Federal Democratic Republic of Ethiopia
Ethiopian Roads Authority

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Feasibility Study,
Environmental Impact Assessment (EIA),
Preparation of Resettlement Action Plan (RAP),
Detailed Engineering Design and
Tender Documents Preparation
for
JIIMMA – CHIDA ROAD PROJECT

UPDATED ENVIROONMENTAL and SOCIAL IMPACT ASSESSMENT

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Associated Engineering Consultants PLC

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

ETHIOPIAN ROADS AUTHORITY

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LIST OF ABBREVIATIONS

AEC	Associated Engineering Consultants
AIDS	Acquired Immune Deficiency Syndrome
ARDO	Agriculture and Rural Development Office
Asl	above sea level
CSC	Construction Supervision Consultant
^{0}C	Degree Celsius
EIA	Environmental Impact Assessment
EI	Environmental Inspector/Supervisor
EMP	Environmental Management Plan
EMSB	Environmental Monitoring and Safety Branch of ERA
ESMP	Environmental and Social Management Plan
EPA	Environmental Protection Authority
EPE	Environmental Policy of Ethiopia
ERA	Ethiopian Roads Authority
FDRE	Federal Democratic Republic of Ethiopia
Ha	Hectare
HIV	Human Immune Virus
IUCN	The International Union for Conservation of Nature and Natural Resources
Km	Kilometre
LEPO	Land & Environmental Protection Office
LHS	Left Hand Side
M	Metre
Mm	Millimetre
NRS	National Regional State
OBoLEP	Oromia Bureau of Land and Environmental Protection
RAP	Resettlement Action Plan
RE	Resident Engineer
RHS	Right Hand Side
ROW	Right of Way
TMP	Traffic Management Plan

WAO	Woreda Administration Office
WNRCO	Woreda Natural Resources Conservation Office/Section
WWSPO	Woreda Water Supply Office

EXECUTIVE SUMMARY

1.1 Introduction

The EIA study of Jima-Chida road project was carried out as part of the contract agreement between ERA and Associated Engineering Consultants (AEC) for the Consultancy Services for Feasibility Study and EIA, Preparation of RAP, Detailed Engineering Design and Tender Document Preparation. The main objective of the study was to ensure that the proposed Jimma – Chida road project is environmentally and socially acceptable. The EIA study was based on review of pertinent national policies, legislations and guidelines; review of relevant previous studies and literature; collection of relevant secondary data from local government offices; field investigations along the project road and collection of primary baseline data; and conducting consultations with key stakeholders at Woreda and the community levels.

This revised EIA is mainly based on the EIA study carried out as part of the Feasibility Study by AEC in 2012 and primary and secondary information collected in May 2016. Its main objective is to update the previous EIA report by incorporating any change on dynamic socio-environmental issues to ensure that the proposed Jimma – Chida road project is environmentally and socially acceptable and up-to-date information is incorporated in the report.

1.2 Project Description

The Jimma-Chida road is located in Seka Chekorsa and Dedo Woredas of the Jimma Zone of the Oromia NRS, and Konta Special Woreda of the SNNP NRS in Southwestern part of Ethiopia. It starts at the junction connecting the Jimma-Chida and the Jimma-Mizan Roads at the outskirt of Jimma town which is about 346 km Southwest of Addis Ababa, and it terminates in Chida town. The total length of the project road is 81 km. The project road connects three important towns, namely Jimma, Sheki and Chida, the former two are Zonal and Woreda administrative centers in Jimma zone.

The proposed road-upgrading project basically follows the alignment of the existing road. However, it will involve realignments at three locations that is found at approximately km 23.3-24.4, km 31.0-31.9 and km 37.8-38.9 (based on existing chainage). Each realigned section has length of 1.1km, 1.5km and 2.8km consecutively, having a total length of 5.4km. These realignments are proposed to avoid existing land-sliding spots. Accordingly, 75.6 km (93%) traverses along the existing road and the remaining 5.4 km follows a new route. The terrain traversed by the project road is dominantly mountainous comprising about 64% while the remaining section consists of rolling section with short occasional flat portions. The project road corridor is mostly densely populated and intensively farmed with some sections traversing forestlands and woodland areas.

1.3 Environmental Policy and Legal Framework

The Constitution of the FDRE, adopted in August 1995, is a prime legal document that has provisions, which have direct policy, legal and institutional relevance for the appropriate implementation of environmental protection and rehabilitation action plans to avoid, mitigate or compensate the adverse effects of development actions. The concepts

of sustainable development and environment rights are entrenched in the rights of the people of Ethiopia through Articles 43 and 44, which state among others the right to development and the right to live in a clean and healthy environment.

The Environmental Policy of Ethiopia (EPE) is a major policy document concerning environmental protection and it supports Constitutional Rights through its guiding principles. The EPE has an overall policy goal to improve and enhance the health and quality of life of all Ethiopians, to promote sustainable social and economic development through sound management and use of natural, human-made and cultural resources and their environment as a whole. The EIA policies are included in the cross-sectorial environmental policies and they emphasis the early recognition of environmental issues in project planning, public participation, mitigation and environmental management, and capacity building at all levels of administration.

Ethiopia is experiencing the effects of climate change. Besides the direct effects such as an increase in average temperature or a change in rainfall patterns, climate change also presents the necessity and opportunity to switch to a new, sustainable development model. The Government of the Federal Democratic Republic of Ethiopia has therefore issued the Climate-Resilient Green Economy strategy in 2011 to protect the country from the adverse effects of climate change and to build a green economy that will help to realize its ambition of reaching middle income status before 2025.

The Climate-Resilient Green Economy (CRGE) initiative follows a sectorial approach and has identified and prioritized several initiatives, which could help the country achieve its development goals while limiting 150 Mt CO2e emissions estimated in 2011 to around 250 Mt CO2e in 2030, which is by far less than the estimated emission under a conventional development path. The green economy plan is based on four pillars:

i. Improving crop and livestock production practices for higher food security and farmer income while reducing emissions,

ii. Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks,

iii. Expanding electricity generation from renewable sources of energy for domestic and regional markets, and

iv. Leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings.

As part of the strategy, the government has selected four initiatives for fast-track implementation: exploiting the vast hydropower potential; large-scale promotion of advanced rural cooking technologies; efficiency improvements to the livestock value chain; and Reducing Emissions from Deforestation and Forest Degradation

(REDD). These initiatives have the best chances of promoting growth immediately, capturing large abatement potentials, and attracting climate finance for their implementation.

The FDRE has adopted several legislations and regulations that are aimed to promote environmental protection and sustainable social and economic development. Among these, the most relevant ones include the Proclamation on Establishment of Environmental Protection Organs, Proclamation on EIA, Proclamation on Environmental Pollution Control, Proclamation on Expropriation of Land Holdings and Payment of Compensation, and Regulations on Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes. The former Proclamation assigns responsibilities to organizations for environmental development, management, regulations and monitoring activities at both federal and regional levels. It was also re-established the federal EPA as an autonomous public institution of the FDRE. However, recently as part of the effort to realize the government's Climate Resilient Green Economy strategy, the former Environment Protection Authority has been upgraded into Ministry of Environmental Protection, Forestry and Climate Change.

The new Ministry is responsible among other undertakings for spearheading the reforestation, and other wide-ranging tasks. It is expected to take measures aimed at preventing deforestation and environmental degradation which are common in many parts of the country. Participatory process of making the country's economy green and climate change resilient was initially planned to be undertaken under the ownership of the then Environment Protection Authority (EPA). However, such effort did not receive the necessary attention either at the federal or regional level thereby necessitating the establishment of the new Ministry. It is also understood that the rights and obligations of the EPA, stated under the proclamation No. 295/2002, is transferred to the newly established Ministry of Environment Protection, Forestry and Climate Change. The general role of the ministry is to provide for the protection and conservation of the broad environment, through formulation of policies, strategies, laws and standards, which foster social and economic development in a manner that enhance the welfare of human and the safety of the environment sustainable It also empowers every Sector Ministry or Agency to establish or designate an Environmental Unit and each regional state to establish an independent regional environmental agency or designates an existing agency.

The EIA Proclamation makes an EIA mandatory for specified categories of development activities and is the legal tool for environmental planning, management and monitoring. The proposed road project has been assigned under the category of projects likely to have significant negative impacts and thus requires EIA. Therefore, in accordance to this legislation, EIA has been conducted to determine the project's potential impacts and to develop appropriate mitigation measures and environmental management plan (EMP) to prevent, reduce or offset the significant negative impacts to acceptable levels. In addition, other pertinent legislations, the EPA's EIA Guidelines, ERA's Environmental Procedures Manual, and Environmental Institutions have been reviewed and incorporated into the EIA Report. Recently, the former EPA was upgraded into a ministerial level and named the Ministry of Environment, Forestry and Climate Change. The detail is included under section 3.7.2.

1.4 Description of the Baseline Condition

1.4.1 Physical Environment

1.4.1.1 Topography

As per the ERA 2002 Geometric Design manual classification, the terrain traversed project route is classified as 64% Mountainous (52 km) and 36% as Rolling (29 km). Although limited in length, the horizontal alignment of the road can be characterized as a straight alignment connected by occasional smooth curves on the flat terrain. Whereas, sharp horizontal curves (hairpin curves) with insufficient passing/ stopping sight distances and insufficient tangent distances on reverse horizontal curves are found on the rolling and mountainous sections of the road. There are some steep grades running for short distances in the mountainous parts of the project area.

The altitude of the project route corridor rises from 1705 m to 2625 m asl and again falls to 1765. The start of the project is 1705 m asl (at Jimma town outskirts) and is 765 m asl at the end (near Sodo Junction) in Chida town.

1.4.1.2 Geology

The geology of the project area in the road corridor according to the Geological Map of Ethiopia 2nd Edition (Mengesha et al, 1996) is approximately as follows:

From Km 0-20 is Nazret Series: Ignimbrites, un-welded tuffs, rhyolitic flows, domes and trachytes. From Km 20-51.8 is Jimma Volcanics rhyolite & trachyte flows and tuffs with minor basalt. From Km 51.8-68.8 is Jimma Volcanics flood basalt with minor salic flows. From Km 68.8-81 (Chida) is Jimma Volcanics rhyolite & trachyte flows and tuffs with minor basalt.

The Jimma rhyolites and basalts are commonly weathered ranging from moderately weathered to highly weathered and as a result are not recommended as quarry sources. However, they make good sub-grades and good sources of borrow materials.

1.4.1.3 Soils

The project road has varying sub-grades as one travels in the corridor. It was observed that flat sections form generally black, swampy clays while rolling and mountainous terrain form well drained red, silty clays. As can be expected, the black swampy clays make weak sub-grade while the red clays and the weathered rock make strong sub-grade. The gray clays make intermediate strength sub-grade. Areas of swamp need special treatment. The first parts of the project road from Km 0-0.4 and Km 3.0-4.5 are swampy with possible expansive black soils.

The sub-grade soil is dominantly covered with reddish brown silty clay soil. Weathered rock of varying degree of weathering is the sub-grade material on the approaches of Gojeb River crossing and beyond that.

Reddish brown silty clay soils and decomposed rocks of various degrees of weathering are considered as good roadbed materials for road construction.

In general, soils along the flat sections are generally black, swampy clays while the soils along the rolling and mountainous sections are well-drained red, silty clays.

1.4.1.4 Climate

The annual rainfall in Jimma area ranges from 1100 to 2000 mm while it ranges from 1100 to 1900 mm in Chida area, and the main rainy season in the project area is in the months of July and August. The mean annual maximum temperature ranges from 27.4 ºc to 28.4 ºc and 25.7 ºc to 27.5 ºc in Jimma and Chida towns respectively. Similarly, the mean annual minimum temperature ranges from 11.3 ºc to 12.9 ºc and 14.6 ºc to 15.7 ºc in Jimma and Chida towns respectively.

1.4.1.5 Drainage and Water Resources

The Jimma – Chida road traverses two major drainage systems, namely Gibe River and Gojeb River catchments that are sub-basins of the Omo-Gibe river system/basin. The rivers and streams crossed by the project road generally drain west-east direction. The project road crosses four major perennial rivers, namely Gibe (km 4.3), Offole (km 8.5), Unta (km 23.7) and Gojeb (km 69.4) rivers, which have substantial flows throughout the year.

The Gibe, Offole and Unta rivers are used for irrigation development by the local people at upstream and/or downstream of the road crossing through traditional diversion schemes and motor pumping. They are also used for animal water supply, but little used for human water supply. In addition, the project road intercepts several small streams, which are located between km 30 and km 63.

1.4.1.6 Land Use and Land Cover

The project corridor is densely populated and used for intensive farming, livestock grazing and human settlements. In addition, there are two protected state forestlands that are located around km 10.7-11.0 RHS and km 48.0-52.0; the former is totally plantation forest whereas the latter comprises both natural and plantation forests. Furthermore, there is extensive savannah woodland in the Gojeb valley on both sides of the river, and a significant part of the valley has already been deforested and occupied by human settlements and crop cultivation. The intensity of land use reflects a high population density in highland and middle altitude areas.

In most places the cropping pattern is characterized by a mixture of annual and perennial crops cultivation. In the lowland and middle altitude areas, the crop range is dominated by teff, maize and sorghum. In contrast, the cropping pattern in the highland areas is dominated by wheat and barley followed by pulses, mainly faba bean and field peas. ‘Enset’ is the predominant perennial crop almost throughout the project area. In addition, coffee, which is an important cash crop, is prominent in the area particularly in the region between start of the project and km 18 (Sheki town). In most places, coffee is grown under canopy indigenous trees, mainly Acacia, Cordia (*Wanza)*, Albizia (*Sassa*), and Fig/Ficus (*Warka*) trees. Furthermore, Chat, which is a stimulant plant and important source of cash income for the local community, is widely planted in the project corridor.

Tree plantations, predominately eucalyptus trees, and remnant indigenous trees or patches of remnant forests comprise a significant proportion of the land use and cover of the route corridor.

Towns, villages and scattered rural settlements also cover a significant share of the land use and land cover. The towns and major villages directly connected by the existing road include Jima town outskirts (km 0-1.3), Gibe (km 4.6-5.1), Kolobo (km 6.0-6.8), Offole (8.8-9.1), Sheki town (km 17.6-21.7), Meteso (km 36.7-38.2), Dilbi (km 46.1-47.6), and Kirara (km 58.5-59.3), Biteti Beduda (km 75.9-76.4), Biteti Gola (km 77.5-77.9) and Chida town, partial (km 80.1-80.9).

1.4.2 Biological Environment

1.4.2.1 Vegetation and Flora

The vegetation in most part of the project corridor has long been severely modified by human activities. The natural vegetation has been extensively deforested to give way mainly for expansion of cultivation and human settlements. The forest resources also have been heavily exploited for timber production (mainly for commercial use), construction materials and fuel wood. Nevertheless, the project area still has some patches of remnant primary vegetation, including one high forest area, and abundant remnant or secondary growth indigenous trees occurring in most part of the project corridor.

Of the existing natural vegetation found in the project area, the protected state forest crossed by the project road at station about km 48.0-52.0 is the most important one or with highest priority in terms of forest and plant genetic resources and ecosystem conservation. This forestland is named as **Sisima Kedo Protected State Forest** and it covers about 11,839 ha, and currently it is managed by the Jimma Branch of the Oromia Forestry and Wildlife Enterprise. Part of the forest crossed by the project road at about km 48.0-50.7 is totally a natural forest whereas part of the forest traversed from km 50.7-52.0 is mainly plantation forest mixed with scattered indigenous trees.

Visual observation made during the site visit and information from local informants revealed that there is no change in the areal coverage and species composition of the protected forest area within the last four years. There is no encroachment into the protected high forest and state plantation areas. Therefore, all the information presented in the original EIA considered valid and relevant as it is. The species composition of the forest area is described below.

Moreover, there is extensive savannah woodland in the Gojeb river valley with a narrow strip of riverine forest along the river. However, greater parts of the savannah woodland have been severely degraded due to encroachment and clearance for crop cultivation and establishment of new human settlements. This situation has been triggered by population pressure and shortage of arable land in the adjacent highland areas.

More in depth or site specific description of the natural vegetation, forests or indigenous trees found along the project road is summarized below.

