projects which may have adverse and significant environmental impacts thus requiring a full Environmental Impact Assessment

**Schedule 2:** Projects whose type, scale or other relevant characteristics have potential to cause some significant environmental impacts but are not likely to warrant a full EIA study

**Schedule 3:** Projects which would have no impact and do not require an EIA

However, projects situated in an environmentally sensitive areas such as land prone to erosion; desertification; areas of historic or archaeological interest; important landscape; religiously important area, etc. will fall under category 1 irrespective of the nature of the project.

According to this guideline all project proponents and executing bodies (agencies) in the country should operate in close cooperation with the MEF to ensure that proper mitigating measures are designed and implemented, especially for projects with an adverse effect on the environment. This in effect means that an Environmental Impact Statement (EIS) should be prepared by project proponents and be examined, commented and approved by the MEF.
3.2.2 Research and Conservation of Cultural Heritage Proclamation (RCCH)

The FDRE House of Peoples’ Representatives enacted to provide the legal manners in which individuals, organizations and other concerned government organs would operate in their activities regarding cultural heritage in Ethiopia. Accordingly, Proclamation No. 209/2000 has defined the term “museum” in Article 3, Sub-Article 12 as: “‘Museum’ means a non-profitable organization which collects, preserves and repairs Cultural Heritage renders service to the public by preparing and organizing collections for their use in research, study, education and entertainment.”

3.2.3 Proclamation Number 471/2005

The Ministry of Culture and Tourism under this proclamation is empowered;

• To consolidate the fragmented activities and ensure coordination of efforts being made by government, the private sector, communities at the tourism destinations and civic organizations, and to create a conducive environment for these entities to be able to discharge their respective responsibilities appropriately.

3.2.4 Urban Planning Proclamation (Proclamation No. 574/2008)

• In this proclamation, it is stated that unplanned urban centers needs to be regulated and guided by sound and visionary urban plans. Therefore, all unplanned perspectives and issues including tourism and heritages of urban centers should be compatible with sound and comprehensive plans.

**Regulations**

1) A Draft Regulation with Regard to planning of Heritages (2011)

This regulation, which is prepared by Heritage Research and Protection Authority, depicted heritage planning in urban areas and stressed the following issues and concerns during heritage plan preparation;

• Heritage protection sites should be identified and included in each town’s structural plan.

• Planners should consider the socio-economic benefits of local community living in heritage sites.

• A plan preparation for Heritage protection and preservation should consider the availability of basic infrastructures for its accessibility and proximity to open space for further development and expansion.
3.2.5 Labour Proclamation 377/2003
The Labor Proclamation (which was revised in 2003) provides the basic principles which govern labor conditions taking into account the political, economic and social policies of the Government, and in conformity with the international conventions and treaties to which Ethiopia is a party. The proclamation under its Part Seven, Chapter One, and Article 92 of this proclamation deals with Occupational Safety, Health and Working Environment, Prevention Measures and Obligations of the Employers. Accordingly the Proclamation obliges the employer to take the necessary measure for adequate safeguarding of the workers in terms of their health and safety. Moreover, the Occupation Health and Safety Directive (MOLSA, 2003) provides the limits for occupational exposure to working conditions that have adverse impacts on health and safety.

3.2.6 National Rural Land Administration and Use (Proclamation No. 456/2005)
The Rural Land Administration and Use Proclamation (Proclamation No. 456/2005) defines the state ownership of rural land and the tenure rights of the land occupant, including rights to "property produced on his land", rights of inter-generational tenure transfer, and rights of exchange land and limited leasing rights. Provisions are made for the registration and certification of tenure rights. Part Three of the Proclamation presents regulations relating to the use of rural land, particularly as it relates to soil and water conservation and watershed management. The rural land administration and land use laws are to be implemented by the regional states.

Land holding right gives the right to use the land for agricultural purposes as well as to lease it and, while the right remains in effect, bequeath it to family members, as well as the right to acquire property thereon, by labor or capital, and to sell, exchange and bequeath the same. The Proclamation also addresses environmental concerns, including non-compliance with directives on environmental protection.

Article 7(3) of the Proclamation reinforces the rights of land users to compensation for the development they have made on the land. It also states that when the land holder is evicted by federal government, the rate of compensation would be determined based on the federal land administration law. When the rural land holder is evicted by regional governments, the rate of compensation would be determined based on the rural land administration laws of regions.
It is envisaged that the Proclamation will create a sense of ownership among the vast majority of the rural population and enable them to take initiatives and collectively engage in environmental management activities.

### 3.3 Institutional Framework

#### 3.3.1 The Environmental Protection Organs

Environmental Protection Proclamation (Proc. 295/2002) is aimed to assign the responsibilities for environmental management to various entities in order to ensure sustainable use of environmental resources, thereby avoiding possible conflicts of interest and duplication of efforts. It is also intended to establish a system that fosters coordinated but differentiated responsibilities among environmental protection offices at a federal and regional level.

At the federal level the Ministry of Environment and Forest is in charge of formulating policies, laws, regulations and standards. Enforcing the laws and policies including EIAs and environmental monitoring, for all projects or activities that falls under the control of the Federal Government also falls within the responsibilities of the MEF.

Each of the main federal institutions active in the construction of infrastructure, or economic development is required by law to have its own environmental unit.

According to the Environmental Protection Organs Proclamation, the regional states are required to create their own regional environmental agencies. These institutions are to deal, among others, with EIAs for regionally managed infrastructures or development activities.

#### 3.3.2 Ministry of Environment and Forest

The MEF has recently been organized as one of the main ministerial structures and reporting directly to the prime minister. The MEF is the key national level environmental agency, with a mandate to address environmental issues. The environmental legislation gives the MEF powers to fulfill its role, support all federal agencies in establishing environmental units, and develop skills in strategic environmental analysis of policies and public instruments. The MEF is involved in the development of environmental policy and legislation, setting environmental quality standards for air, water and soils, monitoring pollution, establishing EIA procedures and an environmental information system, and undertaking capacity development in relevant
agencies to ensure the integration of environmental management in policy development and decision making.