Table 0-1: Vegetation type and status

Chainage	Vegetation type	Major Species	Status
Km 0.5–0.9 mainly on RHS	Semi-natural forest or dense indigenous trees where the under-storey has been cleared and replaced by coffee plantation.	Major trees include *Acacia abyssinica, Cordia africana*, *Croton macrostachyus, Millettia ferruginea*, *Erythrina brucei,* and *Vernonia amygdalina*.	Severely degraded
Km 0.9 – 3.2	Scattered remnant or secondary growth indigenous trees within maize farmlands, Enset plantation and on roadsides frequently with coffee plantation underneath.	Common trees include *Albizia schimperiana, Erythrina brucei, Croton macrostachyus, Acacia abyssinica, Ekebergia capensis Cordia africana*, and *Vernonia amygdalina*.	Severely degraded
Km 5.2 – 6.9	Relatively dense remnant canopy indigenous trees with coffee plantation underneath	Major tree species include *Ficus vasta, Acacia abyssinica, Albizia schimperiana, Cordia africana*, *Croton macrostachyus, Sapium ellipticum*, and *Prunus africana*. Planted trees such as Eucalyptus, Gravillea, Spathodea and Avocado are also prominent.	Degraded
Km 7.5 – 9.2	Some indigenous trees mixed with planted Eucalyptus and cypress trees	Some scattered indigenous trees like *Acacia abyssinica and Sapium ellipticum*, together with planted trees mainly Eucalyptus, Cypress & Avocado, within moderately cultivated land and settlement areas	Degraded
Km 9.2 – 9.4	Scattered canopy trees	*Cordia, Acacia,* and *Erythrina* with coffee underneath within Kolobo village. Planted trees including Eucalyptus, Gravillea, Avocado and Guava are also significant.	Degraded
Km10.7–11.0 on RHS	State Plantation Forest, namely Offole Plantation forest	Dominated by Cypress (*Cupressus lusitanica*) and Eucalyptus spp. It also contains other tree species such as *Casuarina equisetifolia* and	Protected

Chainage	Vegetation type	Major Species	Status
		Gravillea robusta. Photo 5 (middle) shows part of the Plantation forest on the roadside.	
Km11.0–11.5	Dense eucalyptus plantation with scattered indigenous trees	*Eucalyptus tree, Cordia, Croton, Acacia, Prunus, Ficus,* and *Syzygium*.	Degraded
Km 11.5 – 17.1	Scattered indigenous trees, mostly with coffee plantation under the canopy trees	Common tree species include *Ficus, Cordia, Acacia, Albizia, Prunus,* and *Sapium*. Eucalyptus trees are common in the area.	Degraded
Km 17.1 – 20.0	Scattered indigenous trees	*Albizia, Erythrina*, *Cordia*, and *Croton* trees along the section through Sheki town. Eucalyptus trees and Enset plantation are also prominent.	Severely degraded
Km 21.2 – 24.0	Moderately dense indigenous trees along a stream and Unta R	Major trees include *Cordia*, *Ekebergia, Croton, Erythrina, Polyscias, Syzygium,* and *Albizia*	Degraded
Km 26.9-27.7	Cluster of some indigenous trees found along the road	The prominent tree species include *Ficus sur* (*Shola*), *Hagenia abyssinica* (*Kosso*), *Croton, Erythrina, Acacia* and *Dombeya (Wulkefa*), and Highland bamboo; some of the species like *Hagenia*, *Dombeya* and Highland bamboo are indicators of high altitude (>2600m asl).	Severely degraded. *Hagenia abyssinica is one of the endangered medicinal tree species*
Km 29.1-30.1	Scattered or patch of indigenous trees	*Dombeya, Erythrina, Ficus & Euphorbia (Kulkual),* and Highland bamboo. Soft-wooded shrubs such as Giant Lobelia and Senecio gigas.	Degraded. Giant Lobelia and Senecio gigas are endemic species
Km 36.3-	This stretch is a realignment section	The major tree spp. include *Cordia*, *Ekebergia, Croton, Erythrina, Albizia,*	Degraded

Chainage	Vegetation type	Major Species	Status
39.0	having many indigenous tree species within its corridor	*Ficus, Dombeya, Prunus, Polyscias, Apodytes, Syzygium, Millettia, Vernonia, & Maesa,* and Highland bamboo. In particular there is dense forest or trees along Jibiti and Gonfa rivers at km 38.50 and km 39.20 respectively.	
Km 46.6-48.0	Moderately dense remnant canopy trees mainly within farmlands and scattered rural settlement area that are indicators of recent deforestation of high primary forest	Major large tree species include *Prunus africana, Podocarpus gracilior*, *Ekebergia capensis, Polyscias fulva, Syzygium guineense, Celtis Africana, Ficus sur* and *Croton macrostachys.*	Degraded
Km 48.0-km 52.0	There is dense natural forest along km 48.00 – 50.70, which is part of a protected state forest called Sisima Kedo PF. Together with mixed plantation forest, it extends up to about km 52.0 mainly on RHS of the road. It contains a rich diversity of indigenous trees, shrubs, woody climbers (lianas) and woody scramblers (pseudo-lianas). The forest is composed largely of evergreen and broad-leaved species of trees.	The major tree species in the canopy include *Prunus africana, Ekebergia capensis, Polyscias fulva, Apodytes dimidiata*, *Schefflera abyssinica, Syzygium guineense, Sapium ellipticum, Ficus spp. (F. sur, F. vasta & Ficus ovata), Albizia spp. (A. schimperiana & A. gummifera), Croton macrostachys, Celtis africana, Macaranga kilimandscharica*, and *Olea welwitschii*. Other frequent tree species include *Cordia africana, Acacia abyssinica, Millettia ferruginea*, *Ehretia cymosa, Bersama abyssinica, Euphorbia sp. etc*. In addition, the forest comprises *Aningeria adolfi-friedericii* (*Keraro*), which is the tallest and only emergent tree species in the forest; it is not common in the road environment. Moreover, to a lesser extent, the forest contains *Podocarpus gracilior* (Zigba), which is the only coniferous indigenous tree species found in the forest as far as observed during this survey. It was evident that some part of the natural	Protected forest not degraded.

Chainage	Vegetation type	Major Species	Status
		forest, mainly in the northern part, has been deforested for expansion of cultivation and establishment of new settlements, and this practice is illustrated by many large trees that have remained within farmlands and settlements as indicated above for km 46.6-48.0. The plantation forest predominantly comprises Cypress tree (*Cupressus lusitanica*).	
Km 52.0-km 54.0:	Scattered trees mostly within farmlands and settlements	Frequently observed tree species include *Cordia, Polyscias, Croton, Sapium, Ficus,* and *Ekebergia*	Severely degraded
Km 54.0-km 59.4	A transition vegetation zone to lowland charecterised with mixed evergreen/deciduous trees that are the remnants of woodland or wooded grassland. The greater part of the original vegetation is severely degraded as it has been cleared for expansion of farmlands and establishment of settlements. Thus, mostly only scattered trees and shrubs are remained	Common tree species include *Ficus spp., Cordia africana, Terminalia brownii, Combretum molle, Piliostigma thonningii, Stereospermum kunthianum, Entada abyssinica*, *Protea gagudi, Gardenia lutea* etc.	Severely degraded
Km 59.4-70.2	The vegetation along this section is predominantly broadleaved deciduous savannah woodland except a narrow strip of riverine forest along Gojeb river and Tingura river. The vegetation along this section is	The characteristic trees in the woodland vegetation include *Piliostigma thonningii, Stereospermum kunthianum, Terminalia brownii, Combretum molle, Acacia spp. (A. polyacantha, A. seyal), Entada* abyssinica, and *Ficus* spp. Tall *Hyparrhenia* spp. are the predominant grass thickly covering the ground layer throughout	Degraded

Chainage	Vegetation type	Major Species	Status
	mostly less disturbed although certain parts have been severely degraded by encroachment due to clearance for expansion of cultivation and establishment of new settlements.	the savannah woodland area.	
Around km 61.7 and km 67.0	Riverine forest on the banks of Tingura and Gojeb rivers respectively	The major tree species in the riverine forest include *Albizia grandibracteata, Ficus sycomorus, Syzygium guineense, Sapium ellipticum, Celtis aficana, Cordia Africana*	Degreded
Km 70.2-74.0	Moderately dense woodland with a greater part of it has been cleared and transformed to settlement areas and cultivated lands recently	The main tree species in the remaining vegetation or conserved within farmlands or around settlemnents include *Cordia africana, Ficus sycomorus*, *Terminalia brownii, Combretum molle, Acacia polyacantha,* and *Syzygium guineense*. Small trees or shrubs include *Stereospermum, Entada, Gardenia, Protea, Grewia, Maytenus*, and *Rhus* spp. *Hyparrhenia* spp. are the dominant annual grass densely growing in the area; thus, it's a savannah woodland	Severely degraded
Km 74.8-77.1:	Scattered remnant or secondary growth indigenous some are being located just on roadsides like at km 74.8 – 75.0 RHS edge	Commonly observed trees include *Cordia africana, Ficus vasta, F. sycomorus*, *Ehretia cymosa*, *Syzygium guineense, Millettia ferruginea* etc	Severely degraded
Km 77.3-77.7	Some *Cordia africana* mixed with dense alignment eucalyptus plantation on RHS edge of the road	*Cordia Africana, Eucalyptus globulas*	Severely degraded

It is evident that the natural vegetation in most part of the project corridor has been severely degraded due to extensive deforestation and expansion of cultivation and establishment of human settlements. Nevertheless, it yet contains a rich diversity of plant species, including many conservation worthy indigenous tree species. The factors that have attributed for the high plant biodiversity include variations in climate and physical features such as rainfall, temperature, soils, topography and altitudinal ranges. In addition, it is attributed to the farming system that includes annual and perennial crops cultivation integrated with good agro-forestry practices and conservation of remnant indigenous trees. In particular, the culture of maintaining indigenous trees as a shade for coffee plantation has contributed a lot for the preservation of conservation worthy indigenous tree species. Otherwise, most of those indigenous tree species could have been removed to clear the land for annual crops cultivation or for production of timber or other wood materials.

Most part of the project area is characterized by rolling or steep sloping topography and high amounts and high intensity of rainfall. These situations have high potential to cause flooding, soil erosion and slope instability problems with removal of the protective vegetation cover. Therefore, the vegetation has vital roles in conserving soil and water by controlling runoff water and protecting the soil against erosion and slope instability problem.

The corridor of the project road contains a rich diversity of indigenous trees and other plant communities, most of which are evergreen and broad-leaved species. In most places large canopy indigenous trees such as *Ficus vasta (Warka), Ficus sur (Shola), Cordia africana (Wanza), Albizia schimperiana (Sassa), Prunus africana (Tikur Inchet), Podocarpus gracilior (Zigba), Acacia abyssinica (Girar), Ekebrgia capensis (Sombo)* and *Apodytes dimidiata* (Donka/ Wondabiyo) are left standing alone or in cluster as reminders of the primary forest that once covered much of the area. Photos below illustrate parts of protected forests, woodland, indigenous trees and plantation trees found along the project road.

1.4.2.2 Fauna

As indicated above, the natural habitats in most part of the project corridor has been converted to agricultural lands and settlement areas. Therefore, only a small portion of the original natural habitat has been left little disturbed in the region. Now, it is the few remnant forest areas mainly the Sisima Kedo Protected Forest found at km 48–52, and the Savannah woodland and riverine forests in the Gojeb valley that provide major habitats for a variety of wild flora and fauna. The fauna existing in the project corridor include several species of mammals, fish, reptiles and amphibians, as well as a variety of avifauna/bird species. These are briefly described in below.

(i) Mammals

Based on the information gathered from the Woreda Natural Resources Development and Conservation Departments of the ARDO and local people, and observations made during the site visit, monkeys are the commonly observed and relatively abundant terrestrial mammals in the project corridor. These include Anubis baboon, Grivet monkey and Colobus monkey, and they mostly inhabit the forest and savannah woodland habitats. In addition, several species of mammals inhabit the project route corridor and these include Hyena, Bush pig, Warthog, Crested porcupine, Aardvark, Abyssinian Genet, Common jackal, and a number of antelopes including Bushbuck, Bush duiker, Dikdik and Waterbuck. Furthermore, Lion, Leopard and Buffalo were reported to be rarely observed or expected to be found in the project area.

As indicated by local informants, most of the wild animals are concentrated in the protected or least disturbed forest areas, and in the gorge or steep sloping parts of the Gojeb valley, which are less accessible and least disturbed by human activities. In these areas, the animals graze or browse freely as they are afforded some protection from human impacts or interferences such as hunting and habitat losses.

(ii) Aquatic fauna

The aquatic fauna commonly observed in the major rivers, namely Gibe and Gojeb, are Hippopotamus, Nile crocodile and Monitor. In addition, about nine fish species that belong to five families were recorded from Gojeb River (Omo-Gibe Master Plan Study, 1995). Of these, five fish species including Barbus (2 species), Garra, Labeo, Raiamas species belong to the family Cyprinidae. The remaining four species including Bagrus, Nemacheilus, Brycinus and Pollimyrus fish belong to Bagridae, Balitoridae, Characidae and Mormyridae Family respectively. Similarly, Gibe River contains four fish species, namely Barbus, Garra, Labeo and Oreochromis (Tilapia) fish, the former three species belong to Cyprinidae Family and the latter belong to Cichlidae Family (Omo-Gibe Master Plan Study, 1995). Only the Tilapia and Barbus fish are known to be commercially important. Currently there is, however, no significant commercial fish production in the area, but there is some subsistence fishing at local level.

(iii) Birdlife

The project area is endowed with a high diversity of habitats including forests, woodlands,

remnant or planed trees, grasslands, farmlands, villages or settlement areas, rivers and streams, and wetland/swamp areas that harbor a variety of bird species. Based on the identification made during the environmental field survey, information gathered from local informants and published literature, the birds found in the area include Ibises, Egyptian Goose, Pigeons, Doves, Storks, Eagles, Vultures, Egrets, Herons, Starlings, Ravens, Weavers, Fire-finches, Grebes, Ground-horn Bill, Hamerkop, Guinea-fowl, Francolin, etc. The list of bird species identified from the project area is presented in Appendix 3.2. As observed during the site visit, the forests and woodland habitats contain a relatively high diversity and population of birdlife.

(iv) Endemic and Threatened Species

None of the mammal species known to occur or expected to occur in the project area is endemic to Ethiopia. The conservation status of the mammals has been evaluated based on the IUCN Red List of Threatened Species (version 2011.2). Accordingly, two species, namely Lion and Hippopotamus are listed under the *vulnerable* category while other two species, namely Leopard and Striped Hyena are listed under the *Near Threatened* category of the Red List. All the remaining species are classified under the *Least Concern* category.

Of the ten fish species known to exist in Gilgel Gibe and Gojeb rivers, one species, i.e. *Nemacheilus abyssinicus*, is native to Ethiopia and Lake Turkana, and data is deficient for its conservation status. Seven fish species are listed under the *Least Concern* category, and no threats listed for two species. Of the bird species known or expected to be found in the project area, species endemic to Ethiopia and Eritrea include Wattled Ibis, Thick-billed Raven, Abyssinian Oriole and Black-winged Lovebird. According to the IUCN Red List of Threatened Species, none of the bird species is threatened as they are listed under the *Least Concern* category.

1.5 Socio-economic Environment

The settlement pattern of the population residing in the project corridor is dispersed and mainly concentrated in rural settlements that are not yet developed and lack adequate social services and other infrastructural services, such as road network. The majority of the people in the project area belong to Oromo and Konta ethnic groups. Religion wise, the Oromos are predominantly Muslims, while the Konta are Christians. The total population in the woredas traversed by the project road is estimated to be 735,056 as per the Central Statistical Agency (CSA) population and housing census of 2007 and projected for 2016. Among the three woredas crossed by the project road, Konta has the lowest population density. The density per km^2 varies from 47.5 persons in Konta woreda to 305.4 in Seka chekorsa woreda.

The livelihood for the majority of the population in the project area is mainly dependent on mixed agriculture (crop and animal husbandry). The farming system is dependent on smallholder farming which is mainly practiced through traditional methods of hoe cultivation and oxen plough. The development of business, trade and industry is at its very lowest level. In economic terms, road investment facilitates transportation system; it reduces freight and passenger charges, increases the size of vehicles using the road, and decreases vehicles operation cost and permits integration of markets and people.

Furthermore, it is also very important in promoting and enhancing the socio-economic development of social infrastructures such as health, education and others. Road construction influences the activity of the society traversing the area in terms of their settlement pattern, agricultural production, marketing system, social movements, cultural practices, etc.

1.6 Public and Stakeholders Consultations

Public and stakeholders consultations were conducted in urban centers and villages crossed by the project road as part of the feasibility study of the project. Formal consultation was made at Sheki, Chida and Meteso towns, and informal meetings were held with woreda authorities, and community members residing along the project road. The main objectives of the public and stakeholders consultations were to inform the public and key stakeholders about the proposed road upgrading project and seek relevant information, the participation and contributions that are required from the public and all the stakeholders starting from the planning to the construction stages of the project.

The key findings of the public and stakeholder consultations include the existence of critical land-sliding problem at three locations (~km 23.8-24.0, km 31.5 and km 38.50) and the need to provide appropriate solution for this; the request for realignment of the road to follow the route of old road that passes through the center of the Sheki town; bad condition of the existing road, shortage of transportation facilities and high transportation costs related to this, and appreciation of the proposed upgrading of the gravel road to asphalt road; concerns related to loss of landholdings and properties, thus, loss of livelihood. All the stakeholders accepted the envisaged road upgrading project and expressed their willingness to provide necessary support for the successful implementation of the project.

Local authorities are also appealing to the government to start the construction of the road as per the study and design as soon as possible

1.7 Potential Environmental and Social Impacts and Mitigation Measures

1.7.1 Positive Environmental and Social Impacts

Positive environmental impacts: The main positive environmental impacts of the upgrading of the Jimma - Chida road together with integration of environmental mitigation measures include alleviation of the existing land-sliding problem, minimization of the prevailing dust pollution and erosion on the road after asphalt pavement, minimization of erosion from roadside ditches and stresses on water quality, improvement of visibility for drivers and pedestrians, which in turn will reduce accident risks for both motorized and non-motorized traffic, and facilitate traffic flows, and better safety for pedestrians and non-motorized vehicles and reduce release of Carbon into atmosphere, which eventually reduce global warming.

Positive socio-economic impacts: The main positive impacts of the upgrading of the project road include creation of employment opportunities and job for the local communities including women, improved access for transport facilities and reduction of the transport problems of the local communities, contribution to poverty

reduction/alleviation in the project road corridor, transformation of traditional forms of income generating activities into micro and small scale level of production, and increase and utilization of agricultural inputs and services that will result in increased production and productivity. It will also facilitate transportation by attracting Bajajs which has been observed in other completed asphalt roads. Besides solving transportation problem, introduction of Bajajs will create job opportunity for several youths.