The mandate and duties of the MEF were subsequently clarified in the Establishment of Environmental Protection Organs Proclamation (Proclamation No. 295/2002). The federal MEF is responsible for:

- Establishment of a system for environmental assessment of public and private sector projects, as well as social and economic development policies, strategies, laws, and programs of federal level functions.
- Review, decision-making and follow-up implementation of environmental impact study reports for projects, as well as social and economic development programs or plans where they are subject to federal licensing, execution or supervision; also proposed activities subject to execution by a federal agency, likely to entail inter- or trans-regional and international impacts.
- Notification of its decision to the concerned licensing agency at or before the time specified in the appropriate law or directives.
- Auditing and regulation of implementation of the conditions attached to the decision.
- Making its decisions and the EIA report available to the public.
- Resolution of complaints and grievances in good faith and at the appropriate time.
- Development of incentives or disincentive structures required for compliance with regional environmental agency requirements.

3.3.3 Ministry of Culture and Tourism

Under proclamation No. 691/2010, the Ministry of Culture and Tourism is given the power to ensure that the country's tourist attractions are identified, properly developed and organized, tourist facilities are expanded, and that local communities share the benefits derived from tourism, facilitate the studying and preservation of the country's natural heritages and the development and utilization of them as tourist attractions; ensure the proper management of wildlife conservation areas designated to be administered by the government.

3.4 Summary of the Relevant World Bank’s safeguards Policies

OP/BP 4.01 Environmental Assessment
The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and Trans-boundary and global environment concerns.

The Bank undertakes environmental screening for each proposed projects to determine the appropriate extent and type of EA. It classifies a proposed project into one of the Categories, depending on the type, location, sensitivity and scale of the project and the nature and magnitude of its penitential environmental impacts:

**Category A:** Proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented.

**Category B:** Proposed project is classified as category B if it’s potential adverse environmental impacts on human population or environmentally important areas—including wetlands, forests grasslands and other natural habitats –are less adverse than those of Category A projects. These projects are site specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A Projects. The present Tiya Megalithic World Heritage Site Development Project falls under this category.

**Category C:** a proposed Project is classified as category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a category C Projects.

**Category FI:** A proposed project is classified as category FI if it involves investment of Bank funds through a financial intermediary, in sub projects that might result in adverse environmental impacts.

**Disclosure: OP 4.01** also requires that EA reports are (I) reviewed and cleared by the responsible national agencies and the Bank and (II) made available by the government in the publicly accessible places in the country as well as the Banks Info shop. This report should also be made available to the project affected groups and local NGOs. If the borrower objects to the Bank’s
release an EA report through the World Bank Info shop, Bank staff (a) do not continue processing the project or (b) or submit the issue for further process to the Executive Directors of the Bank.

A screening exercise on the present project was conducted by applying the screening format of the World Bank. Accordingly, it was found that most of the likely significant environmental impacts that will arise from the project implementation are site specific, temporary and reversible impacts which can be mitigated by employing appropriate mitigation options. As a result the project falls under Category B.

**OP/BP 4.11 Physical Cultural Resources**

The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, “physical cultural resources” are defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.

The existing physical cultural and archaeological resources in the area is Tiya Archeological/Megalithic site which contains 36 monuments, including 32 carved steles covered with symbols of different types. As far as our assessment goes, this policy will not be triggered under this Sub-Project, if the Environmental and Social Management Plan, recommended under this ESIA report, are implemented.

**OP/BP 4.12 Involuntary Resettlement**

The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits.
Tiya Megalithic Site Development Project is constructed on communal land that was formerly delineated for expansion of the buffer zone of the megalithic site.

There are no permanent and temporary structures built inside the project site that needs to be cleared during project implementation. Therefore, it is clear that Tiya Megalithic Site Development Project implementation activities will not trigger OP/BP 4.12 Involuntary Resettlement.
4. Study Methodology

The methodology adopted for conducting the Social and Environmental impact assessment study includes the conventional methods, which are briefly discussed below.

- **Field Surveys:** The method of field surveying is second to none in understanding the likely impacts of a given development project on the particular environment around the project site. An ESIA study team has been mobilized for field survey to the project site. The team has made observations in and around the project site to gather essential field data. During site observation information on physical, biological and socio-economic environment has been collected. In addition base line data collection was also done through field investigations.

- **Interviews with specialists:** Project alternatives, designs and processes were discussed with the project engineers with particular emphasis on the reasons establishing the form and scope of the proposed project.

- **Literature searches:** Information on existing environmental conditions was obtained from review of various published and unpublished sources. In addition review of studies including the Design Documents prepared by Seleshi Consult, Consulting Architects and Engineers.

- **Consultation with relevant federal and local authorities:** Interviews and discussions with several local authorities and stakeholders have been carried out in the project area. The local authorities consulted include the Sodo Wereda and Tiya town administration which are hosting Tiya World Heritage site. Moreover, relevant offices in each of these administrations were consulted and made to provide desired data. These offices include the land administration, health, education, culture and tourism offices.

**Impact Assessment Steps**

The Environmental and Social Impact Assessment (ESIA) process incorporates a number of Key steps. The assessment process constitutes a systematic approach to the evaluation of a project in the context of the natural, regulatory and socio-economic environments of the area in which the project is proposed to be implemented.
The process adopted to undertake the ESIA study for the above indicated project is summarized below.

**Step 1 Scoping**

The first step in the ESIA is to define the proposed project activities and the natural, regulatory (i.e. legal) and socio-economic environments in which these activities will occur. This is achieved through Scoping. Scoping identifies which of the activities has a potential to interact with the environment. Scoping is conducted early in the ESIA process so that a focus on the priority issues (i.e. those that have the greatest potential to affect the natural and/or socio-economic environment) can be established for the rest of the ESIA process. There are a number of key elements to the Scoping exercise as follows:

- Gather and review existing environmental and socio-economic data relevant to the proposed development project
- Gather and review existing engineering design definition with respect to the proposed development project. All project elements including construction and operations will be considered.
- Assemble and review relevant legislative requirements, environmental standards and Guidelines associated with the proposed development.
- Consult with project stakeholders and other potentially interested and affected parties.

**Step 2 Detailed data gathering and review**

Following step 2, engineering, environmental and socio-economic data will be assessed in greater detail to ensure all of the proposed activities and their consequences will be considered in all stages of the development.

**Step 3 Existing environmental conditions**

In order to identify any potential impact on and potential change to the natural and socio-economic environments, it is essential to have a thorough understanding of the existing environment prior to commencement of the proposed activities. In this regard there is a need to characterize the existing baseline environmental and socio-economic conditions including establishing the prevailing conditions for a range of media as follows:
• Natural environment media such as, water, soil and flora and fauna;
• Socio-economic media such as demographics, economic activity and service provisions
• Definition of the existing environmental conditions will be achieved by completing two main tasks as follows:
• Conducting a detailed review of all secondary data sources (i.e. existing documentation and literature).
• Undertaking physical observation to supplement and build upon the existing information base.

*Step 4 Consultations*

Project stakeholder consultation is a vital component of the ESIA process. The consultation process focuses on providing information on the proposed Megalithic Site Development project in a manner that can be understood and interpreted by the relevant audience, seeking comment on key issues and concerns, identifying potential impacts and offering the opportunity for alternatives or objections to be raised by the potentially affected parties and other stakeholders.

All relevant stakeholders will be identified and consultations at all levels of the ESIA study will be conducted. By conducting such consultations the people that will be affected by or have an interest in the proposed project will have an opportunity to express their opinions and concerns.

*Step 5 Identification and analysis of the environmental impacts*

Potentially beneficial as well as adverse impacts on the physical, biological and socio-economic environment associated with the construction and operation phases of the project will be identified with the help of checklists, site survey and consultations with stakeholders and affected parties. In addition environmental impact analysis will be carried out in three stages:

*Identification*- This includes description of the existing environment, determination of the project components and definition of the environment that will be modified by the project

*Prediction*- forecasting of the quality and/or spatial dimensions of the changes and estimation of the probability that the impact will occur

*Evaluation*- determination of the incidence or magnitude and significance of the impact before mitigation
Step 6 Environmental Mitigation and Benefit Enhancing Measures

Based on the impact assessment feasible and cost effective mitigating and benefit enhancement measures that may reduce potentially significant adverse environmental impacts to acceptable levels will be recommended under this step.

Step 7 Environmental Management and Monitoring Plan

It will be necessary to monitor and audit project development and operation. Monitoring will provide the information necessary for feedback into the environmental management process and will assist in identifying where additional mitigation effort or where alteration to the adopted management approach may be required.

The monitoring plan will describe the various environmental management strategies and generic procedures for their implementation. Further, it will identify the management roles and responsibilities for ensuring that monitoring is undertaken and that the results are analysed and any necessary amendments are identified and implemented in a timely manner.

Step 8 Preparation of ESIA Report

The final step is the preparation of the social and environmental Impact assessment report. This report is expected to address the key issues and impacts affecting overall environmental performance of the project.
5. Description of the State of Environment

5.1 Physical environment

5.1.1 Climate
The climate of the area is characterized by two distinct seasonal weather patterns. The main wet season, locally known as Kiremt, extends from June to September, contributing about 70% of the total annual rainfall. A minor rainy season, locally known as Belg, contributes moisture to the region from mid-February to mid-April. The remaining months are dry season. Tiya town belongs to “Weina Dega” or subtropical climatic zonation within the five traditional climatic zonation of Ethiopia known as Wirch, Dega, Weia dega, Kolla and Bereha. The mean annual temperature of the town is about 17.6°C. Mean annual rainfall recorded from Buie meteorological station is 1,012 mm.

5.1.2 Topography and Drainage
The new development area is situated more or less on flat plain surrounded by rolling landform. The western and eastern part of the site is drained by Alulto and Robelle Rivers respectively.

5.1.3 Soil type
The soil type of the area is black cotton soil. It is closely related to parent material and degree of weathering. Basalt and ignimbrite are the main parent materials (Di Paola, 1972). Generally the dominate soil type of the study area is Eutric Cambiso type of soil.

5.1.4 Geology and Hydrogeology
The study area is exposed to rhyolites and ignimbrites formation which includes ash flow tuffs, pantellritic ignimbrites and un-welded tuffs while the Dino formation is made up of Dino ignimbrites. The western escarpment or highlands of Gurage Mountain have generally permeability ranging from 0.1 m/day to 1m/day (Tenalem Ayenew, 1998). The rocks comprising this zone are highly welded ignimbrites, tuff, rhyolite and trachyte without visible large faults. The upper weathered rock and soils are permeable; however, the underlying volcanic sequences are massive.

5.1.5 Land Use /Land Cover
The major land use and cover around the site development is categorized as intensively cultivated and shrub lands. Cereal crops like Teff, wheat, barley and chickpea are cultivated
seasonally. Patches of eucalyptus trees and ‘enset’ (false banana) are dominantly scattered around rural residential areas. However, specific to the site, it is dominantly of grazing land used by the nearby community.

![Image of land use](image)

**Fig-4**: Land use of the site development area

### 5.1.6 Water Resources
The dominant rivers in the area are Alulto River which is far from the site, which is drained into Meki River at downstream. There is also small waterfall in Aouache River that drains the eastern part of the catchment; and their respective tributaries.

### 5.2 Biological Environment

#### 5.2.1 Terrestrial vegetation
The area around Tiya town has suffered considerably from over exploitation of natural forest resources. The original vegetation has been significantly disturbed due to the expansion of subsistence level agricultural practices that predominate in the area. Special and unique
agricultural practice of Enset (false banana) cultivation is common in the area. Relatively, the slopes alongside of river valleys are dominated by a fairly dense vegetation cover.