1.7.2 Negative Impacts

The main potential negative environmental and social impacts and their key mitigation measures include the following:

(i) Impacts on Air Quality

Implementation of the proposed road-upgrading project is expected to bring significant impacts on air quality due to emissions of particulate matters, notably dust, and exhaust gases and noise from vehicles and machines. Dust and noise pollution problems are considered to be most significant along most sections of the road as many people live and work close to the road esp. in the towns and villages.

Proposed mitigation measures include restriction of traffic speeds and spraying of water regularly on dusty roads, use of modern and well-maintained equipment, regular maintenance of machinery, plants and vehicles, siting of aggregate production plants and bitumen mixing plants at a minimum distance of 3km from sensitive receptors, application of a well-designed traffic management plan, carrying out noisy construction activities during normal working hours.

(ii) Impacts on Soils

Potential impacts on soils include increased risks of soil erosion, soil compaction and soil pollution. The potential causes of soil erosion include land clearing, earthworks/cutting in soil and earthmoving works to widen the road width, improve the alignment, construct the realignment sections, construct new culverts and side drains or replace the existing old and substandard structures, and to construct detour and access roads, campsites and other site facilities. In addition, runoff water concentrated in roadside ditches and diversion drains may cause erosion in the structures themselves and in downstream areas. Soils could also be affected due to compaction by heavy equipment and construction vehicles esp. dump trucks as well as due to contamination by hazardous substances like oils, fuel and detergents resulting from accidental spillage, leakage of equipment and vehicles, or improper disposal of used oils.

These impacts can be minimized by implementing the road works during the dry season, applying half-way construction method, construction of effective drainage structures (paved side-drains, diversion drains, check dams, sufficient turnouts), reducing the time surface remains bare following completion of works, planting of appropriate plant species on erosion-prone slopes, and preventing soil pollution by hazardous substances through careful handling and appropriate disposal of used oils through approved wastes agency.

(iii) Impacts on landscape quality

There will be certain impacts on landscape quality in relation to earthworks for increasing the road width and construction of realignment sections, exploitation of construction material sources, establishment of camps and materials processing and storage sites (stone crushing and asphalt mixing plants), and spoil disposal. In particular, disfiguring of the landscape at borrow pits and quarry sites, spoil disposal places and materials processing plant sites is expected to be significant.

Proposed mitigation include planting of appropriate grass species on cut slopes and fill slopes, avoiding indiscriminate disposal of surplus or unsuitable excavation materials by depositing it only at approved disposal sites, and use of existing material sources and materials processing sites that have been used by former road projects. Additional measures include restoration of borrow sites and areas of contractors' site facilities through back-filling, landscaping and re-establishing vegetation cover, designing and constructing appropriate slope stabilizing structures like retaining walls or gabions at the vulnerable sections, and controlling surface water infiltration to reduce seepage forces by providing adequate side drains, interceptor drains, etc.

Wherever borrow and quarry sites are deep enough to cause falling accident on people and animals, fencing the perimeter or the steep side will prevent from potential falling accident.

(iv) Impacts on slope stability

The existing road has critical land-sliding problem at three locations, including at ~km 23.80 to km 24.00, at km 31.50, at km 38.50 and at km 76.50. These spots caused major impediments to traffic movement esp. during wet seasons and there is a high risk of complete blockage of the road as there is a high probability of mass sliding that may totally damage sections of the road crossing through those vulnerable spots. In the design for the road upgrading, realignments have been considered to provide a sustainable solution for the land-sliding problem at those locations. In addition, minor slope instability problems could be expected at some spots that could be triggered due to cutting in vulnerable slopes for widening the road. Moreover, slope instability problem may encounter at locations where inappropriate disposal of excess spoil materials esp. on steep slopes is practiced.

Proposed mitigation include designing realignment to avoid the existing land-sliding problem areas indicated above, planting suitable tree species on landslide vulnerable areas. Designing and constructing appropriate slope stabilizing structures like retaining walls or gabions at the vulnerable sections, and controlling surface water infiltration to reduce seepage forces by providing adequate side drains, interceptor drains, etc.

(v) Impact of flood

Few stretches of the flat sections along the project road are prone to seasonal flooding and require high fill to raise the road above the flood level. It also requires installing pipe/box culverts to balance the flood on both sides of the road. Flat areas are located at about km 0.0-0.4 and around km 7.6-8.8. These areas are not permanent marshes, but when rain falls it retain some flood for sometimes.

Proposed mitigation measures include raising the road above flood level and installing box/pipe culverts to balance the flood. Provide appropriate drainage line and regularly clean pipes and culverts during the operation phase.

(vi) Impacts on land under various uses

The proposed road upgrading activities will cause loss of land under various uses mainly due to widening of the road width, alignment improvements and realignments to meet the requirement of the recommended design standard and to avoid stretches that have a land-sliding problem. The potentially affected land is dominantly under crop production, plantation trees and settlements.

Recommended mitigation measures include designing the road upgrading following the existing road alignment as far as it is technically feasible, opting 'half-width' construction method to reduce the impacts due to land taking for detour roads, limiting land acquisition and earthmoving activities to the imperative area necessary for the road works, avoiding disposal of excavation materials onto adjacent farmlands or on lands under other uses, and avoiding designing and construction of culverts and side-drains in such a way that they would release runoff or flood water onto lands under agricultural or other uses. Additional mitigation measures include restoration of areas affected due to temporary activities like detours and access roads to productive state and payment of reasonable compensation for loss of farmlands, grazing areas, and trees and other properties according to the pertinent government laws.

(vii) Impacts on water resources

Potential impacts on water resources include increased sediment loading and water pollution risks of the streams, rivers and wetland spots crossed by the project road. The main likely causes of increased sedimentation of water bodies include excavations for foundation of culverts, increasing the road width, and construction of realignment sections and roadside ditches and diversion drains. Other possible causes include disposal of excavation materials on riverbanks or in river-courses and mining of sand from river-bed. In addition, water quality of streams, groundwater or other water sources could be impacted due to contamination through spillage of pollutants like fuel and oil, or due to improper disposal of used oil, as well as due to uncontrolled discharge of sewage and other fluid wastes at campsites.

Recommended mitigation measures include execution of earthworks for construction of the road and drainage structures during dry season, avoidance of dumping excess excavation materials on riverbanks or in river courses, proper siting of spoil disposal sites (i.e. avoiding locating nearby streams and rivers, wetlands, drainage lines or slopes), proper handling of hazardous substances (oils, fuel, used oil, detergents etc.) to avoid water pollution, and provision of satisfactory solid and liquid wastes disposal facilities at construction camps.

(viii) Impacts on water supply systems and competition for water

The road construction works is likely to affect water supply pipelines crossing the road like in Sheki town (~km 18.0-21.0). In addition, the road works could be affect a protected spring source at km 22.6 RHS located below the road, and a hand pump at ~km 7.20

LHS. Moreover, the project may cause competition for drinking water supply due to the contractor's campsites requirements. The existing water supply sources are not be expected to meet the existing users' water demands and the road project's campsites requirements.

Potential impacts water supply systems and existing water uses shall be avoided or minimized through relocation of the affected water supply pipelines before the commencement of the road works, taking maximum care to avoid impacts on protected spring water sources and hand pumps, and developing water supply for campsites requirements and other purposes of the project.

(ix) Impacts on vegetation and flora

Implementation of the proposed road-upgrading project is expected to cause loss of several indigenous trees, numerous plantation trees and secondary vegetation due to construction of the realignment sections (with total length of 5.4km), alignment improvements and widening of the existing road section. In addition, exploitation of construction material sources and construction of access roads and detour roads are likely to cause some loss of natural vegetation and trees.

Mitigation measures recommended to minimize or mitigate loss of vegetation and important trees include designing and implementing widening/improving the road to one side only for sections of the existing road containing important indigenous trees on roadsides, adopting 'half-width' construction method for sections passing through areas containing important indigenous or exotic trees or through protected forests, limiting earthworks to the imperative area necessary for the road works, avoiding side-casting of excavation materials on down-slope where it may affect trees/ vegetation, careful site selection for borrow pits, quarries, materials processing plants site and campsites, and implementing tree program to compensate for trees/vegetation lost.

(x) Impacts on fauna

Implementation of the proposed road project will cause some disturbances to wildlife inhabiting the habitats found adjacent to the road and material sources due to increased noise pollution resulting from intensive operation of heavy-duty equipment and construction vehicles esp. dump trucks involved in haulage of construction materials. The project activities will intensify the existing noise pollution caused by the normal traffic operating on the exiting road. However, the project activities are not expected to cause serious or significant impacts on most of the wild animals inhabiting the road environment or other potentially affected areas since they are already adapted to human disturbances and noise pollution. Nonetheless, impacts on birdlife could be important as habitat disturbances/ losses and noise pollution may affect the nesting and breeding success of some bird species.

Potential impacts on wildlife and habitats will be minimized or compensated for by adopting the mitigation measures recommended for the impacts on flora. In addition, impacts on wildlife will be minimized through strict prohibition of illegal hunting by the workforce and killing of wild animals, avoiding disposal of excavation materials on down-slope, avoiding locating spoil disposal sites where these may affect wildlife habitats and

cause obstruction to wildlife movements, posting appropriate signs in the important wildlife areas and applying speed limits for sections passing through those areas, and taking precautions to avoid any fire accident and control any fire incident due to contractor's activities.

(xi) Road and traffic safety issues

During construction, there will be increased traffic volume on the project road and commensurately this may result in increased accident risks to the roadside communities, road users and domestic animals. Since the road construction works will take place during the road in operation, traffic accidents may occur due to complete or partial closure of the road and use of detours with narrow width and/or poor sight distances to drivers. In particular, the dump trucks transporting construction materials could create more safety risks for road users and villagers.

Proposed mitigation measures include developing and strictly following a well-designed work program and traffic management plan (TMP) that would consider local conditions like the normal traffic, terrain, weather and socio-economic conditions, provision of necessary information such as speed limits, direction, hazard locations, sensitive sites (e.g. schools, villages, animal crossing paths etc.) by putting appropriate signals and hazard markings, assigning traffic regulators or traffic police to control traffic flows at critical sections or periods where/when traffic safety is a serious issue, awareness training of operators of equipment and construction vehicles in traffic safety measures, establishment of speed limits and controls for construction vehicles and discipline for the drivers, and provision of awareness education for the local population in traffic safety measures.

(xii) Socio-economic impacts

The key adverse social impacts include demolishment of housing units used either for residential or business purposes, loss of farmlands and crops, relocation of public utilities (electric and telephone lines and water pipes), impacts on religious properties (mosques and churches), and pressure on local services and facilities, and impacts on settlements. The specified negative impacts could be mitigated by effecting compensation for affected housing units, social services, farmlands and crop losses based on the existing legal frameworks and regulations provided for these sorts of interventions. Further, in order to avoid pressure on the local services like health and water supply, there has to be statement in the contract document urging the Contractor to construct the specified type of social services in the camp for its project workers.

(xiii) HIV/AIDS prevalence

HIV/AIDS is one of the key adverse social impacts of the project Woredas. HIV/AIDS data obtained from Konta woreda shows a total of 101 people (29 male and 72 female) are living with HIV/AIDS in the woreda, which makes the HIV prevalence rate for males 0.05% and for female 0.12%. In Dedo woreda, there are about 40 persons living with HIV/AIDS and receive Anti-Retroviral Treatment (ART) medication. People living with HIV/AIDS in Chida town and Ameya town are 55 and 46 respectively.

The impacts could be mitigated by providing training and awareness creation on HIV/AIDS and other STDs. Involving a separate and well experienced HIV/AIDS awareness creation and prevention sub consultant from the start of the project work would prevent expansion of the disease.

1.8 Environmental and Social Management and Monitoring Plans

1.8.1 Environmental and Social Management Plan

Environmental and Social Management Plan (ESMP) provides the set of mitigation and monitoring measures recommended to be adopted to prevent, reduce or offset the main potential adverse impacts identified in this assessment. In addition, it provides the responsibilities for their implementation and time framework as well as cost estimate where required. The proposed mitigation and monitoring actions will be applied during the subsequent stages of the project, including the Detailed Engineering Design, Pre-construction/Preparation for Construction, Project Construction, Project Decommissioning, and Project Operation and Maintenance Stages. Therefore, the ESMP specifies what actions shall be taken during each stage of the road project. Details of the proposed ESMP are provided in section 8.

1.8.2 Socio-Environmental Monitoring Plan

Socio-Environmental monitoring is needed during the implementation as well as operation phases of the project to ensure the proper implementation of the EIA recommendations as well as to detect any unforeseen environmental and social issues. Socio-Environmental monitoring will help to detect the scale and extent of impacts caused by the project over time and to assess whether mitigation actions have been properly and timely implemented and are working as expected. Monitoring of environmental and social parameters will identify potential problems from the road development activities and will allow for prompt implementation of effective corrective measures.

The main issues or components to be covered in the environmental monitoring program include site selection/location of quarry and borrow material sources and their operation and hauling condition; land acquisition for the project requirements and rehabilitation measures after completion of works; site selection, establishment and operation of contractor's site facilities (like workers campsites, stone crusher & asphalt mixing plants, workshops, materials casting places); handling of soils/excavation materials exposed to erosion and rate of soil erosion and siltation; drainage and water resources like modification of drainage systems/alteration of surface or subsurface water flows, water pollution; impacts on water supply systems such as pipelines, protected springs & hand pumps, and competition for water; spoil or excess excavation materials disposal condition like location of disposal sites, impacts on land use, landscape quality, water resources etc.; management or disposal of wastes generated from campsites, workshops/garages, used oils etc.; impacts on protected forests, indigenous trees as well as plantation trees and road and traffic safety issues. Details of the recommended socio-environmental monitoring program are provided in section 8.2 and it includes the major issues/indicators/parameters to be measured/ monitored, frequency of monitoring, responsibilities for the monitoring activities, and cost estimate.

1.9 Environmental Mitigation Management and Monitoring Costs

The mitigation measures proposed in Chapter 6 and 8 comprise engineering features and socio-environmental mitigation and compensation measures. The engineering features will be considered in the engineering design and will be implemented as part of the construction items; thus, these will not require separate costs as they are considered as part of the engineering item and good engineering practices. Several of the mitigation measures specified in this EIA document shall be incorporated in the engineering design and included in the BOQ and contract documents for the Contractor. Others will be included in environmental clauses that will be part of contract documents for the Contractor.

Some socio-environmental mitigation measures will have separate cost items and these include reinstatement of quarry and borrow pits, campsites and materials processing sites through backfilling, landscaping and establishment of appropriate vegetation; bio-engineering measures (grassing of road embankments, cut slopes & other erosion prone areas) to stabilize slopes and/or prevent erosion; replanting of trees and shrubs to replace or compensate for trees and other vegetation removed or to prevent erosion, stabilize slopes and/or improve the visual quality of areas impacted by project activities; awareness creation programs on traffic safety and public health issues for the local community as well as project workforce to minimize accidents related to road and traffic safety hazards and spreading of sexually infected diseases, and environmental monitoring activities and capacity building. The socio-environmental mitigation, monitoring and capacity-building costs are estimated to be around 13.6 Million Birr. It should be note that the costs related to physical construction works are referred to be included in the engineering design cost estimates, while the costs related to resettlement and compensation for loss of private and public properties are referred to be included in RAP.

1.10 Conclusions and Recommendations

1.10.1 Environmental Aspects

The assessment of potential environmental impacts of the Jimma – Chida road was against the baseline environmental features of the project impact areas as described in Chapter 4, and was based on the proposed engineering features or road improvement activities as described in Chapter 2. The impact assessment acknowledges that the proposed road upgrading of the Jimma – Chida road and its subsequent operation will bring a number of positive as well as negative environmental impacts. The key potential positive environmental effects include alleviation or reduction of existing land-sliding problem, minimization of prevailing dust pollution and its effects on roadside communities, reduction of erosion from gravel-surfaced road and its side ditches, and stresses on water quality, reduction of accident risks for both motorized and non-motorized traffic, and facilitation of traffic flows, reduction of individual vehicle's air and noise pollution, and better safety for pedestrians and non-motorized vehicles due to provision of pedestrian walkways and parking lanes along town and village sections.

On the other hand, implementation of the proposed road improvement project is likely to bring a number of adverse environmental impacts, most of which will occur during the construction phase. Most of the significant potential impacts are related to the road

location in sensitive areas like settlements, prime agricultural areas and protected forests, land requirements for alignment improvements, realignments and construction material sources, the road works, extraction, haulage and processing of construction materials, opening and use of access roads, establishment of contractor's site facilities, and disposal of spoil materials.

The potential environmental impacts that will require due attention and mitigation measures include air pollution (esp. dust pollution), land-sliding, loss of agricultural lands, increased soil erosion and sedimentation of streams and rivers, impacts on roadside indigenous trees as well as plantation trees, and road and traffic safety issues/increased accident risks. Other important environmental impacts include disfiguring of landscape quality esp. at quarries and borrow pits, soil and water pollution risks, impacts on water supply systems and competition for water, and impacts on fauna. Most of the impacts are issues involved in normal road construction works, and thus, they are not unexpected ones. Nevertheless, they need due attention and corresponding mitigation and monitoring measures in order to minimize the impacts to acceptable levels.

Most of the potential impacts will occur during the construction period and thus, they are short-term in nature. Most impacts are expected to be medium in magnitude, but some are likely to be high, and moderate to high in significance. Nonetheless, they can be mitigated to acceptable levels with good engineering design and proper construction methods, as well as through application of appropriate environmental mitigation measures. Therefore, it can be concluded that there are no serious environmental issues that will prevent the proposed Jimma – Chida road upgrading project from proceeding to the implementation stage as long as the recommended mitigation and monitoring measures are properly considered and timely implemented.