Fig-5, vegetation covers around Tiya Stele core conservation site

5.2.2 Wildlife
Human intervention in the area, consisting of expansion for agriculture and grazing practices and encroachment for settlement and construction has significantly affected the vegetation cover in the area. Hence, it couldn’t provide a good habitat to support diverse wildlife species. But according to the Tiya town administration and local enquiries, species that are common in many parts of the country like spotted hyenas, hare, Fox, jackal, baboons etc. are seen in the area.

5.3 Social and Socio-economic Environment

5.3.1 Population and Settlement
Based on figures from the Central Statistical Agency in 2005, Tiya town had an estimated total population of 3,363 of whom 1,615 are men and 1,748 are women. According to the data provided from the city administration during the field assessment, currently a total population of approximately 5000 is believed to live permanently in the town.
5.3.2 Education
The town of Tiya hosts limited number of educational institutions. It has only one primary school (grade 1-8th) and one secondary school (grade 9-10th) owned and run by government. There is no secondary school (grade 9-12th) in the town.

5.3.3 Health
Health care is one of the crucial components of basic social services that have a direct linkage to the growth and development of a country as well as the welfare of the society. In Tiya, there is one health center, two private clinics and five health posts in the town and adjacent rural area.

Table-3: Top ten diseases in Tiya town which occurred in the year of 2012/2013

<table>
<thead>
<tr>
<th>Rank</th>
<th>Type of diseases by rank</th>
<th>Percentage of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>AURTI</td>
<td>16</td>
</tr>
<tr>
<td>2nd</td>
<td>ADD</td>
<td>12</td>
</tr>
<tr>
<td>3rd</td>
<td>T. Fever (Typhoid)</td>
<td>11</td>
</tr>
<tr>
<td>4th</td>
<td>Pneumonia</td>
<td>8</td>
</tr>
<tr>
<td>5th</td>
<td>Skin Infection</td>
<td>7</td>
</tr>
<tr>
<td>6th</td>
<td>Trauma</td>
<td>7</td>
</tr>
<tr>
<td>7th</td>
<td>AFI(Acute Favorile Illness)</td>
<td>6</td>
</tr>
<tr>
<td>8th</td>
<td>Helementisis</td>
<td>6</td>
</tr>
<tr>
<td>9th</td>
<td>Eye Diseases</td>
<td>4</td>
</tr>
<tr>
<td>10th</td>
<td>Dental &amp; Gum disease</td>
<td>3</td>
</tr>
</tbody>
</table>

5.3.4 Water supply and Sanitation
The city’s water supply at present is totally dependent on underground water sources. The water is abstracted from two Boreholes with yield of 1.5 l/s and 2 l/s. Currently one additional deep well yielding 2 l/s is ready for operation. The Woreda water supply office has identified areas
that could be drilled for the water supply system of the town but the implementation stacked due to budget constraint.

5.3.5 Physical Infrastructures
Tiya town has all the necessary infrastructure services such as internal roads, telephone, electricity supply, water supply, economic and social services. The power supply for the town serves for 24 hrs. It has digital telephone service and is connected with Addis Ababa with asphalt road. The asphalt road crosses the town into two parts (east and west). It is the road that connects the town with Butajira to south and Addis Ababa to north.

5.3.6 Economic Activities
The economy of Tiya town is predominantly based on social services sector and farming on the outskirt of the town. Among trade and other services, the dominating enterprise is small-scale alcohol sales, bar and yarn production. Lack of up-to-date data is making it difficult to measure the overall economic performance of the town, such as rate of employment growth, income level and level of investment.

Tiya and its surroundings has a potential to be one of the notable tourist destinations of Ethiopia by its own merit due to the existence of the Steles Site, historical caves at Mamo & Molodo areas, a forest inside the deep gorges of Himelel, and many medieval churches like Midre kebed, and local artisans’ village in Damu area. One would expect that there would still be future expansion of tourism industry in Tiya.

Table-4: Four years’ data on Tiya megalithic site visitors’ number

<table>
<thead>
<tr>
<th>Year</th>
<th>Local visitor</th>
<th>Foreign visitor</th>
<th>Total</th>
<th>Annual income(Birr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/2008</td>
<td>3398</td>
<td>1185</td>
<td>4583</td>
<td>51933</td>
</tr>
<tr>
<td>2008/2009</td>
<td>2235</td>
<td>1257</td>
<td>3492</td>
<td>65353</td>
</tr>
<tr>
<td>2009/2010</td>
<td>3261</td>
<td>2513</td>
<td>5774</td>
<td>127904</td>
</tr>
<tr>
<td>2010/2011</td>
<td>4877</td>
<td>2659</td>
<td>7536</td>
<td>143040</td>
</tr>
</tbody>
</table>

5.3.7 Religious, Cultural, Historical and Archaeological Resources
Among the targeted destinations along Addis Ababa and its environs, Tiya Megalithic World Heritage Site constitutes one of the intervention areas for Addis Ababa and its environs'. The site
is a World Heritage Site registered by UNESCO in 1972 and among the most important of the roughly 160 steles archaeological sites discovered so far in the Soddo region, south of Addis Ababa.

The steles of Tiya contain 36 monuments, including 32 carved steles covered with symbols of different types, sculpted with vaguely representational configurations most of which are difficult to decipher. The steles are monolithic stones of hemispheric, conic and sometimes anthropomorphic form and some of them are sword-shaped. They are the remains of an ancient Ethiopian culture whose age has not yet been precisely determined.

![Fig-6: Tiya Stele inside the core conservation site](image-url)
6. Consultation

6.1 Stakeholder Consultation
According to the guidelines for ESIA of the Environmental Protection Authority of Ethiopia and World Bank guidelines public consultations are an integral component of the ESIA requirements. Consultation is very important tool when conducting ESIA. By conducting consultation it becomes possible to inform in advance the stakeholders and the project affected population about the positive and negative impacts of any development project upon implementation. These consultations will identify key issues and determine how the concerns of all parties will need to be addressed in response to the objectives and outputs of the ESIA.
To this effect the consultant made consultation with the stakeholders and the communities thought to be affected as a result of the implementation of the Tiya Megalithic World Heritage 1st phase project activities of the Site Development. Consultation was conducted at the Ministerial, Wereda, Town, and community levels as follows

6.1.1 Federal Ministry of Culture and Tourism
At the Ministry Level discussions and consultations were made with relevant personnel from ESTDP. The consultation was focused on clarifying the overall objectives of the project and the required outputs and benefits the country expects to achieve from implementing this project.

6.1.2 Ethiopian Authority for Research and Conservation of Cultural Heritage
Consultations were made with different stakeholders from Cultural Heritage Research Directorate and Heritage Development department. In the consultation, it was made clear that heritage sites registered by UNESCO as world heritage site are administered by the authority. Tiya Megalithic Site is already registered by UNESCO as World megalithic heritage site and is therefore administered by the Authority.

6.1.3 Sodo Wereda
At the Wereda Level discussions and consultations were made with the following officials and senior experts.

➢ Ato Zenebe Debele, Acting Manager, Sodo Wereda Administration,
➢ Ato Adane Areda, Coordinator of Sodo Wereda Land Administration and Environmental Protection Core Process,
The consultative meeting with stakeholders was held at the Sodo Wereda Administration Office. The meeting commenced by the Social and Environmental Consultant’s brief presentation describing biophysical and social environment of the project and highlighting the possible social and environmental impacts that will result from implementing Tiya Megalithic World Heritage Site Development Project.

The meeting was very interactive. Some of the environmental and social issues that were raised and discussed during the stakeholders meeting include the following:

- The ownership of the land where the site development will be implemented and the loss of income generation that would result from construction of the site development and issue of fair compensation if the land is privately owned.
- The issue of compensating nearby community those who will loss grazing land that will be taken permanently for construction of the Museums and walkways.
- Impact of the clearance of shrubs and grass land due to construction of the museums and walkways.

The participants briefed that they are highly eager to see the site development completed on time and briefed the consultant that the land where the site development to be implemented is administered by Tiya Town Administration and there is no privately owned property on the proposed project area.

Finally, the meeting helped to raise awareness and understanding among stakeholders about the adverse project impacts resulting from project implementation and the mitigating measures proposed to minimize those effects.
6.1.4 Tiya Town Administration
At the level of Town Administration, discussion was made with the following officials and senior experts.

- Ato Mesele Mengistu, Tiya Town Administration, Mayor
- Ato Yared Asfaw, Coordinator, Tiya Town Administration Land Administration and Development Core Process.
- Ato Samuel Hailesillasie, Tiya Town Administration construction and supervision expert.
- W/ro Simegn Welde Agegnehu, Coordinator, Tiya Town Administration Infrastructure Core Process.
- Ato Adiss Kebede, Coordinator, Tiya Town Environmental Sanitation and Recreational Service Core Process.

The meeting with Tiya Town Administration was chaired by the Mayor himself who gave the introduction about the overall development in the town in particular about the Tiya World Heritage site development. The consultant presented to the participants of the meeting briefly about the nature and type of the proposed site development, potential positive and negative
impacts as well as possible ways of enhancing the positive and abating or mitigating the negative ones.

Discussions focused on the current ownership of the land on which the site development to be implemented and practices of compensation for loss of income and property that are associated with the site development.

It was disclosed by the participants that land on which the new archeological museum, artisanal craft section and the walkway to be constructed is communal land and there is no private land owner in the site development area and they confirmed that the license given for one investor for construction of lodge with in the current site development area has been cancelled in 2012 as the investor couldn’t act as per the contract agreement.

The consultant also expounded about the roles and responsibilities of the town administration and its line offices can play in the overall study particularly in the management and monitoring activities using the Environmental and Social Management Plan (ESMP) that will be prepared by the environmental consultant. This was done in order to obtain their views and concerns as regards to the anticipated impacts of the proposed industrial zone project and the way the consultant proposed to handle these impacts.

6.1.5 Consultations with Project Affected Populations
From field assessment and consultation with all responsible offices, the land for 1st phase site development is communal grazing land and no consultation meeting with affected population has been conducted.
7. Project Alternatives

In this ESIA study, all available alternatives were examined. Choosing alternative site for the construction of new museum and associated walkways at a safe distance from the steles and free from grazing land was an option assessed under this study. An option to undertake the development project within the world heritage core conservation will affect the ground stability of the steles and there is no open space enough to accommodate the construction of new museum and walkways. The other option is to locate the development project far from the heritage site so as to minimize loss of grazing land. But this option will again affect settlement areas and main high way from Addis Ababa to Butajira.

The proposed location of the new museums, artisanal blocks and walkway is therefore the preferred option to implement the development project.
8. Environmental Impacts and Proposed Mitigation Measures

8.1 Positive Impacts and Enhancement Measures

8.1.1 Income-generation and job creation
Tiya World Heritage Site development project will add economic value to the already existing stele based attractions. This will provide a wide range of experience and prolongs the visitors stay. Prolonging the stay of the visitor provides more learning opportunity and community-visitor interaction for the visitor and the local community alike. Opportunity for the economic benefit from tourism to the locals will also increase as the visitor’s stay gets longer.

The local community economic benefit could be from direct employment on the site development, directly supplying goods and services and indirectly employed by private sector service providers. The employment of unskilled and semi-skilled people from the project area is expected to be also significant during construction phase of the project. It will create job opportunities for the local community as daily laborers. Other sector of the society will also benefit from supplying construction material and other related services. During the implementation of development, the community will benefit from employment opportunity that will be generated from the megalithic based tourism. Museum staffs such as professionals, technicians, conservators, security guards will be employed. Nearby community can be benefited from selling Craft products and even food and beverage services to visitors and as scout and mule transport provider for tourists.

8.1.2 Skill transfer
The implementation of the site development project will attract many professionals and researchers to the area and make it national center of excellence for Archeological/Megalithic research and learning as well as pioneer research center on modern scientific archaeology.