To ensure implementation, it is strictly recommended that the proposed mitigation measures shall be included in the detailed engineering design or in the tender documentation, either as contract and/or special technical specification clauses as appropriate. In addition, sufficient budget shall be allocated for the mitigation, management and monitoring actions not included in the obligations of the Contractor and the Construction Supervision Consultant, and necessary institutional/specialist arrangement is made for their implementation before the commencement of the construction works. Further, a well-planned monitoring programme should be instituted in order to follow up the proper implementation of the EIA recommendations and their effectiveness, as well as incidence of any unforeseen issues.

1.10.2 Social Aspects

The upgrading of the project road will create better and improved market opportunities for the sale of agricultural produce and consumer goods. When upgraded it will create better market access for the local farmers, and their produces will fetch higher market prices in comparison to the current low prices. Further, due to the introduction and availability of improved agricultural inputs, production per hectare would also increase. The local economy would also show growth with the development of small business, investment projects; growth of urban centers, improved and efficient communication system, exposure to the advancement of technology and science through improved means of

production. In general, employment opportunities will be created in the project area with the growth of the economy and improvement in the social services.

The population residing in the project area and in particular those along the project road would like the upgrading of the road to start immediately. In all the public and stakeholders' consultations held with different groups of the local community, and government officials as well as professional experts working in the project, it was clear that the local population, PAPs and other stakeholders have expressed positively about the upgrading. The proposed project road is in harmony with all the national development policies and strategies of Ethiopia, and fulfils all requirements set forth both by the Federal and Regional Governments.

The upgrading of the project road could be successfully implemented if it properly addresses both the positive and negative social impacts that would be created during the implementation of the project. Most social benefits are difficult to assign monetary values but are clearly part of project assets and welcomed by local people as improvements in their everyday life (e.g. less dust, better roads also for pedestrian…). Some of these impacts may be temporarily undesirable.

On the down side, the upgrading of the project road would create some negative impacts on the local population. The negative impacts are mainly related to the spread of communicable diseases, the spread of HIV/AIDS, traffic accidents and injuries. The negative impacts could be managed if proper mitigation measures are carried out, as suggested in this report. Road construction is inherently a relatively dangerous industry, and accidents invariably may also occur, Hence, appropriate occupational health and safety measured need to be adopted in the working environment. Similarly, the presence of construction workforces in the direct influence are of the project road, even if it is relatively small in number can impose additional strains on the existing health and other social services by reducing its effectiveness of services given for the local population.

ERA in the preparation of its tender document for the upgrading of the road needs to ensure that clauses both for the social issues are included as suggested in this study and from other relevant documents.

The monitoring of the project implementation has to be done on a regular basis by a Sociologist that is assigned by the supervision consultant. The Sociologist assigned by the supervision consultant has to copy its monitoring report to ESMT.

Generally, there are no socio economic conditions that will affect the project road from being constructed. The negative impacts identified in this study could be mitigated and the mitigation measures are strictly adhered by all concerned bodies.

2. INTRODUCTION

2.1 Project Background

The Federal Democratic Republic of Ethiopia (FDRE), represented by Ethiopian Roads Authority (ERA) was allocated sufficient budget to finance payments for the Consultancy Services for Feasibility Study and Environmental Impact Assessment, Preparation of Resettlement Action Plan, Detailed Engineering Design and Tender Document Preparation for Jimma – Chida Road Project. Hence, ERA was required the services of a Consultant with relevant experience. Therefore, ERA was entered into contract agreement with Associated Engineering Consultants (AEC) to perform the aforementioned consultancy services. The consultancy service agreement was signed on June 28, 2011while the date of commencement of the service was on September 21, 2011.

EIA study was carried out as part of the contract agreement. It was undertaken in accordance with the requirements of the EIA Guidelines of Ethiopia prepared by the Federal EPA and the ERA's Environmental and Social Management Manual (2008) prepared for the road sector. The EIA Report presented the findings of the EIA study essentially following the requirements stated in the TOR of the consultancy services as well as the requirements of the EIA Guidelines stated above.

This revised EIA report is required to update the 2012 EIA which was prepared as part of the feasibility study by the contracted consultant (AEC). The purpose of revising the previous EIA study report is to incorporate changes in the socio-environment of the project area during the last four years. It is realized that most of the physical and natural environment have remained the same except little change in the land use and population. Therefore, minor changes are made on these dynamic socio-environmental aspects and socio-environmental mitigation costs.

2.2 Objectives of the revised EIA Study

The main objective of this revised EIA study is to ensure that the proposed Jimma – Chida road project is environmentally and socially acceptable and aligned to the current socio-environmental situation of the project area. It is aimed at ensuring that the potential environmental and social impacts of the planned road project are properly identified and adequately considered during the design, implementation and operation phases so that it does not cause serious adverse effects.

The revised EIA also devoted to incorporate changes made in the sphere of project's socio-environment during the last four years. It is aimed to assess how to strengthen and reinforce the positive impacts created due to the upgrading of the project road and also on how to mitigate the negative or adverse social impacts.

The scope of the Environmental and Social Impact Assessment study include:

- Review of the relevant policies and development strategies, legal and institutional frameworks,
- Identification and description of the existing environmental and socio-economic situation of the project influence area,

- Carrying out public and stakeholder consultations to gain relevant information about the existing socio-environment of the road environment, and the potential benefits as well as adverse effects of the road-upgrading project,
- Determination of the magnitude and significance of direct and indirect environmental and socio-economic impacts, both positive and negative, likely to result due to the construction and operation of the road project,
- Recommendation of appropriate and cost-effective mitigation measures in case of negative socio-environmental impacts and reinforcement measures in case of positive impacts,
- Development of the appropriate socio-environmental management and monitoring framework, which will ensure reinforcement of the positive impacts and mitigation of adverse impacts.

2.3 Approach and Methodology of the EIA Study

This section describes briefly the approach and methodology adopted to obtain the primary and secondary data and information required for description of the baseline environmental and socio-economic conditions, prediction and evaluation of potential environmental and social impacts and development of mitigation and management plans.

2.3.1 Review of Pertinent Policies, Development Strategies and Legislations

It is essential to understand and follow pertinent national policies, development strategies, legislations and EIA procedures in conducting environmental and social impacts of development projects. In view of this, Ethiopia's environmental policy, development strategies, relevant legislations and EIA guidelines were collected and reviewed. Then, the requirements of the policy and legal framework were followed in conducting this EIA study and producing this Environmental Statement. A concise description of the policies, laws and guidelines reviewed is presented in Chapter 3 and their list is provided in the list of references.

2.3.2 Review of Previous Studies and Literature

Relevant former studies in the project area and published literature were collected from different sources including government organizations, NGOs, and Consultant's Archive. Tthese were reviewed and relevant data and information presented in the documentation was extracted and used in the baseline description. The full list of the documents consulted is given in the list of references.

2.3.3 Field Surveys and Data Collection

Following the review of the policy and legal framework and initial review of existing previous studies, the Environmental and Social Experts conducted field visits to the project area to carry out the following major tasks:

- To collect relevant secondary data from local government offices,

- To conduct consultations with the key stakeholders including the project affected community, and
- To survey the project road environment, collect primary baseline data and identify environmental and social issues likely to arise with implementation of the proposed road project.

Important secondary data were collected from administration and sectorial government offices of Woredas connected by the project road. These offices include Woreda Administration, Agriculture and Rural Development, Land and Environmental Protection, Water Resources Development, Finance and Economic Development, Health and Education Offices.

In parallel with the secondary data collection, the Experts conducted intensive field surveys along the entire length of the project road. Through this activity, the Experts collected detailed baseline data on environmental and social characteristics of the direct impact zone of the project, and identified possible environmental and social impacts of the planned road project. In addition, interviews and discussions were made with officials and key experts as well as members of the local community met along the road. Moreover, formal meetings or public consultations were made at key locations along the project road.

In addition to the intensive field work conducted during the feasibility study in 2012, quick field observation was made along the road corridor in May 2016 to identify any change occurred since the last study.

2.3.4 Public and Stakeholders Consultations

During the environmental field visit, the key stakeholders at Woreda and community levels were contacted in order to inform them about the envisaged road-upgrading project, consult them and obtain relevant information on existing conditions or constraints of the study area. In addition, their opinions, information and concerns about potential environmental and social issues and their mitigation measures were gathered through informal discussions and interviews. The information and ideas obtained during the consultations are considered in the impact analysis and the key findings are briefly discussed in Chapter 5, and the list of consulted persons and organizations are given in **Appendix 1**.

In addition, formal meetings were held at key locations along the project road. These include Sheki and Chida towns, and major villages that directly connected by the project road. The key stakeholders participated in the consultation meetings include woreda and Kebele administrators, heads or representatives of sector offices, and representatives of the local community.

Information related to existing environmental and socio-economic features of the project influence area, as well as the attitudes of the consulted parties towards the envisaged project were obtained during the consultations. These information and opinions have been considered in the impact analysis and development of mitigation, management and monitoring plans. The details of the consultation process and the key findings are described in Chapter 5, and the minutes of the meetings are presented in Appendix 4.

2.3.5 Impact Analysis

Subsequent to the analysis of the baseline data and the stakeholders' opinions, potential positive as well as negative environmental and social impacts of the construction and operation of the planned road-upgrading project have been identified and their significance analyzed. The identified impacts have been evaluated being classified as impacts on physical, biological, and socio-economic environments. Corresponding to the significance of impacts, appropriate mitigation measures have been recommended to prevent or minimize the adverse impacts. The details of the impact analysis are presented in Chapter 6.

3. DESCRIPTION OF THE PROJECT

Administrative wise, the Jimma – Chida road is located in Seka Chekorsa and Dedo Woredas of the Jimma Zone of the Oromia National Regional State (NRS), and Konta Special Woreda of the Southern Nations and Nationalities and Peoples NRS in Southwestern part of Ethiopia. It starts at the junction connecting the Jimma – Chida and the Jimma – Mizan Roads at the outskirt of Jimma town which is about 346 km Southwest of Addis Ababa, and it terminates in Chida town at approx. 100 m before reaching the Chida – Sodo Junction which is approx. 82 km from Jimma town in the southern direction. The total length of the project road is 79.4 km.

The Jimma – Chida road connects three important towns, namely Jimma, Sheki and Chida, the former two are zonal and woreda administrative centers in Jimma zone. In addition, the project road passes through a number of villages and town. Important towns and villages traversed by the project road are listed in Table 3-1 below.

Table 3-1: Important Towns and Villages along the Road

S. No	Start Station	End Station	Town/ Village	Notes
1	0+000	1+300	Jimma town, outskirts	Zonal capital (of Jimma Zone)
2	4+600	5+100	Gibe village	Kebele center in Dedo Woreda
3	6+000	6+800	Kolobo village	Kebele center in Dedo Woreda
4	8+800	9+100	Offole	Kebele center in Dedo Woreda
5	17+600	21+700	Sheki Town	Woreda capital (of Dedo Woreda)
6	36+700	38+200	Meteso village	Major village & Kebele center in Dedo Woreda
7	46+100	47+600	Dilbe village	Major village & Kebele Center in Dedo Woreda
8	58+500	59+300	Kirara village	Kebele center in Konta Woreda
9	75+900	76+400	Biteti Beduda	Kebele center in Konta Woreda
10	77+500	77+900	Biteti Gola	Kebele center in Konta Woreda
11	80+100	80+900	Chida town, outskirts	2nd town in the Konta Woreda, outskirts

The existing road is gravel-surfaced road with the existing pavement is badly deteriorated along most sections. Because of topographic condition and intensity of rainfall, a significant portion of the existing road is vulnerable to erosion. However, most sections of the ditches vulnerable to erosion were provided with either concrete lined or stone pitched

side drains that in most places are still in good condition and well-functioning. Nevertheless, in many places they are heavily silted up and/or infringed by vegetation growth, while in some locations they are partly damaged. In addition, there are many pipe culverts that are heavily silted up and/or infringed by dense growth of grasses and herbaceous and shrubbery plants. In summary, the road was provided with very good engineering features including roadside drainage structures designed for runoff control and erosion protection. However, lack of follow up and proper maintenance works is a major deficiency for the road project.

The proposed road-upgrading project basically follows the alignment of the existing road. However, it will involve realignments at three locations that is at approximately 23.3-24.4, km 31.0-31.9 and km 37.8-38.9 (based on existing chainage. Each realigned section has length of 1.1km, 1.5km and 2.8km consecutively, having a total length of 5.4km. These realignments are proposed to avoid existing land-sliding spots. Accordingly, 75.6 km (93%) traverses along the existing road and the remaining 5.4 km follows a new route.

The terrain traversed by the project road is dominantly mountainous comprising about 64% while the remaining section consists of rolling section with short occasional flat portions. The project road corridor is mostly densely populated and intensively farmed with some sections traversing forestlands and woodland areas. In particular, the corridor of km 48-52 is covered by a protected forestland while the corridor from km 59-70, which is the Gojeb river valley is covered by savannah woodland vegetation.

Within Sheki town, in addition to the main project road, a second road with 7m carriageway and total length of 1.7km shall be constructed. This road branches-off from the main road at km 17.9 and later re-joins back at km 19.0. The main purpose of the road is to provide access to the main market area in Sheki town.

N

Figure 3-1: Location of the Project within the Country

4. ENVIRONNEMENTAL POLICY AND LEGAL FRAMEWORK

The policies, legislations and guidelines which govern the way in which environmental and social assessments are conducted in Ethiopia, and the framework in which the environmental and social management of the proposed road works would be undertaken have been identified and reviewed during the EIA process. These are briefly described in the following sections.

4.1 The Constitution of FDRE

The Constitution of Ethiopia, adopted in August 1995 through Proclamation No. 1/1995 , contains a number of articles, which are relevant to environmental matters in connection with development projects, and forms the fundamental basis for the development of specific environmental legislative instruments.

In the section, which deals with democratic rights, Article 43 gives the right to people to improved living standards and to sustainable development. Article 92 of Chapter 10 (which sets out national policy principles and objectives), includes the following significant environmental objectives:

- Government shall endeavor to ensure that all Ethiopians live in a clean and healthy environment as stated in Article 44,
- Development projects shall not damage or destroy the environment,
- People have the right to full consultation and the expression of views in the planning and implementation of environmental policies and projects that affect them directly, and
- Government and citizens shall have the duty to protect the environment.

4.2 Relevant National Policies and Strategies

4.2.1 Environmental Policy of Ethiopia

The Environmental Policy of Ethiopia (EPE) of the Federal Democratic Republic of Ethiopia (FDRE) was approved by the Council of Ministers in April 1997. It is based on the Conservation Strategy of Ethiopia (CSE), which was developed through a consultative process over the period 1989-1995. The policy has the broad aim of rectifying previous policy failures and deficiencies, which in the past, have led to serious environmental degradation. It is fully integrated and compatible with the overall long-term economic development strategy of the country, known as Agricultural Development-Led Industrialization (ADLI), and other key national policies.

The EPE's overall policy goal may be summarized in terms of the improvement and enhancement of the health and quality of life of all Ethiopians, and the promotion of sustainable social and economic development through the adoption of sound environmental management principles. Specific policy objectives and key guiding principles are set out clearly in the EPE, and expand on various aspects of the overall

goal. The policy contains sectorial and cross-sectorial policies and provisions required for the appropriate implementation of the policy itself.

Environmental Impact Assessment (EIA) policies are included in the cross-sectorial environmental policies. The EIA policies emphasis the early recognition of environmental issues in project planning, public participation, mitigation and environmental management, and capacity building at all levels of administration.

The policy also establishes the authority of the Environmental Protection Agency (EPA) to harmonize Sectorial Development Plans and to implement an environmental management program for the country. It also imparts political and popular support to the sustainable use of natural, human-made and cultural resources at the federal, regional, zonal, Woreda and community levels.

4.2.2 Conservation Strategy of Ethiopia

Since the early 1990s, the Federal Government of Ethiopia has undertaken a number of initiatives to develop regional, national and sectorial strategies for environmental conservation and protection. Paramount amongst these was Conservation Strategy of Ethiopia (CSE), approved by the Council of Ministers, which provided a strategic framework for integrating environmental planning into new and existing policies, programs and projects. The CSE is approved by the Federal Government, and it is an important policy document. The CSE itself provides a comprehensive and rational approach to environmental management in a very broad sense, covering national and regional strategies, sectorial and cross-sectorial policies, action plans and programs, as well as providing the basis for development of appropriate institutional and legal frameworks for implementation.

The plan comprehensively presented the exiting situation within the country and gave priority actions plan on the short and medium term. In particular, it recognizes the importance of incorporating environmental factors into development activities from the outset, so that planners may take into account environmental protection as an essential component of economic, social and cultural development.

4.2.3 Ethiopia's Climate-Resilient Green economy strategy

Ethiopia is experiencing the effects of climate change. Besides the direct effects such as an increase in average temperature or a change in rainfall patterns, climate change also presents the necessity and opportunity to switch to a new, sustainable development model. The Government of the Federal Democratic Republic of Ethiopia has therefore issued the Climate-Resilient Green Economy strategy in 2011 to protect the country from the adverse effects of climate change and to build a green economy that will help to realize its ambition of reaching middle income status before 2025.

The Climate-Resilient Green Economy (CRGE) initiative follows a sectorial approach and has identified and prioritized several initiatives, which could help the country achieve its development goals while limiting today's 150 Mt CO2e emissions to around 250 Mt CO2e in 2030, which is by far less than the estimated emission under a conventional development path. The green economy plan is based on four pillars:

v. Improving crop and livestock production practices for higher food security and farmer income while reducing emissions,

vi. Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks,

vii. Expanding electricity generation from renewable sources of energy for domestic and regional markets, and

viii. Leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings.

As part of the strategy, the government has selected four initiatives for fast-track implementation: exploiting the vast hydropower potential; large-scale promotion of advanced rural cooking technologies; efficiency improvements to the livestock value chain; and Reducing Emissions from Deforestation and Forest Degradation (REDD). These initiatives have the best chances of promoting growth immediately, capturing large abatement potentials, and attracting climate finance for their implementation.

4.2.4 Sectorial Policies

The Government of Ethiopia has issued several sectorial and cross-sectorial policies that considers environmental issues for sustainable development. Among these, the ones which are most relevant are described below.

i) Water Resource Policy

The Ministry of Water Resources formulated the Federal Water Resource Policy in 1998 for comprehensive and integrated water resource management. The overall goal of the water resources policy is to enhance and promote all national efforts towards the efficient and optimum utilisation of the available water resources for socio-economic development on sustainable bases. The document includes policies to establish and institutionalise environment conservation and protection requirements as integral parts of water resources planning and project development.

ii) Wildlife Policy

The Wildlife Policy was developed in 2006 by the Ministry of Agriculture and Rural Development. The prime objective of the policy is to create conducive environment for the preservation, development and sustainable utilisation of Ethiopia's wildlife resources for social and economic development and for the integrity of the biosphere/ biodiversity. It covers a wide range of policies and strategies relating, amongst others, to wildlife conservation and protected areas with four categories from the highest protection ranking *'National Park'*, followed by *'Game Reserve'* and *'Sanctuary'* to *'Controlled Hunting Area'*.

iii) National Biodiversity Conservation and Research Policy

The National Biodiversity Conservation and Research Policy, adopted in 1998, provides policy directives with regard to conservation, development and sustainable utilization of the genetic resources and essential ecosystems of the country as well as the need to build national capacity to collect, evaluate, conserve and utilize the country's biodiversity. The need to regulate access to genetic resources through various measures, including legislation and building appropriate institutional structures and mechanisms is also emphasized. Moreover, strengthening capacity for information collection and documentation, encouraging networking and generally integration of biodiversity conservation, research and development elements in education and general awareness programs are considered important.

iv) National Population Policy

This Policy was issued in April 1993 and aims at closing the gap between high population growth and low economic productivity through a planned reduction in population growth combined with an increase in economic returns. With specific reference to natural resources, the main objectives of National Population Policy are:

- making population and economic growth compatible and the over-exploitation of natural resources unnecessary;
- ensuring spatially balanced population distribution patterns, with a view to maintaining environmental security and extending the scope of development activities;
- improving productivity of agriculture and introducing off-farm/ non-agricultural activities for the purpose of employment diversification; and
- Maintaining and improving the accommodating capacity of the environment by taking appropriate environmental protection and conservation measures.

v) Ethiopia's Health Policy

Ethiopia's health policy was issued in 1993, with the aim of giving special attention to women and children, to neglected regions and segments of the population, and to victims of man-made disasters. The priority areas of the policy are in the field of Information Education and Communication (IEC) of health to create awareness and behavioral change of the society towards health issues, emphasis on the control of communicable disease, epidemics, and on diseases that are related to malnutrition and poor living condition, promotion of occupational health and safety, the development of environmental health, rehabilitation of health infrastructures, appropriate health service management system, attention to traditional medicines, carrying out applied health research, provision of essential medicines, and expansion of frontline and middle level health professionals.

vi) National HIV/AIDS Policy and ERA's HIV/AIDS Policy at Work Places

Ethiopia is one of the countries in the world that is facing HIV/AIDS pandemics. Having understood the magnitude of the HIV/AIDS pandemic and its paramount impacts on the

socio-economic development of the country, the FDRE issued a Policy on HIV/AIDS in 1998, which calls for an integrated effort of multi-sectorial response to control the epidemic. The National HIV/AIDS Policy urges communities at large, including government ministries, local governments and the civil society to assume responsibility for carrying out HIV/AIDS awareness and prevention campaigns. The general objective of the policy is to provide an enabling environment for the prevention and control of HIV/AIDS in the country. In order to address the problem and coordinate the prevention and control activities at national level, in 2000 National AIDS Council was established under the Chairmanship of the country's President, and in 2002 HIV/AIDS Prevention and Control Office was established.

The transport sector, to which ERA belongs, is among the most susceptible sectors for the spread of HIV/AIDS. It was in recognisance of this that ERA has issued Sectorial Policy for HIV/AIDS in the Work places of ERA in June 2004. The policy acknowledges that HIV/AIDS is a reality in the work places, which may have detrimental effects on its work force. The policy is prepared with the objectives of developing and implementing an effective workplace programme. Some of the policy objectives of ERA´s HIV/AIDS policy are to create awareness among its employees and promote effective ways to managing HIV/AIDS and to create supportive environment for those affected. The principles of the policy are to ensure that employees living with HIV/AIDS have the same right and obligations; to avoid discriminations and stigmatization of employees with HIV/AIDS to receive equal treatment; seek to minimize the social and development consequences, provide support counselling and educational services to infected and affected employees; to establish and maintain an employee assistance programme and ensure sustainable resource for the prevention and control.

vii) National Policy on Women

This Policy was issued in March 1993 emphasizing that all economic and social programs and activities should ensure equal access of men and women to the country's resources and in the decision making process, so that they can benefit equally from all activities carried out by the Federal and Regional Institutions. Among the main policy objectives is that laws, regulations, systems, policies and development plans that are issued by the government should ensure the equality of men and women, and that special emphasis should be given to the participation of rural women.

4.2.5 ERA's Resettlement/Rehabilitation Policy Framework

ERA's resettlement/rehabilitation policy framework (RPF), issued in February 2002 and revised in December 2006, contains various elements that ERA should follow regarding compensation procedures. The RPF also clarifies the principles of reinforcement measures for the positive social impacts and mitigation measures for addressing negative social impacts induced by road projects. The policy framework stresses the need to consult and compensate project-affected persons (PAPs) in relation to resettlement/relocation and for loss of assets and properties that are affected due to construction of road projects.

Regarding compensation procedures and establishing compensation rates, ERA establishes compensation committees at project area level by enlisting representatives

from government offices and representatives of PAPs. The compensation committees have the function of conducting the registration of affected properties and the number of PAPs and determining the compensation rates.

If a dispute arises regarding the amount of compensation to be paid to the project affected persons, recourse is available to the courts. However, aggrieved PAPs will also have a chance to make their complaints to the Right of Way (ROW) agent, the consultant and finally to the compensation committee.

4.3 Safeguard Policies

The African Development Bank has environmental, social, and legal Safeguard Policies, of which the ones that are likely triggered by the proposed Jimma – Chida Road-upgrading Project are described in brief below.

4.3.1 Environmental Assessment (EA)

Environmental Assessment is used to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. The purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.

As per the usual adopted norm, a proposed project is classified into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. The four categories are:

Category A: If a proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The *Category A* designation may be equated to the *Schedule 1* designation in Ethiopian EIA guideline document (EPA, 2000).

The planned Jimma – Chida road upgrading project would fall under *Category A* because it is expected to bring a number of significant negative environmental and social impacts. Hence, it has been subjected to an EIA study in order to identify potential impacts and propose mitigation measures in order to avoid or reduce the potentially significant adverse impacts to acceptable levels. In addition, an Environmental and Social Management Plan (ESMP) that encompasses the mitigation, monitoring and institutional measures to be implemented during the project construction and operation phases has been prepared and included in Chapter 8 of this EIA Report. It is expected that the ESMP would be part of the project implementation plan (PIP).

Category B: A proposed project is classified as Category B if its potential adverse impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - are less adverse than those of Category A

projects. These impacts are site-specific; few if any of them are irreversible; and in most cases, mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project is narrower than that of Category A EA. Like Category A EA, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

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 project.

Category FI: A proposed project is classified as Category F if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

4.3.2 Natural Habitats

The conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species.

This policy may be triggered by the proposed road-upgrading project because the project road traverses a protected forestland at about km 48 to km 52. The forestland comprises dominantly natural forest that contains many indigenous trees including national conservation priority species. The road project is proposed to follow exactly the alignment of the existing road in order to avoid any adverse impacts on the protected forest.

4.3.3 Involuntary Resettlement

The objective of this aspect is to either avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs, assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them, encourage community participation in planning and implementing resettlement, and provide assistance to affected people regardless of the legality of land tenure.

This policy may be triggered by the Jimma – Chida Road Project since its implementation is likely to displace several families residing along the road, mainly along the sections passing through towns and major villages including Sheki town and Meteso, Dilbe and Kirara villages. To address this issue, the accurate number of families that will be affected by the road project need to be identified after completion of the detailed engineering

design and a resettlement action plan (RAP) is prepared and implemented in order to rehabilitate the affected families.

4.4 Environmental Framework Legislations

This section describes briefly the legislations that are aimed at advancing environmental protection and sustainable use of natural as well as man-made resources.

4.4.1 Proclamation on Establishment of Environmental Protection Organs

This Proclamation (No. 295/2002) came into effect in 2002 and its objective was to assign responsibilities to separate organizations for environmental development and management activities on one hand, and environmental protection, regulations and monitoring on the other, in order to ensure sustainable use of environmental resources, thereby avoiding possible conflicts of interest and duplication of effort. It is also intended to establish a system that fosters coordinated but differentiated responsibilities among environmental protection agencies at federal and regional levels.

The Proclamation re-established the EPA as an autonomous public institution of the FDRE. It also empowers every Sector Ministry or Agency to establish or designate an Environmental Unit (Sectorial Environmental Unit) that shall be responsible for coordination and follow-up so that the activities of the ministry or competent agency are in harmony with this Proclamation and with other environmental protection requirements. Furthermore, the Proclamation stated that each regional state should establish an independent regional environmental agency or designates an existing agency that shall be responsible for environmental monitoring, protection and regulation in their respective regional states.

4.4.2 Proclamation on Environmental Impact Assessment

This Proclamation (Proc. No. 299/2002) was issued in December 2002 with the aim to make an EIA mandatory for specified categories of activities undertaken either by the public or private sectors and to ensure EIA as a legal tool for environmental planning, management and monitoring.

The Proclamation elaborates on considerations with respect to the assessment of positive and negative impacts and states that the impact of a project shall be assessed on the basis of the size, location, nature, cumulative effect with other concurrent impacts or phenomena, trans-regional context, duration, reversibility or irreversibility or other related effects of a project. Categories of projects that will require full EIA, not full EIA or no EIA are provided. To effect the requirements of this Proclamation, the EPA has issued a Procedural and Technical EIA Guidelines, which provide details of the EIA process and its requirements.

4.4.3 Proclamation on Environmental Pollution Control

This Proclamation, Proc. No. 300/2002, is mainly based on the right of each citizen to have a healthy environment, as well as on the obligation to protect the environment of the Country and its primary objective is to provide the basis from which the relevant ambient

environmental standards applicable to Ethiopia can be developed, and to make the violation of these standards a punishable act. The Proclamation states that the "polluter pays" principle will be applied to all persons. Under this proclamation, the EPA is given the mandate for the creation of the function of Environmental Inspectors. These inspectors (to be assigned by EPA or regional environmental agencies) are given the authority to ensure implementation and enforcement of environmental standards and related requirements.

4.4.4 Proclamation on Development, Conservation and Utilization of Wildlife

This Proclamation (No. 541/2007) came into effect in August 2007 and its major objectives are to conserve, manage, develop and properly utilize the wildlife resources of Ethiopia; to create conditions necessary for discharging government obligations assumed under treaties regarding the conservation, development and utilization of wildlife; and to promote wildlife-based tourism and to encourage private investment. Under its Part two, the Proclamation provides the categories of Wildlife Conservation Areas to be designated and administered by the Federal Government, Regional States, Private Investors, and Local Communities.

Part three of the Proclamation contains provisions related to economic activities that may be undertaken within a wildlife conservation area, wildlife resource based tourism, and trading in wildlife and their products. Finally, Part four of the Proclamation comprises Miscellaneous Provisions that include Powers and Duties of the MoARD, Regional States and Wildlife Anti-Poaching Officers, Penalty, Repeal and Savings, and Inapplicable Laws.

4.4.5 Proclamation on Forest Development, Conservation and Utilization

Proclamation No. 542/2007, issued in September 2007, provides for the development, conservation and sustainable utilization of forests in satisfying the needs of the society for forest products and in the enhancement of national economy in general. It provides the basis for sustainable utilization of the country's forest resources. The Proclamation categories types of forest ownership as private forest and state forest. The Proclamation then goes on to give some specific direction for the development and utilization of private and state forests. Part two of the Proclamation contains provisions for the Promotion of the Utilization of Private Forest, while Part three gives provisions for Conservation, Development and Administration of State Forest. Lastly, Part four comprises Miscellaneous Provisions that, among others, include prevention of forest fire, production and movement of forest products, prohibitions, forest guards and inspectors of forest products movement, and powers and duties of the MoARD and Regional States.

4.4.6 Proclamation on Expropriation of Land Holdings and Payment of Compensation

This Proclamation, Proc. No. 455/2005, issued in July 2005, deals with appropriation of land for development works carried out by the government and determination of compensation for a person whose landholding has been expropriated. It includes provisions on power to expropriate landholdings, notification of expropriation order, responsibility for the implementing agency, and procedures for removal of utility lines. According to the Proclamation, the power to expropriate landholdings mainly rests on Woreda or urban administration authorities. Article 3 (1) of the Proclamation states that a

Woreda or an urban administration shall, upon payment in advance of compensation in accordance with this Proclamation, have the power to expropriate rural or urban landholdings for public purpose where it believes that it should be used for a better development project to be carried out by public entities, private investors, cooperative societies or other organs, or where such expropriation has been decided by the appropriate higher regional or federal government organ for the same purpose.

In addition, the Proclamation deals with determination of compensation having articles on the basis and amount of compensation, displacement compensation, valuation of property, property valuation committees, complaints and appeals in relation to compensation. As per this Proclamation, a land holder whose holding has been expropriated shall be entitled to payment for compensation for his property situated on the land for permanent improvements he made to such land, and the amount compensation for property situated on the expropriated land shall be determined on the basis of replacement cost of the property. For houses in urban areas, the amount of compensation should not be less than the current market value of construction. In addition to the amount of compensation for the property expropriated, the Proclamation also gives a provision for cost of removal, transportation and erection.

4.4.7 Proclamation on Rural Land Administration and Land Use

This Proclamation, Proc. No. 456/2005, came into effect in July 2005, and its objective was to conserve and develop natural resources in rural areas by promoting sustainable land use practices. In order to encourage farmers and pastoralists to implement measures to guard against soil erosion, the Proclamation introduces a Rural Land Holding Certificate, which provides a level of security of tenure. The MoARD is charged with executing the Proclamation by providing support and coordinating the activities of the regional authorities. Regional governments have an obligation to establish a competent organization to implement the rural land administration and land use law.

According the Proclamation where land, which has already been registered, is to be acquired for public works, compensation commensurate with the improvements made to the land shall be paid to the land use holder or substitute land shall be offered. The Proclamation imposes restrictions on the use of various categories of land, for example wetland areas, steep slopes, land dissected by gullies, etc.

4.4.8 Proclamation on Research and Conservation of Cultural Heritage

Proclamation No. 209/2000 provides legal framework for Research and Conservation of Cultural Heritage. The Proclamation establishes the Authority for Research and Conservation of Cultural Heritage (ARCCH) as a government institution with a juridical personality. In addition, it has provisions for management, exploration, discovery and study of Cultural Heritage and miscellaneous provisions.

As defined in the Proclamation, the objectives of the Authority (ARCCH) are to carry out a scientific registration and supervision of Cultural Heritage; protect Cultural Heritage against man-made and natural disasters; enable the benefits of Cultural Heritage assist in the economic and social development of the country; and discover and study Cultural Heritage.

Article 41 of the Proclamation is on Fortuitous Discovery of Cultural Heritage and Sub-Article (1) states that, any person who discovers any Cultural Heritage in the course of an excavation connected to mining explorations, building works, road construction or other similar activities or in the course of any other fortuitous event, shall forthwith report same to the Authority, and shall protect and keep same intact, until the Authority (ARCCH) takes delivery thereof. Connected to this, Sub-Article (2) states that, the Authority shall, upon receipt of a report submitted pursuant to Sub-Article (1) hereof, take all appropriate measures to examine, take delivery of, and register the Cultural Heritage so discovered.

4.4.9 Proclamation on Ethiopian Water Resources Management

Proclamation No. 197/2000, issued in March 2000, provides legal requirements for Ethiopian water resources management, protection and utilization. The aim of the Proclamation was to ensure that water resources of the country are protected and utilized for the highest social and economic benefits, to follow up and supervise that they are duly conserved, ensure that harmful effects of water use prevented, and that the management of water resources is carried out properly.

4.4.10 Proclamation on Public Health

The Public Health Proclamation (No. 200/2000) entered into force as of March 9, 2000. Objectives of the Proclamation include enhancing popular participation in implementing the country's health sector policy, promoting attitudinal changes through primary health care approach and promoting healthy environment for the future generation.

4.4.11 Proclamation on Establishment of Oromia Land and Environmental Protection Bureau

Proclamation No. 147/2009 of the Oromia NRS provides for the establishment of Oromia Bureau of Land and Environmental Protection (OBoLEP), which came into force as the 5th of Mach 2009. The main objective of the Proclamation was to establish the OBoLEP that shall administer and regulate the urban and rural land and prepare land use planning of the region in an organized manner under one executive, and regulate implementation of any development with the knowledge of land use planning and environmental protection. The Proclamation provides details of the powers and duties of the authority.