8.2 Negative Impacts

8.2.1 Impact on communal grazing lands
The assessment made has shown that the impact of the proposed 1st phase project activities of the Site Development emanates mainly from construction of the Museums and Artisanal Production Hall outside of the existing Megalithic World Heritage core conservation and walkway which links the museum, artisanal production hall and the steles.
The impact that has been identified by the consultant and which is very important in terms of the impact on communal grazing land as follows;

- Land area of about 170m$^2$ will be permanently lost due to construction of the Archeological block.
- Land area of about 170m$^2$ will be permanently lost due to construction of the Ethnographic block.
- Land area of about 276m$^2$ will be permanently lost due to construction of the Ethnographic block.
- Land area of about 2595m$^2$ will be permanently lost due to construction of the walkway.

The Archeological, Ethnographic and Artisanal blocks as well as the walkways are all on communal grazing lands. This land is communal land for which private land use entitlements are not given to individual members of the community. However, it is temporarily used for grazing by the nearby community. Totally, the site development project in the 1$^{st}$ phase activities will consume 3211m$^2$ of communal grazing land.
Fig-8: Grazing Land that will be taken by the construction

8.2.2 Impact on the Archeological/Megalithic remains
The region of Sodo is dotted with numerous archaeological sites of the megalithic period, comprising hundreds of sculpted steles. Investigations conducted in Tiya, revealed archaeological materials such as tombs along with potteries are scattered around the steles. Different archaeologists excavated a lot of tombs, and dug out skeletons. Some of the fossils are dating 12th -14th century AD.

Unless otherwise properly directed to prevent disturbance of ground cover from excavation of soil for construction of the two Museums and Artisanal production blocks, buried Archeological and Megalithic remains in the area may be damaged by excavation of soils for foundation of the buildings. Chance findings should scientifically be recovered from the site during construction, as removal of chance finding artifacts from the scene makes it hard for archaeologists to understand the sequence and nature of past cultures.

Moreover, the increment of tourists and parking congestion as a result of the site development can cause pressure and physical damage to the steles and archeological remains.
8.2.3 Impacts on Flora and Fauna
The construction of the new Museum (Archeological & Ethnographic) and Artisanal Production blocks outside of Tiya World heritage core conservation site will not generally cause a significant impact on fauna and flora of the area. On the one hand the walkway that links the museum and artisanal production block is mainly carried on communal grazing lands that do not have dense vegetation cover. The only impact on terrestrial vegetation is anticipated to occur during walkway construction within the existing core conservation area resulting in site clearing of about 60m$^2$ of dominantly grass and bush. Generally, the site development project will have less effect on flora and fauna.

8.2.4 Impacts on soil
The project impacts on soil emanates from the works to be carried during construction phase. Firstly, the construction of the new museum and artisanal production hall will require top soil excavation which can expose the soil structure to erosion unless necessary precautions are taken. The construction of the walkway will require filling with selected material that will alter the natural characteristics of the soil. The overall impact can be considered in terms of the potential for disturbance of the natural soil structure. Some excess construction materials may be left over which needs to be disposed-off properly.

8.2.5 Impacts on Health and Safety
Engineering activities that are performed during the construction stage of the new museum and Artisanal production hall have the potential of impacting human health and safety. These are accidents and injuries that can affect workers from operating trucks, mixer machines, movement and hauling of construction materials as well as traffic accidents. They mostly arise from lack of incorporating appropriate and adequate health and safety as well as protection measures.

8.2.6 Air pollution and noise nuisance
The construction activities of the museums and artisanal production hall will cause the formation of dust in the environment. This will be especially during the excavation work and during dumping construction materials like aggregates and sands from dump trucks. Mobility of the machineries and vehicles will exacerbate the dust pollution. Noise nuisance released by the construction equipment will also be another impact to be created by the project. Heavy trucks
during construction could be a source of ground vibration to the World Heritage core site where large numbers of stele are erected.

**8.2.7 Impact on natural scenery of the site (Aesthetic Pollution)**
The aesthetic pollution of leftover construction materials and accumulated excavated soils can be severe if the screening of the operation and restoration of land to its natural is not undertaken.

**8.3 Major impacts and proposed mitigation measures**

**8.3.1 Mitigation measures for impacts involving loss of communal grazing lands**
During field assessment and design review, the consultant confirmed that an area of 3211 m² will be permanently taken for construction of the new Museums, Ethnographic and walkways. Tiya Town administration will ensure that land replacements of equal size communal grazing land will be prepared and suitable for the purposes it was serving for the nearby community.

**8.3.2 Mitigation measure for Impacts on the Archeological/Megalithic remains**
The project shall ensure that the foundation depth of the new museum and artisanal buildings will be shallow and not more than 30 cm to avoid physical damages on buried archeological remains. The floor space between the reinforced concrete beam should be covered with light materials like parquet so as to easily remove in case chance findings of archeological remains occur. The buildings will need to be constructed with local light materials to minimize weight stress on the soil layer which may be hosting archeological remains.

If archaeological remains are exposed during construction, experts from the Tiya Megalithic World Heritage site administration and SNNP Tourism and Culture Bureau should be notified immediately. Such experts may undertake assessments and determine the steps that need to be taken in order to ensure the preservation of the archaeological remains. Should the extent of archaeological remain being uncovered be substantial, a realignment of the museums and Walkways for that particular area is essential to be looked into.
8.3.3 Mitigation measure for Impacts on Flora and Fauna
In the description made under the impact assessment, it has already been noted that there is less vegetation cover in 1st phase of the site development. To some extent, from the fence up to the old existing walkway, the impact on fauna will have some significance. The impact on the grass and bush from construction of the walkway from the stele up to the fence should be rehabilitated to its natural landscape. Care must be taken during the walkway construction and impact need to be minimized by avoiding unnecessary cutting alongside of the walkway route with in the heritage core site.