4.4.12 Proclamation on Oromia Rural Land Administration and Use

In line with the powers given to regional governments, the Oromia NRS issued this Proclamation (Procl. No. 55/2002). The main objectives of the Proclamation were to establish systems that promote a sustainable use of rural land and to create a conducive environment for rural land administration. Among others, the Proclamation defines the use right, security and obligation of the land users in accordance with the land use and administration policy, and institutional arrangement for implementation of the Proclamation.

4.4.13 Regulations on Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes

Regulations No. 135/2007 came into force in July 2007, deal with payment of compensation for property situated on landholdings expropriated for public purposes. These Regulations were issued by the Council of Ministers pursuant to Article 5 of the Definition of Powers and Duties of the Executive Organs of the FDRE Proclamation No. 471/2005 and Article 14(1) of the Proclamation No. 455/2005 (discussed under 2.2.7) with an objective of not only paying compensation but also to assist displaced persons to restore their livelihood.

The Regulations contain provisions on assessment of compensation for various property types (including buildings, fences, crops, trees and protected grass), permanent improvement of rural land, relocation of property, mining license, burial ground, and formula for calculating the amount of compensation. In addition, it has provisions for replacement of urban land and rural land, displacement compensation for land used for crops, protected grass or grazing, and provisional expropriation of rural land. Further, the Regulations contain provisions that specify properties for which compensation is not payable and regarding furnishing of data to compensation committee, records of property, evidence of possession and ownership, and valuation costs.

4.5 International Conventions and Protocols

In addition to national environmental legislations, the Federal Democratic Republic of Ethiopia is also a party to a number of Regional and International Conventions and Protocols on Environment. The Government has established an Environmental Protection Authority, and this Authority is designated as focal point for the implementation of these conventions and protocols. These Conventions and Protocols are as follow:

- Convention concerning the Protection of World Cultural and Natural Heritage, ratified in 1972.
- International Plant Protection Convention.
- Convention on International Trade in Endangered Species (CITES), ratified in 1989.
- Vienna Convention on Ozone Layer Protection (1990);
- Montreal Protocol for Substances Depleting the Ozone Layer (1990);
- United Nations Convention on the Law of the Sea.
- Framework Convention on the Law of the Sea.
- Framework Convention on Climate, ratified in 1994.
- Convention on Biological Diversity, ratified in 1994.
- African Convention on the Conservation on Natural Resources.

- Convention on Desertification, ratified 1997.
- Convention on Biodiversity (Rio convention) (1997);
- Framework Convention of United Nations on Climate Change (1997); and
- Convention on the Control of Trans-boundary Movement of Hazardous Substances.

4.6 Environmental Assessment Guidelines

4.6.1 EPA's EIA Guidelines

In view of implementing the EIA legislation, EPA has prepared and issued a number of environmental guidelines. Among these are the technical and procedural EIA guidelines, which were issued in 2000 and 2003 respectively. They are intended to guide developers, competent agencies and other stakeholders in carrying out EIAs. The procedural guideline details the required procedures for conducting an EIA, the permit requirements, the stages and procedures involved in EIA process, and the roles and responsibilities of parties involved in the EIA process. It also includes the categories of projects (schedule of activities) concerning the requirement of EIA, and list of project types under each category.

The technical guideline specifies tools particularly standards and guidelines that may be considered when engaging in the EIA process, and details key issues for environmental assessment in specific development sectors. The Guideline provides the categories, the relevant requirements for an EIA and lists project types under each category. In accordance with this Guideline, projects are categorized into three schedules:

Schedule 1: Projects which may have adverse and significant environmental impacts and therefore require 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.

Road projects that are likely to have significant environmental and social impacts would fall into Schedule 1. The Jimma – Chida Road Project is considered as Schedule 1 because it is expected to bring some significant environmental and social impacts. The EIA laws and guidelines of Ethiopia require the preparation of environmental impact statement (EIS)/EIA report and its submission to the EPA or REA for projects requiring EIA. The legal documents also state that an EIS should contain sufficient information that enable the determination of whether or under what conditions the project should proceed.

4.6.2 ERA's Environmental Procedure Manual

In order to standardize environmental procedures for design of new roads and rehabilitation of existing roads, the ERA, in consultation with the EPA, has prepared an Environmental Procedures Manual for the use and technical guidance of design personnel of the ERA and consultants preparing projects for the Authority.

In the Manual two project categories are described as follows:

Category I Projects: Projects requiring a full EIA study

These are projects that are likely to have significant impacts on the environment. Therefore, a self-standing EIA is required that in turn requires specific Terms of Reference for its fulfillment. Projects of such nature may include new/upgrading of major roads, new/upgrading of regional roads, and other works of similar extent.

Category II Projects: Projects requiring an initial EIA

These are road projects that have the potential to cause some significant environmental impacts but not likely to warrant a detailed EIA study. These are projects like rehabilitation of roads, and other works of similar extent.

According to this manual, the Jimma – Chida Road Project should be subjected to a full scale environmental and social assessment study, i.e. Category I Project.

The Manual outlines standard methods and procedures for a step-by-step approach to environmental management activities to be conducted during each phase of the road project cycle, including the preparation and supervision of works contracts as well as the execution of road construction, rehabilitation and maintenance works.

4.6.3 ERA's Standard Technical Specifications

ERA prepared the Standard Technical Specifications (2002) which specifies among others acceptable environmental standards for the preparation of the road project design and contract document. The standard under division 1600 deals with environmental protection and mitigation measures. It mainly covers landscape preservation, temporary soil erosion control, preservation of trees and shrubbery, preservation of water pollution, abatement of air, dust, noise and lighting pollution, preservation of historical, archaeological and cultural remains and clean up and disposal of waste materials. Moreover, under division 1400 it deals with accommodation, sanitary arrangements, water and other social services. These standards specified regarding the social and environmental protection have been used appropriately in the preparation of this EIA study.

4.7 Institutional and Administrative Framework

4.7.1 Federal and Regional Administration

The Federal Democratic Republic of Ethiopia (FDRE) was formally established on August 21, 1995. The FDRE comprises of the Federal States with nine Regional State members. The new government structure takes power from the center to regions and localities. The relative roles of government at the different levels (Federal, Regional and Local) in terms

of power and duties, including on fiscal matters, have been defined by the Constitution, Proclamations Nos. 33 of 1992, 41 of 1993, and 4 of 1995. Under these proclamations, duties and responsibilities of Regional States include planning, directing and developing social and economic programs, as well as the administration, development and protection of natural resources of their respective regions.

The duties and responsibilities of the Regional States include planning, directing and developing social and economic programs as well as the administration, development and protection of natural resources of their respective regions. The basic administrative units in each Regional Government are the Woredas, which sub-units are the Kebeles. Further, based on their authority and responsibilities the regional governments have established Sectorial Bureaus, Commissions and Authorities.

4.7.2 Ministry of Environmental Protection, Forestry and Climate Change

Recently, as part of the effort to realize the government's Climate Resilient Green Economy strategy, the former Environment Protection Authority has been upgraded into Ministry of Environmental Protection and Forestry. The new Ministry is responsible among other undertakings for spearheading the reforestation, and other wide-ranging tasks. It is expected to take measures aimed at preventing deforestation and environmental degradation which are common in many parts of the country. Participatory process of making the country's economy green and climate change resilient was initially planned to be undertaken under the ownership of the then Environment Protection Authority (EPA). However, such effort did not receive the necessary attention either at the federal or regional level thereby necessitating the establishment of the new Ministry. It is also understood that the rights and obligations of the EPA, stated under the proclamation No. 295/2002, is transferred to the newly established Ministry of Environment Protection and Forestry. The general role of the ministry is to provide for the protection and conservation of the broad environment, through formulation of policies, strategies, laws and standards, which foster social and economic development in a manner that enhance the welfare of human and the safety of the environment sustainable.

4.7.3 Sectorial Environmental Unit

The Proclamation No. 295/2002, requires at the Federal level each sectorial ministry to establish in-house Environmental Protection Unit to ensure harmony with respect to implementation of the environmental proclamations and other environmental protection requirements. This Unit forms a lower level inter-sectorial co-ordination structure.

4.7.4 Regional Environmental Agencies

In accordance with the principles of government decentralization and the Proclamation no. 295/2002, each national regional state shall establish an independent Regional Environmental Agency or designate an existing agency that shall, based on the Ethiopian Environmental Policy and Conservation Strategy and ensuring public participation in the decision making process, be responsible for:

- coordinating the formulation, implementation, review and revision of regional conservation strategies; and

- Environmental monitoring, protection and regulation.

The Proclamation also states that regional environmental agencies shall ensure the implementation of federal environmental standards or, as may be appropriate, issue and implement their own no less stringent standards. Finally, the Proclamation states that regional environmental agencies shall prepare reports on the respective state of the environment and sustainable development of their respective states and submit them to the EPA.

For the Oromia NRS in which about 65% of the Jimma – Chida Road Project is located, the *Oromia Bureau of Land and Environmental Protection (OBoLEP)* is responsible for environmental protection matters in the Region. The Bureau is responsible for the review and approval of EIA of development proposals under the mandate of the Regional Government and follow-up of the implementation of EIA recommendations of such proposals. Therefore, project proponents in the Region should operate in close cooperation with the Bureau to ensure that the adverse environment effects of development proposals are properly identified and their mitigation or management actions incorporated in the project design or planning and implemented at the right time. Similar to the federal level, an Environmental Impact Study Report should be prepared by the project proponents and examined, commented and approved by the *OBoLEP*.

4.7.5 Ethiopian Roads Authority

The Ethiopian Roads Authority (ERA) was established in 1951 through Proclamation No.63/1963 with responsibilities for the construction, improvement and maintenance of the Country's road network. ERA is a legally autonomous agency and is in charge of the planning, construction and maintenance of trunk and major link roads, while responsibility of rural roads has been decentralized to regional Rural Road Authorities (RRAs). The highest body in the management hierarchy of ERA is the board.

ERA was re-established by Proclamation No. 80/1997 and its objectives are to develop and administer highways and to ensure the standard of road construction and to create a proper condition on which the road network is co-ordinately promoted. Article 6 of the Proclamation provides the powers and duties of the Authority. Sub-article 18 guarantees the ERA to use, free of charge, land, quarry materials and such other resources required for the construction and maintenance of highways, camps, storage of equipment and other required services. This is, however, provided that ERA shall pay compensation in accordance with the law for properties on the land it uses.

4.7.5.1 ERA's Environmental and Social Management Team (ESMT)

ERA's Environmental and Social Management Team (ESMT) was established in January 1998 as Environmental Management Branch (EMB) under the Planning and Programme Division of the Engineering and Regulatory Department. ESMT's major responsibilities are setting and implementing ERA's environmental guidelines in support of the national level requirements. The ESMT holds the capacity of advisory, co-ordination and supervision aspects that are pertinent to the road environmental impacts and implication assessment as well as co-ordination with the respective ERA district offices.

4.7.5.2 Right-of-Way (ROW) Team

According to the current ERA's organizational structure, each Directorate has its own Right-of-Way (ROW) Team, which is responsible for making available the required land for road construction and maintenance, the establishment of materials sources (borrow pits and quarries) and campsites and for implementation of Resettlement Action Plans (RAP).

Right-of-Way Team in liaison with the respective Woreda and Kebele administrations/authorities and community representatives establishes compensation committee that carries out the inventory and valuation of the structures, crops, trees and others affected by the road project, and effects payments to the project affected people.

Therefore, according to the existing organizational structure of ERA, it is the ERA Western Region ROW Team responsible for implementation of compensation issues related to land acquisition and loss of properties due to implementation of the Jimma-Chida road project.

5. DESCRIPTION OF BASELINE CONDITION

5.1 Physical Environment

5.1.1 Topography

The terrain of route corridor was evaluated based on ERA's 2002 Design Manual. Accordingly, the following criterion was applied to classify the terrain traversed by the project alignment.

Table 5-1: Terrain type of the route corridor

Terrain Type	Transversal Slope (%)
Flat	0 - 5
Rolling	5 - 25
Mountainous	25 - 50
Escarpment	50 and above

According to the data collected during the site reconnaissance, the visual terrain classification of the project route is as shown in Table 5-2 below.

Table 5-2: Terrain Classification of the Project Alignment

Start Station	End Station	Type of Terrain	Length (m)
0+000	16+400	Rolling	16,400
16+400	19+400	Mountainous	3,000
19+400	21+700	Rolling	2,300
21+700	39+800	Mountainous	18,100
39+800	41+600	Rolling	1,800
41+600	62+800	Mountainous	21,200
62+800	69100	Rolling	6,300
69+100	76+100	Mountainous	7,000
76+100	78+300	Rolling	2,200
78+300	80+800	Mountainous	2,500

Based on the above data, the terrain traversed project route is classified as 64% Mountainous (52 km) and 36% as Rolling (29 km).

The altitude of the project route corridor rises from 1705 m to 2625 m asl and again falls to 1765. At the start of the project it is about 1705 m asl at Jimma town and is 1765 m asl at the end of the project at Sodo Junction in Chida town.

5.1.2 Geology

a) Regional Geology

The oldest rocks in Ethiopia consist of crystalline granitic rocks and metamorphic gneisses and schist that form the basement. The basement rocks are overlain by Mesozoic marine transgressive and regressive sedimentary rocks consisting of sandstones, limestone shale and gypsum. As a result of up-doming due to presumed mantle plume at about the center of Ethiopia in the Tertiary, large quantities of volcanic rocks mainly basalts with subordinate trachytes and rhyolites poured out through fissures forming the plateau.

These fissural eruptions consist of Ashangi Formation, Jimma Basalts and rhyolites, Aiba Basalts and Alagi Basalts and rhyolites. As the fissures closed up, there were some points where volcanism continued forming central volcanoes like Mount Ras Dashen, mount Meghezez and Mount Guge which rose above the general plateau plain to heights of more than 4000 meters. The plateau itself reached heights of 2000m and more. Following these, there was regional rifting which divided Ethiopia into the Western plateau and the Eastern plateau with the rift valley running in the center from the Northeast to the South west.

Post rift volcanism mainly in the rift formed rocks consisting of basalts, rhyolitic domes, pyroclastics, ignimbrites and other intermediate volcanic rocks. In the rift depressions were also formed lakes leading to the deposition of lake sediments and other alluvial deposits from rivers.

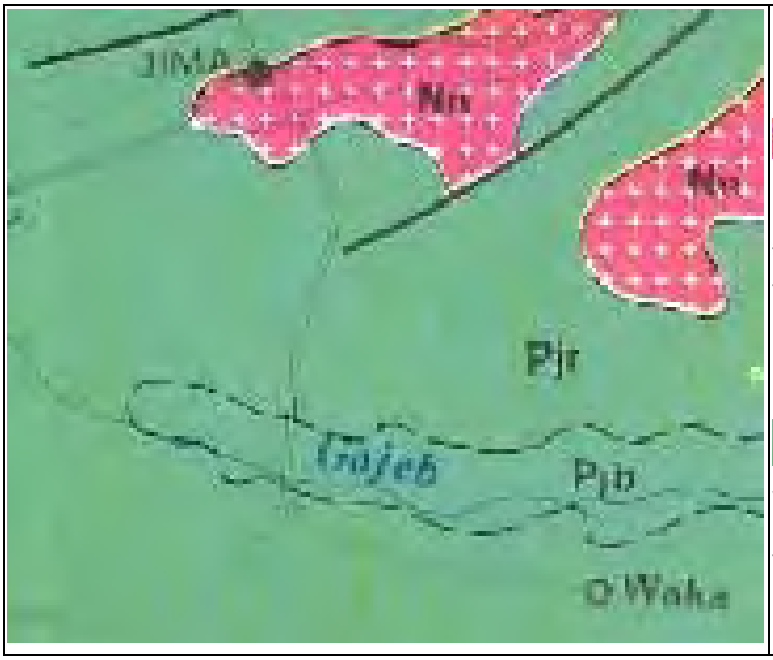
The project road is located mainly in the Jimma Volcanics which consists of basalts in the lower part and rhyolites in the upper part with a small stretch in Nazreth Series (See Figure5-1, Geological Map).

b) Geology of the Project Area

The geology of the project area in the road corridor according to the Geological Map of Ethiopia 2nd Edition (Mengesha et al, 1996) is approximately as follows:

From Km 0-20 is Nazret Series: Ignimbrites, un-welded tuffs, rhyolitic flows, domes and trachytes (Nn). From Km 20-51.8 is Jimma Volcanics (upper part) rhyolite & trachyte flows and tuffs with minor basalt (Pjr). From Km 51.8-68.8 is Jimma Volcanics (Lower part) flood basalt with minor salic flows (Pjb). From Km 68.8-79.8 is Jimma Volcanics (upper part) rhyolite & trachyte flows and tuffs with minor basalt (Pjr). The present observation more or less also confirmed the above geological formations.

The Jimma rhyolites and basalts are commonly weathered ranging from moderately weathered to highly weathered and as a result are not recommended as quarry sources. However, they make good sub-grades and good sources of borrow materials. Nonetheless, at this stage, the existence of fresh rock in dykes and veins cannot be ruled out and, thus, further studies should be made during the detailed investigation. The rocks in all cases are generally covered by soil. In some areas, the soil cover is thin and the weathered rock makes the sub-grade. The weathered rock makes better sub-grade compared to the soil, though it will be relatively harder to excavate. The weathered rock will also have relatively stable slopes when it is not jointed and fractured.



Nn

Nazret Series: ignimbrites, unwelded tuffs, rhyolitic flows, domes and trachytes

Pjr

Jimma Volcanics (upper part): rhyolite and trachyte flows and tuffs with minor basalt

Figure 5-1: Geological Map of the Project Area from the Geological Map of Ethiopia (Mengesha et al 1996)

5.1.3 Soils

The project road has varying sub-grades as one travels in the corridor. The preliminary soil extension of the road corridor is given in Table 5-3 below. It was observed that flat sections form generally black, swampy clays while rolling and mountainous terrain for well drained red, silty clays. As can be expected, the black swampy clays make weak sub-grade while the red clays and the weathered rock make strong sub-grade. The gray clays make intermediate strength sub-grade. Areas of swamp need special treatment. The first parts of the project road from Km 0-0.4 and Km 3.0–4.5 are swampy with possible expansive black soils.

The sub-grade soil is dominantly covered with reddish brown silty clay soil. Weathered rock of varying degree of weathering is the sub-grade material on the approaches of Gojeb River crossing and beyond that.

Reddish brown silty clay soils and decomposed rocks of various degrees of weathering are considered as good roadbed materials for road construction.

Table 5-3: Sub-Grade Soil Extension

Chainage		Material Description
From	To	
0+000	0+400	Swampy dark clay
0+400	3+900	Reddish brown silty clay
3+900	5+300	Light grayish silty clay (Possibly expansive)
5+300	7+670	Reddish Brown silty clay
7+670	7+530	Swampy dark clay
7+530	23+500	Whitish decomposed limestone
23+500	24+700	Reddish brown silty clay underlain by Decomposed rock
24+700	25+300	Reddish brown silty Clay
25+300	30+900	Decomposed rock
30+900	31+454	Dark brown silty clay underlain by decomposed rock
31+454	31+568	Dark Brown silty clay
31+568	32+000	Dark brown silty clay underlain by rock
32+000	38+000	Dark brown silty clay underlain by rock
38+000	39+000	Dark Brown silty clay
39+000	40+000	Reddish decomposed rock
40+000	49+872	Rock
49+872	52+464	Decomposed Rock
52+464	52+903	Rock
52+903	60+582	Decomposed Rock
60+582	70+182	Dark Clay
70+182	80+900	Decomposed rock

5.1.4 Climate

Climatic conditions in Ethiopia are largely governed by altitudinal variations that control rainfall distributions to some degree and the temperature variation to a very large extent. Based on mean seasonal precipitation and mean seasonal temperature variations, three operational seasonal periods are commonly known in Ethiopia. These are named as "*Bega", "Belg"* and "K*iremt"* and they occur in months of October - January, February - May and June - September respectively.

According to the data obtained from the National Meteorological Services Agency, the annual rainfall in for the last ten years ranges from 1100 to 2000 mm in Jimma town and from 1100-1900 mm in Chida town. The main rainy season in most of the project area is in the months of July and August.

As per the data collected from the National Meteorological Services Agency the mean annual maximum temperature for the last ten years ranges from 27.4 ºc to 28.4 ºc and 25.7 ºc – 27.5 ºc in Jimma and Chida towns respectively. Similarly, the mean annual minimum temperature for the last ten years ranges from 11.3 ºc to 12.9 ºc and 14.6 ºc to 15.7 ºc in Jimma and Chida towns respectively. The hottest months are from March to May and the coldest months are from November to January.

5.1.5 Drainage and Water Resources

The Jimma – Chida road traverses two major drainage systems, namely Gibe River and Gojeb River catchments that are sub-basins of the Omo-Gibe river system/basin. The rivers and streams crossed by the project road generally drain west-east direction. The project road crosses four major perennial rivers, namely Gibe (km 4.3), Offole (km 8.5), Unta (km 23.7) and Gojeb (km 69.4) rivers, which have substantial flows throughout the year.

The Gibe, Offole and Unta rivers are used for irrigation development by the local people at upstream and/or downstream of the road crossing through traditional diversion schemes and motor pumping. They are also used for animal water supply, but little used for human water supply. In addition, the project road intercepts several small streams, which are located between km 30 and km 63.

Photo 5-1 depicts Gojeb and Gibe rivers, which are the major rivers crossed by the project road.

The Gibe, Offole and Unta rivers are used for irrigation development by the local people at upstream and/or downstream of the road crossing through traditional diversion schemes and motor pumping. They are also used for animal water supply, but little used for human water supply.

Photo 5-1: A downstream view of Gojeb river at km 67 (left) and Gibe river at km 4.30 (right) and riverine vegetation/forest along the rivers

Most sections of the existing road that have slopes vulnerable to erosion were provided with either concrete lined or stone pitched side drains that in most places are still in good condition and well-functioning; Photo 5-2 below illustrates this situation. Nevertheless, in many places they are heavily silted up and/or infringed by vegetation growth, while in some locations they are partly damaged. Therefore, they require repairing of the damaged sections or spots and clearance of vegetation. In addition, there are many pipe culverts that are heavily silted up and/or infringed by dense growth of grasses and herbaceous and shrubbery plants; Photo 5-2 (right) demonstrates an example of such problem. In summary, the road was provided with very good engineering features including roadside drainage structures designed for runoff control and erosion protection. However, lack of follow up and proper maintenance works is a major deficiency for the road project.

It is recommended that the design of the road-upgrading project shall consider the structures that are in good condition so that they would be maintained with necessary repairing measures. Based on current practices in most road projects in the country, such effective structures may not be reconstructed if they would be removed and replaced by new ones.

Photo 5-2: A view of well-functioning concrete lined roadside ditches at km 34 (left) and km 21 (middle), and a completely silted up pipe culvert at km 20 at junction to internal road (right)

5.1.6 Land Use and Land Cover

The project corridor is densely populated and used for intensive farming, livestock grazing and human settlements; Photo 5-3 illustrates such land use pattern. In addition, there are two protected state forestlands that are located around km 10.7-11.0 RHS and km 48.0-52.0; the former is totally plantation forest whereas the latter comprises both natural and plantation forests; Photos 5-3 illustrate part of these forests. Furthermore, there is extensive savannah woodland in the Gojeb valley on both sides of the river, and a significant part of the valley has already been deforested and occupied by human settlements and crop cultivation. The intensity of land use reflects a high population density in highland and middle altitude areas.

In most places the cropping pattern is characterized by a mixture of annual and perennial crops cultivation. In the lowland and middle altitude areas, the crop range is dominated by teff, maize and sorghum. In contrast, the cropping pattern in the highland areas is dominated by wheat and barley followed by pulses, mainly faba bean and field peas. Enset is the predominant perennial crop almost throughout the project area. In addition, coffee, which is an important cash crop, is prominent in the area particularly in the region between start of the project and km 18 (Sheki town). In most places, coffee is grown under canopy indigenous trees, mainly Acacia, Cordia (*Wanza)*, Albizia (*Sassa*), and Fig/Ficus (*Warka*) trees. Furthermore, Chat, which is a stimulant plant and important source of cash income for the local community, is widely planted in the project corridor.

Tree plantations, predominately eucalyptus trees, and remnant indigenous trees or patches of remnant forests comprise a significant proportion of the land use and cover of the route corridor. Towns, villages and scattered rural settlements also cover a significant share of the land use and land cover. As per the town length (shown in Table 3-1, earlier), the total town/ village section portion comprises of 11.9km or 14.7% of the total project length.

The land use and land cover patterns of Dedo Woreda, in which about 80% length of the project is situated, is presented in Table 5-4 below. As these data indicate, the land use system in the woreda is very intensive dominated by crop cultivation. In 2015, cultivated land covered over 62% of the total surface area of woreda. Forestlands and grazing areas comprised 7.6% and 12% respectively. The area of constructed lands or built up areas covered only about 2.5%, which is a relatively small proportion. Photo 5-3 depicts part of the Sheki town center.

Photo 5-3: Typical land use and land cover pattern of the project corridor (left), dominant land use/land cover (Enset, coffee & settlement) at a realignment around km 38.50 (middle) and livestock grazing (right)

Table 5-4: Land Use and Land Cover of Dedo Woreda (2015)

S No.	Land use and land cover type	Area	
		Area (ha)	%
1	Cultivated land	98,232.50	62.5
2	Grazing land	18,860.64	12.0
3	Forestland	11,945	7.6
4	Constructed/built up areas	3,904.46	2.5
5	Degraded land	12,463.28	7.9
6	Bushes and shrub land	10,159.97	6.5
7	Swamps and marsh land	1,606.04	1.0
	Total	157,172	100

Source: Woreda Agriculture and Rural Development Office (2015)

Table 5-5: Land Use and Land Cover of Konta Woreda (2016)

Ser. No.	Land use and land cover type	Area in Ha	%
1	Cultivated land	62,057.1	27.5
2	Natural forest	73,311.43	32.5
3	Protected state forest	3,582.6	1.6
4	Private forest	1,031.2	0.5
5	Tree plantation	1,919.47	0.9
6	Grazing land	12,412.4	5.5
7	Wasteland	2,142.79	0.9
7	Cultivable land	11,560.4	5.1
8	Others	57,358.61	25.5
	Total	225,376	100

Source: Woreda Agriculture and Rural Development Office (2016)

5.2 Biological Environment

5.2.1 Vegetation and Flora

The climax vegetation in most part of the project corridor has long been severely modified by human activities. The natural vegetation has been extensively deforested to give way mainly for expansion of cultivation and human settlements. The forest resources also have been heavily exploited for timber production (mainly for commercial use), construction materials and fuel wood. Nevertheless, the project area still has some patches of remnant primary vegetation, including one high forest area, and abundant remnant or secondary growth indigenous trees occurring in most part of the project corridor.

The corridor of the project road contains a rich diversity of indigenous trees and other plant communities, most of which are evergreen and broad-leaved species. In most places large canopy indigenous trees such as *Ficus vasta (Warka), Ficus sur (Shola), Cordia africana (Wanza), Albizia schimperiana (Sassa), Prunus africana (Tikur Inchet), Podocarpus gracilior (Zigba), Acacia abyssinica (Girar), Ekebrgia capensis (Sombo)* and *Apodytes dimidiata* (Donka/Wondabiyo) are left standing alone or in cluster as reminders of the primary forest that once covered much of the area. Photos 4 and 5 illustrate parts of protected forests, woodland, indigenous trees and plantation trees found along the project road.

Photo 5-4: Part of the protected primary forest/Sisima Kedo State Forest at km 48 – 50.70 (left), Big Fig trees on RHS edge at km 16.2 (middle) and Acacia woodland around km 65 on RHS (right)

Photo 5-5: A big Podocarpus tree at a realignment at Sheki town (left), part of the Offole Plantation Forest at km 10.70 - 11.00 RHS (middle), and part of a dense alignment eucalyptus plantation at km 77.3 - 77.7 (right)

Of the existing natural vegetation found in the project area, the protected state forest crossed by the project road at station about km 48.0-52.0 is the most important one or with highest priority in terms of forest and plant genetic resources and ecosystem conservation. This forestland is named as Sisima Kedo Protected State Forest and it covers about 11,839 ha, and currently it is managed by the Jimma Branch of the Oromia Forestry and Wildlife Enterprise. Part of the forest crossed by the project road at about km 48.0-50.7 is totally a natural forest whereas part of the forest traversed at km 50.7-52.0 is mainly plantation forest mixed with scattered indigenous trees. The species composition of the forest area is described below.

Moreover, there is extensive savannah woodland in the Gojeb river valley with a narrow strip of riverine forest along the river. However, greater parts of the savannah woodland have been severely degraded due to encroachment and clearance for crop cultivation and establishment of new human settlements. This situation has been triggered by population pressure and shortage of arable land in the adjacent highland areas.

More in depth or site specific description of the natural vegetation, forests or indigenous trees found along the project road is given below.

- Km 0.5-0.9 mainly on RHS: Semi-natural forest or dense indigenous trees where the under-storey has been cleared and replaced by coffee plantation. Major trees include *Acacia abyssinica, Cordia africana*, *Croton macrostachyus, Millettia ferruginea*, *Erythrina brucei,* and *Vernonia amygdalina*.

- Km 0.9-3.2: Scattered remnant or secondary growth indigenous trees within maize farmlands, Enset plantation and on roadsides frequently with coffee plantation underneath. Common trees include *Albizia schimperiana, Erythrina brucei, Croton macrostachyus, Acacia abyssinica, Ekebergia capensis Cordia africana*, and *Vernonia amygdalina*.

- Km 5.2-6.9: Relatively dense remnant canopy indigenous trees with coffee plantation underneath. Major tree species include *Ficus vasta, Acacia abyssinica, Albizia schimperiana, Cordia africana*, *Croton macrostachyus, Sapium ellipticum*, and *Prunus africana*. Planted trees such as Eucalyptus, Gravillea, Spathodea and Avocado are also prominent.

- Km 7.5-9.2: Some scattered indigenous trees like *Acacia abyssinica and Sapium ellipticum*, together with planted trees mainly Eucalyptus, Cypress & Avocado, within moderately cultivated land and settlement areas.

- Km 9.2-9.4: Scattered canopy trees like *Cordia, Acacia,* and *Erythrina* with coffee underneath within Kolobo village. Planted trees including Eucalyptus, Gravillea, Avocado and Guava are also significant.

- Km 10.7-11.0 on RHS: State Plantation Forest, namely Offole PF, dominated by Cypress (*Cupressus lusitanica*) and Eucalyptus spp. It also contains other tree species such as *Casuarina equisetifolia* and *Gravillea robusta*. Photo 5 (middle) shows part of the Plantation forest on the roadside.

- Km 11.0-11.5: Dense eucalyptus plantation with scattered indigenous trees including *Cordia, Croton, Acacia, Prunus, Ficus,* and *Syzygium*.

- Km 11.5-17.1: Scattered indigenous trees, mostly with coffee plantation under the canopy trees. Common tree species include *Ficus, Cordia, Acacia, Albizia, Prunus,* and *Sapium*. Eucalyptus trees are common in the area. Photo 4 (middle) depicts a cluster of big Fig trees (*Ficus vasta*) on RHS edge of the road at km 16.2.

- Km 17.1-20.0: Scattered indigenous trees including *Albizia, Erythrina*, *Cordia*, and *Croton* trees along the section through Sheki town. Eucalyptus trees and Enset plantation are also prominent.

- Km 21.2-24.0: Moderately dense indigenous trees along a stream and Unta R. and scattered trees elsewhere. Major trees include *Cordia*, *Ekebergia, Croton, Erythrina, Polyscias, Syzygium,* and *Albizia.*

- Km 26.9-27.7: Cluster of some indigenous trees found along the road. The prominent tree species include *Ficus sur* (*Shola*), *Hagenia abyssinica* (*Kosso*), *Croton, Erythrina, Acacia* and *Dombeya (Wulkefa*), and Highland bamboo; some of

the species like *Hagenia*, *Dombeya* and Highland bamboo are indicators of high altitude (>2600m asl).

- Km 29.1-30.1: Scattered or patch of indigenous trees including *Dombeya, Erythrina, Ficus & Euphorbia (Kulkual),* and Highland bamboo. Soft-wooded shrubs such as Giant Lobelia and Senecio gigas, which are endemic species, are found along this section of the road, and they are observed up to about km 32.

- Km 32.2-35.2: Indigenous trees such as *Croton, Dombeya, Erythrina, & Maesa* are distributed along the road.

- Km 36.3-39.0: This stretch is a realignment section having many indigenous tree species within its corridor. The major tree spp. include *Cordia*, *Ekebergia, Croton, Erythrina, Albizia, Ficus, Dombeya, Prunus, Polyscias, Apodytes, Syzygium, Millettia, Vernonia, & Maesa,* and Highland bamboo. In particular there is dense forest or trees along Jibiti and Gonfa rivers at km 38.50 and km 39.20 respectively.

- Km 46.6-48.0: Moderately dense remnant canopy trees mainly within farmlands and scattered rural settlement area that are indicators of recent deforestation of high primary forest. Major large tree species include *Prunus africana, Podocarpus gracilior*, *Ekebergia capensis, Polyscias fulva, Syzygium guineense, Celtis Africana, Ficus sur* and *Croton macrostachys,*

- Km 48.0- 52.0: There is dense natural forest along km 48.0-50.7, which is part of a protected state forest called Sisima Kedo PF. Together with mixed plantation forest, it extends up to about km 52.0 mainly on RHS of the road. It contains a rich diversity of indigenous trees, shrubs, woody climbers (lianas) and woody scramblers (pseudo-lianas). The forest is composed largely of evergreen and broad-leaved species of trees. The major tree species in the canopy include *Prunus africana, Ekebergia capensis, Polyscias fulva, Apodytes dimidiata*, *Schefflera abyssinica, Syzygium guineense, Sapium ellipticum, Ficus spp. (F. sur, F. vasta & Ficus ovata), Albizia spp. (A. schimperiana & A. gummifera), Croton macrostachys, Celtis africana, Macaranga kilimandscharica*, and *Olea welwitschii*. Other frequent tree species include *Cordia africana, Acacia abyssinica, Millettia ferruginea*, *Ehretia cymosa, Bersama abyssinica, Euphorbia sp. etc*. In addition, the forest comprises *Aningeria adolfi-friedericii* (*Keraro*), which is the tallest and only emergent tree species in the forest; it is not common in the road environment. Moreover, to a lesser extent, the forest contains *Podocarpus gracilior* (Zigba), which is the only coniferous indigenous tree species found in the forest as far as observed during this survey. It was evident that some part of the natural forest, mainly in the northern part, has been deforested for expansion of cultivation and establishment of new settlements, and this practice is illustrated by many large trees that have remained within farmlands and settlements as indicated above for km 46.6-48.0. The plantation forest predominantly comprises Cypress tree (*Cupressus lusitanica*). Photo 5-4 (left) illustrates part of the high forest along the road at km 48.0-km 50.7.