8.3.4 Mitigation measure for Air pollution and noise impact
The dust and noise nuisances predicted to occur in the construction sites will be mitigated by applying the following measures. Re-suspension of dust in the construction sites can be prevented by occasional sprinkling of water. This will be specially applied during the construction of the new museum and artisanal production hall. The possible noise from construction of walkway with in the core conservation area also should be minimized by limiting the number of trucks from entering the core conservation site. Limited number of daily workers should be involved in the walkway construction. Awareness creation and training programs is necessary to be conducted to workers on minimizing nuisance from the construction activities also to avoid ground vibration around the stele site in the core conservation area.

8.3.5 Mitigation measure for Impacts on soil
The project will ensure that construction materials and excavated soils material which will be left over needs to be disposed-off properly and will not be accumulated in the area which can potentially affect the natural scenery of the area and it should promptly remove the material from the site. It will also ensure that the area should be rehabilitated and restored.

8.3.6 Mitigation measure for health and safety accidents
In addition to providing all necessary protection gadgets, equipment and clothing materials to workers which are prone to hazardous risks, awareness creation program should be prepared for drivers and other machine operators to show maximum restraint and discipline with regards to saving life and property.
9. Environmental and Social Management Plan (ESMP)

9.1 Institutions Responsible in the Implementation of ESMP
The Environmental management plan gives mitigating measures and monitoring requirements, and identifies the organizations assigned to implement them. Mitigating measures for the impacts that are likely to arise from implementing the project are given in the previous chapter.

It is believed that the project proponent in this particular case, ARCCH, Ethiopia Sustainable Tourism Development Project, SNNP Tourism and Culture Bureau, the construction Supervisor and the relevant Zone & Wereda officer responsible for environment will take the major responsibility in supervising the implementation of the environmental mitigation and monitoring plans.

9.2 Responsibility for the implementation of ESMP in the construction phase
Prior to the commencement of the construction period, Tiya Town administration office will facilitate on grazing land replacement arrangements in collaboration with the communities and also facilitate refining of the initial censuses of affected nearby communities.

During construction, the contractor will be responsible for implementing environmental mitigation measures included in the present ESIA report. The construction supervisor will monitor the proper implementation of mitigating measures at the right time. The Contractor will be fully responsible for ensuring that all the work will be carried out as per the environmental requirements indicated in the present ESIA report. SNNP Regional Bureau of Tourism and Culture and ESTDP will be responsible for the overall coordination of the environmental management activities during construction phase. They will advise the contractors, construction supervisors, the project management unit of the contractor and the local authorities regarding the implementation of the environmental mitigating measures and monitoring of impacts.

9.3 Responsibility for the implementation of ESMP in the operation phase
During the operation period, the environmental issues will be monitored by ARCCH, SNNP Regional Bureau of Culture and Tourism. In particular, the Regional office in charge of environment will coordinate all other organizations stated above. Sodo Wereda culture and Tourism Office and Tiya Town administration office will be involved in the monitoring of some of the parameters.
### Table-5 Summary of Environmental and Social Management Plan (ESMP)

<table>
<thead>
<tr>
<th>No</th>
<th>Potential environmental &amp; social impacts</th>
<th>Proposed mitigation measures</th>
<th>Responsible for implementing the mitigation measures</th>
<th>Responsible for monitoring the implementation of mitigation measures</th>
<th>Time Horizon Mitigation</th>
<th>Time Horizon Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nearby community will permanently lose communal grazing lands for the site development project.</td>
<td>Arrange land replacements of equal size and suitable for the purposes it was serving.</td>
<td>Tiya Town Administration Office</td>
<td>-SNNP Bureau of Tourism and Culture -ESTDP</td>
<td>-Before construction</td>
<td>-before construction &amp; during construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Grass land and bush will be cleared during construction of the walkway inside the core site.</td>
<td>-Minimize impact by avoiding unnecessary cutting -Rehabilitation and replantation alongside of the walkway</td>
<td>Contractor</td>
<td>- Tiya Town administration office</td>
<td>During Construction</td>
<td>During construction &amp;During operation</td>
</tr>
<tr>
<td>No.</td>
<td>Impact on buried Archaeological/megalithic remains.</td>
<td>Use Local light construction materials like bamboo parquet for floor finish that can easily be removed during chance findings of archeological remains.</td>
<td>Light machineries should be used to minimize soil compaction so as not to damage buried archaeological remains.</td>
<td>Shallow depth of foundation of the buildings.</td>
<td>Contractor</td>
<td>-Construction Supervisor or Consultant</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
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<td>---------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Dust during construction impacting nearby residents and tourists.</td>
<td>Sprinkle water occasionally to prevent dust pollution</td>
<td>-Contractor</td>
<td>-Construction Supervisor</td>
<td>- Tiya Town Administration office</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>During Construction</td>
<td>During Construction</td>
</tr>
</tbody>
</table>
|   | Noise during construction of the new museum and artisanal impacting tourists. | -Awareness creation to workers to minimize noise from construction activities especially during odd hours, i.e., at night and dawn. | Limited number of workers and vehicles should be involved inside the core site | Contractor | - Construction Supervisor  
- Tiya Town Administration office | during construction | during construction |
|---|---|---|---|---|---|---|---|
| 5 | Aesthetic Pollution from accumulation of excavated soils and wasted construction materials. | Land rehabilitation/Restoration work should go side by side to create attractive landscape. | | contractor | -Construction supervisor  
- Tiya Town Administration office. | during construction | during construction & operation |
| 6 | Accidents occurring on Workers | -employment of first aid experts  
-provide safety equipment | Contractor | -ESTDP  
-Tiya Town health office. | during construction | during construction |
10. Environmental and Social Monitoring Plan

Environmental monitoring is very essential part of the project implementation. It helps to follow up the implementation of the proposed mitigation measures and to capture unforeseen environmental impacts of the project.

It is necessary to establish and maintain environmental monitoring system to assess the efficiency of different mitigation measures, to perceive possible environmental hazards or to detect unpredicted impacts in time. Monitoring of environmental parameters will timely signal potential problems and will allow for prompt implementation of effective corrective measures.

Due to capacity and resource limitations monitoring should be scoped to those indicators that are most relevant for evaluation of the performance of the environmental mitigating measures. The selection of the issues to be monitored must be based on the severity, extent and intensity of the impacts.

For this particular project the proposed environmental and social monitoring indicators, frequency of measurement and reporting requirement are indicated in Table-6
### Table-6: Environment and social monitoring plan

<table>
<thead>
<tr>
<th>S No.</th>
<th>Impact</th>
<th>Performance indicators to be Monitored</th>
<th>Frequency of measurement</th>
<th>Frequency of reporting</th>
<th>Budget for monitoring per year in Birr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nearby community will permanently lose communal grazing lands for construction of the Museums, Artisanal &amp; walkways.</td>
<td>livelihood change of the nearby community</td>
<td>before construction commencement &amp; during construction</td>
<td>every three months</td>
<td>2000</td>
</tr>
<tr>
<td>3</td>
<td>Grass &amp; Bush will be cleared during the construction of walkway inside the core site fence affecting the terrestrial vegetation cover of site</td>
<td>land use change</td>
<td>every six months</td>
<td>once a year</td>
<td>2000</td>
</tr>
<tr>
<td>4</td>
<td>Impact on Archaeological /Megalithic remains</td>
<td>Occurrence of chance finding archeological and fossil materials.</td>
<td>once every week during construction</td>
<td>once every month</td>
<td>10000</td>
</tr>
<tr>
<td>5</td>
<td>Dust during construction impacting residents, tourists and wildlife.</td>
<td>Number of complaints from tourists and residents.</td>
<td>once every week during construction</td>
<td>once every month during construction</td>
<td>3000</td>
</tr>
<tr>
<td>6</td>
<td>Noise during construction of the gallery and walkway impacting tourists and residents.</td>
<td>survey result of wildlife numbers</td>
<td>once every week during construction</td>
<td>once every month</td>
<td>3000</td>
</tr>
<tr>
<td>7</td>
<td>Aesthetic Pollution from accumulation of excavated soils and wasted construction materials particularly from the new museums and artisanal production hall to be constructed.</td>
<td>survey result of landscape scenery</td>
<td>Once every six month</td>
<td>once every year</td>
<td>2000</td>
</tr>
</tbody>
</table>
11. Conclusion and Recommendation

The negative impacts caused as a result of the implementation of the project such as impacts on property, heritage, soil, air and vegetation has been found to be manageable and can be avoided or minimized by introducing appropriate mitigation measures. In general the positive impacts of the project far outweigh the negative impacts. However, it is found important to assign an archaeologist to recover any archaeological or cultural material that may be unearthed during construction.

Mitigation measures that will minimize the impacts will need to implement as per Environmental and Social Management Plan (ESMP). It is also recommended that the project proponent establish Project Implementation Unit (PIU) that will coordinate and supervise proper implementation of the mitigation measures.
Annexes
# Annex-1: List of Consulted persons

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of contacted person</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fasil</td>
<td>AddisA baba &amp; Its Env’s SMU Project Manager</td>
<td>Ministry of Culture and Tourism, Ethiopian Sustainable Tourism Development Project</td>
</tr>
<tr>
<td>2</td>
<td>Desalegn Abebaw</td>
<td>Cultural Heritage Research Directorate Director</td>
<td>Ethiopian Authority for research and Conservation of Cultural Heritage (ARCCCH)</td>
</tr>
<tr>
<td>3</td>
<td>Belayneh Tegene</td>
<td>Senior Heritage Development Site Expert</td>
<td>Ethiopian Authority for research and Conservation of Cultural Heritage (ARCCCH)</td>
</tr>
<tr>
<td>4</td>
<td>Zenebe Debele</td>
<td>Acting Manager, Sodo Wereda Administration</td>
<td>Administration of Sodo Wereda Office</td>
</tr>
<tr>
<td>5</td>
<td>Mulukzen Fesese,</td>
<td>Expert in Sodo Wereda administration Culture and Tourism process</td>
<td>Sodo Wereda administration, Culture and Tourism Office</td>
</tr>
<tr>
<td>6</td>
<td>Adane Areda</td>
<td>Team Leader, Sodo Wereda Land Administration and Environmental Protection Process</td>
<td>Sodo Wereda Land Administration and Environmental Protection Office</td>
</tr>
<tr>
<td>7</td>
<td>Mesele Mengistu</td>
<td>Mayor</td>
<td>Tiya Town Administration Office</td>
</tr>
<tr>
<td>8</td>
<td>Yared Asfaw</td>
<td>Coordinator, Land Administration and Development Core Process</td>
<td>Tiya Town Administration Office</td>
</tr>
<tr>
<td>9</td>
<td>Samuel Hailesillasie</td>
<td>Construction and Supervision, expert</td>
<td>Tiya Town Administration Office</td>
</tr>
<tr>
<td>10</td>
<td>Simgn Welde Agegnehu</td>
<td>Coordinator, Infrastructure Core Process</td>
<td>Tiya Town Administration Office</td>
</tr>
<tr>
<td>11</td>
<td>Adiss Kebede</td>
<td>Coordinator, Environmental Sanitation and Recreational Service</td>
<td>Tiya Town Administration Office</td>
</tr>
</tbody>
</table>
Annex: Photo of some selected features and consultations

Entrance gate to Tiya stele  
Tiya Steles

Settlements around the core conservation site  
Grazing land to be consumed by the development

Rocky grazing land within the site  
House owned by lodge owner within the site
High volt transmission line crossing the site  Eucalyptus trees outside the new development area

Consultation with expert in Sodo Wereda culture and Tourism Office
Annex-3: References

- African Development Bank group’s policy on environment, 2004
- CSA (2007), Central Statistical Authority the 2007 Population and Housing Census of Ethiopia;
- David H.F Liu, B’ela G. Liptak (1999), Environmental engineering hand book