- Km 52.0-km 54.0: Scattered trees mostly within farmlands and settlements, and the frequently observed tree species include *Cordia, Polyscias, Croton, Sapium, Ficus,* and *Ekebergia.*

- Km 54.0-km 59.4: This is a transition zone to lowland comprising mixed evergreen/deciduous trees that are the remnants of woodland or wooded grassland. The greater part of the original vegetation is severely degraded as it has been cleared for expansion of farmlands and establishment of settlements. Thus, mostly only scattered trees and shrubs are remained and the common trees include *Ficus spp., Cordia africana, Terminalia brownii, Combretum molle, Piliostigma thonningii, Stereospermum kunthianum, Entada abyssinica*, *Protea gagudi, Gardenia lutea* etc.

- Km 59.4-70.2: The vegetation along this section is predominantly broadleaved deciduous savannah woodland except a narrow strip of riverine forest along Gojeb River and Tingura River. The vegetation along this section is mostly less disturbed although certain parts have been severely degraded by encroachment due to clearance for expansion of cultivation and establishment of new settlements. The characteristic trees in the woodland vegetation include *Piliostigma thonningii, Stereospermum kunthianum, Terminalia brownii, Combretum molle, Acacia spp. (A. polyacantha, A. seyal), Entada* abyssinica, and *Ficus* spp. Tall *Hyparrhenia* spp. are the predominant grass thickly covering the ground layer throughout the savannah woodland area.

- Around km 61.7 and km 67.0: Riverine forest on the banks of Tingura and Gojeb rivers respectively. The major tree species in the riverine forest include *Albizia grandibracteata, Ficus sycomorus, Syzygium guineense, Sapium ellipticum, Celtis aficana, Cordia africana, Acacia polyacantha, Mimusops kummel,* and *Phoenix reclinata.* It also contains several small trees, shrubs and lianas.

- Km 70.2-74.0: Moderately dense woodland with a greater part of it has been cleared and transformed to settlement areas and cultivated lands recently. The main tree species in the remaining vegetation or conserved within farmlands or around settlemnents include *Cordia africana, Ficus sycomorus*, *Terminalia brownii, Combretum molle, Acacia polyacantha,* and *Syzygium guineense*. Small trees or shrubs include *Stereospermum, Entada, Gardenia, Protea, Grewia, Maytenus*, and *Rhus* spp. *Hyparrhenia* spp. are the dominant annual grass densely growing in the area; thus, it's a savannah woodland.

- Km 74.8-77.1: Scattered remnant or secondary growth indigenous some are being located just on roadsides like at km 74.8-75.0 RHS edge. Commonly observed trees include *Cordia africana, Ficus vasta, F. sycomorus*, *Ehretia cymosa*, *Syzygium guineense, Millettia ferruginea* etc.

- Km 77.3-77.7: Some *Cordia africana* mixed with dense alignment eucalyptus plantation on RHS edge of the road (see Photo 5-5 (right)).

A detail list of the flora (trees, shrubs and grasses) identified from the project road environment is presented in Appendix 2.

It is evident that the natural vegetation in most part of the project corridor has been severely degraded due to extensive deforestation and expansion of cultivation and establishment of human settlements. Nevertheless, it yet contains a rich diversity of plant species, including many conservation worthy indigenous tree species. The factors that have attributed for the high plant biodiversity include variations in climate and physical features such as rainfall, temperature, soils, topography and altitudinal ranges. In addition, it is attributed to the farming system that includes annual and perennial crops cultivation integrated with good agro-forestry practices and conservation of remnant indigenous trees. In particular, the culture of maintaining indigenous trees as a shade for coffee plantation has contributed a lot for the preservation of conservation worthy indigenous tree species. Otherwise, most of those indigenous tree species could have been removed to clear the land for annual crops cultivation or for production of timber or other wood materials.

Most part of the project area is characterized by rolling or steep sloping topography and high amounts and high intensity of rainfall. These situations have high potential to cause flooding, soil erosion and slope instability problems with removal of the protective vegetation cover. Therefore, the vegetation has vital roles in conserving soil and water by controlling runoff water and protecting the soil against erosion and slope instability problem.

5.2.2 Fauna

As indicated in section 5.2.1 above, the natural habitats in most part of the project corridor has been converted to agricultural lands and settlement areas. Therefore, only a small portion of the original natural habitat has left little disturbed in the region. Now, it is the few remnant forest areas mainly the Sisima Kedo Protected Forest found at km 48-52, and the Savannah woodland and riverine forests in the Gojeb valley that provide major habitats for a variety of wild flora and fauna. The fauna existing in the project corridor include several species of mammals, fish, reptiles and amphibians, as well as a variety of avifauna/bird species. These are briefly described in below.

(v) Mammals

Based on the information gathered from the Woreda Natural Resources Development and Conservation Departments of the ARDO and local people, and observations made during the site visit, monkeys are the commonly observed and relatively abundant terrestrial mammals in the project corridor. These include Anubis baboon, Grivet monkey and Colobus monkey, and they mostly inhabit the forest and savannah woodland habitats. In addition, several species of mammals inhabit the project route corridor and these include Hyena, Bush pig, Warthog, Crested porcupine, Aardvark, Abyssinian Genet, Common jackal, and a number of antelopes including Bushbuck, Bush duiker, Dikdik and Waterbuck. Furthermore, Lion, Leopard and Buffalo were reported to be rarely observed or expected to be found in the project area. The list of mammals known to occur or expected to occur in the project area and their conservation status is presented in Appendix 3.1.

As indicated by local informants, most of the wild animals are concentrated in the protected or least disturbed forest areas, and in the gorge or steep sloping parts of the

Gojeb valley, which are less accessible and least disturbed by human activities. In these areas, the animals graze or browse freely as they are afforded some protection from human impacts or interferences such as hunting and habitat losses.

(vi) Aquatic fauna

The aquatic fauna commonly observed in the major rivers, namely Gibe and Gojeb, are Hippopotamus, Nile crocodile and Monitor. In addition, about nine fish species that belong to five families were recorded from Gojeb River (Omo-Gibe Master Plan Study, 1995). Of these, five fish species including Barbus (2 species), Garra, Labeo, Raiamas species belong to the family Cyprinidae. The remaining four species including Bagrus, Nemacheilus, Brycinus and Pollimyrus fish belong to Bagridae, Balitoridae, Characidae and Mormyridae Family respectively. Similarly, Gibe River contains four fish species, namely Barbus, Garra, Labeo and Oreochromis (Tilapia) fish, the former three species belong to Cyprinidae Family and the latter belong to Cichlidae Family (Omo-Gibe Master Plan Study, 1995). Only the Tilapia and Barbus fish are known to be commercially important. Currently there is, however, no significant commercial fish production in the area, but there is some subsistence fishing at local level.

(vii) Birdlife

The project area is endowed with a high diversity of habitats including forests, woodlands, remnant or planed trees, grasslands, farmlands, villages or settlement areas, rivers and streams, and wetland/swamp areas that harbor a variety of bird species. Based on the identification made during the environmental field survey, information gathered from local informants and published literature, the birds found in the area include Ibises, Egyptian Goose, Pigeons, Doves, Storks, Eagles, Vultures, Egrets, Herons, Starlings, Ravens, Weavers, Fire-finches, Grebes, Ground-horn Bill, Hamerkop, Guinea-fowl, Francolin, etc. The list of bird species identified from the project area is presented in Appendix 3.2. As observed during the site visit, the forests and woodland habitats contain a relatively high diversity and population of birdlife.

(viii) Endemic and Threatened Species

None of the mammal species known to occur or expected to occur in the project area is endemic to Ethiopia. The conservation status of the mammals has been evaluated based on the IUCN Red List of Threatened Species (version 2011.2). Accordingly, two species, namely Lion and Hippopotamus are listed under the *vulnerable* category while other two species, namely Leopard and Striped Hyena are listed under the *Near Threatened* category of the Red List. All the remaining species are classified under the *Least Concern* category.

Of the ten fish species known to exist in Gilgel Gibe and Gojeb rivers, one species, i.e. *Nemacheilus abyssinicus*, is native to Ethiopia and Lake Turkana, and data is deficient for its conservation status. Seven fish species are listed under the *Least Concern* category, and no threats listed for two species. Of the bird species known or expected to be found in the project area, species endemic to Ethiopia and Eritrea include Wattled Ibis, Thick-billed Raven, Abyssinian Oriole and Black-winged Lovebird. According to the IUCN Red List of Threatened Species, none of the bird species is threatened as they are listed under the

Least Concern category.

5.3 Socio-economic Environment

5.3.1 Geographic and Administrative Location

The project road is located in South-Western part of Ethiopia in two Regional states, namely in Oromia and Southern Nations and Nationalities and Peoples' Regional State (SNNPRS). It crosses three woredas; two woredas in Oromia and one woreda in SNNPRS. The woredas crossed by the project road include Seka Chekorsa and Dedo Woredas in Jimma Administrative Zone of Oromia Regional State and Konta Special Woreda in Southern Nations and Nationalities and Peoples' Regional State. Out of the total length of the project road, about 50% is located in Oromia and the remaining 50% in SNNPRS.

The settlement pattern of the population residing in the above three woredas is dispersed and mainly concentrated in rural settlements that are not yet undeveloped and lack adequate social services and other infrastructural services, such as road networks. There are only two major towns that are located along the project road corridor, namely, Sheki and Chida.

5.3.2 Ethnic Groups and Religion

The people in the three project woredas belong to Oromo and Konta ethnic groups. The Oromos reside in Dedo and Seka chekorsa woredas, while Konta are from Konta special woreda. This means that the Oromos are the majority population in the road corridor. Religion wise, the Oromos are predominantly Muslims, while the Konta are Christians.

5.3.3 Demography

The total population in the woredas traversed by the project road is estimated to be 735,056 as per the Central Statistical Agency (CSA) population and housing census of 2007 and projected for 2016. Among the three woredas crossed by the project road, Konta has the lowest population density. The density per km^2 varies from 47.5 persons in Konta woreda to 305.4 in Seka chekorsa woreda.

Table 5-6 below summarizes the population distribution of the woredas traversed by the project road by sex.

Table 5-6: Population distribution by sex and Density

Woreda	Male	Female	Total	Area in km^2	Density in km^2
Seka Chekorsa	130,956	130,130	261,086	854.85	305.4
Dedo	179,390	181,355	360,745	1515.89	237.9
Konta	55,370	57,855	113,225	2381.63	47.5
Total	365,716	369,340	735,056	4752.37	154.67

Source: Statistical Abstract, July 2016

5.3.4 Economic Activities

The livelihood for the majority of the population in the project area is mainly dependent on mixed agriculture (crop and animal husbandry). The farming system is dependent on small holder farming which is mainly practiced through traditional methods of hoe cultivation and oxen plough.

In the project road corridor, the development of business, trade and industry is at its very lowest level. Apart from farming and small scale trade of agricultural produces and other consumables there is very little economic activity. Due to low level of development, communication and interaction with the outside world, low level of literacy and household income, there is very little economic activity in the project area outside of agriculture.

The only major non-agricultural activity in the project area is the recent development in that has started in the exploration and mining of natural coal in Dedo woreda. It is reported that the woreda has abundant potential for coal mineral and following its exploration an international company, Delbi coal mining Share Company established in 2010 has started exploration works in an area specifically known as Delbi and which located some few km from Sheki town. The production of the coal has already started to create employment opportunity to the local population, generate income and in the long term contribute to the growth and development of the woreda and the country.

Other economic activities in the woreda include the existence and growth of financial institutions in the project road corridor. The existing financial institutions that operate in the project woredas are mainly Micro Finance Institutions (MFI) that provides credit and saving services to small scale businesses. Apart from the MFI, the only existing bank in the corridor is the Agricultural Development Bank located in Sheki town.

The low level of economic development in the project road corridor is also reflected by the low level of urbanization. The only urban centers are the three woreda towns, namely Sheki, Ameya and Chida.

The project road corridor has a very high potential for agricultural investments and exploration of mineral resources. This potential could be exploited once the upgrading of the project road is carried out and that the road network with other woredas improves.

5.3.5 Social Services and Road Infrastructure

In economic terms, road investment facilitates transportation system; it reduces freight and passenger charges, increases the size of vehicles using the road, and decreases vehicles operation cost and permits integration of markets and people. Furthermore, it is also very important in promoting and enhancing the socio economic development of social infrastructures such as health, education and others. Road construction influences the activity of the society traversing the area in terms of their settlement pattern, agricultural production, marketing system, social movements, cultural practices, etc. In view of these, the consultant has attempted to assess the level of basic social services in the woredas crossed by the road project as follows.

a) Health Services

In the project area, there are 18 health centers, 7 clinics, 129 health posts and 5 rural drug shops. In the corridor, a Health Center serves for 35,645 people; that is 10,000 more than that of the standard (25,000 people) set by the Federal Ministry of Health. Table 4.5 below shows the number of health facilities in each woreda by type and number.

Table 5-7: Number of Health Facilities by woreda

Woreda	Hospital	Health center	Clinic	Health Post	Rural Drug shop	Percent coverage
Seka Chekorsa	-	5	4	36	3	89
Dedo	-	9	3	53	2	-
Konta	1	4	3	43	2	94.8
Total	1	18	10	132	7	-

Source: Woreda Health offices

The number of health professionals working in the above health facilities is below what is required for the population. The numbers of health professionals in the woredas that are crossed by the project road including health extension workers are 387, and of which the number of health officers is 17 (or 4.3%). The ratio of a Health Officer for the corridor population shows 1:37,742 and the ratio of a Nurse to the population is 1:4249.16. In the project road corridor, there is no a single Physician and a hospital. Table 5-8 below presents the number of health professional at each woreda level.

Table 5-8: Distribution of health professionals by woreda

Health professionals by qualification	Woreda			
	Dedo	Seka	Konta	Total
Nurse (all type)	57	55	39	**151**
Health Officer	6	6	5	**17**
Sanitarian	5	6	4	**15**
Laboratory Technician	8	2	2	**12**
Health Assistant	1	3	-	**4**
Health Extension worker	111	-	74	**185**
Pharmacist	1	1	-	**2**
Druggist	-	-	1	**1**
Total	189	73	125	387

Source: Woreda Health offices

b) HIV/AIDS

According to the 2010 single point HIV prevalence study made by the HIV/AIDs Prevention and Control Office (HAPCO), there are 28,073 deaths from AIDS in Ethiopia; and of which, 3908 are in SNNPRS and 6854 are in Oromia region.

Table 5.3-4 below presents the prevalence rate among adults and the positive population country and in the two regions.

Table 5-9: HIV Prevalence Rate by Country & Region

Country/ Region	Percent of Adult prevalence for all ages in urban and rural	HIV/AIDs positive population	Annual AIDS deaths
Ethiopia	2.4% (Male 1.9% & Female 2.9%)	1,216,908	28,073
SNNPRS	1.7% (Male 1.4% & Female 2.0%)	169,700	3,908
Oromia	1.6% (Male 1.3% & Female 1.9%)	287,301	6,854

Source: HAPCO: Single Point HIV prevalence estimate

Table 5-10: HIV/AIDS prevalence

No.	Town Woreda	Total Population			HIV/AIDS Positive			Prevalence Rate	
		Male	Female	Total	Male	Female	Total	Male	Female
1	Konta Woreda	56,668	57,124	113,792	29	72	101	0.05%	0.12%
2	Chida Town	-	-	-	15	40	55		
3	Ameya Town	-	-	-	14	32	46		

The above table shows a total of 101 people (29 male and 72 female) are living with HIV/AIDS in Konta woreda, which makes the HIV prevalence rate for males 0.05% and for female 0.12%.

In Dedo woreda, there are about 40 persons living with HIV/AIDS and receive Anti-Retroviral Treatment (ART) medication. People living with HIV/AIDS in Chida town and Ameya town are 55 and 46 respectively.

c) Educational Services

The distribution of education facilities and services in the project road corridor seems to be fair. However, there are still many school age children who did not have access to education due to a number of reasons. In the project area there are 135 primary schools (1-8), 5 secondary schools (9-10) and 5 kindergartens. Table 5-11 below table presents the number of schools by grade level, number of schools and number of students.

Table 5-11: Distribution of schools by grade level and number of students by woreda

Woreda	School level	Number	No. of Students
Seka Chekorsa	Kindergarten	3	244
	1-4	20	NA
	5-8	31	54,050
	9-10	1	1654
Dedo	Kindergarten	2	NA
	1-4	23	68,146
	5-8	NA	18,781
	1-8	110	86,927
	9-10	3	1481
	Vocational & Technique	1	NA
Konta	1-4	34	18,907
	1-8	27	26,822
	9-10	4	1463
	11-12	1	

6. PUBLIC AND STAKEHOLDERS CONSULTATIONS

Public and stakeholders consultations were conducted during the environmental field survey that was carried out in November 2011 as well as during the social field survey that was undertaken in January 2012. Moreover, additional consultations and discussions have been conducted with zonal and town administration officials in May 2016. The consultation processes and their findings are briefly described below.

6.1 Public and Stakeholder Consultations Conducted during Environmental Survey

During the environmental field survey, public and stakeholders consultations were conducted at key locations along the project road. Formal consultation was made at Sheki town, which is the capital of Dedo Woreda, and at Chida town, which is the second major town connected by the project road. In addition, consultation was carried out with communities found within the direct impact zone of the realignment sections located at about km 23.3-24.5, km 31.0-32.6 and km 36.3-39.0. Photos 6-1 and 6-2 below illustrate these consultations. The main objectives of the consultations were to inform the key stakeholders about the proposed road upgrading project and obtain relevant information on existing condition of the road and associated problems, opinions on the proposed realignments, on potential positive and negative impacts and their mitigation measures. The key findings of the consultations are described in brief below, and the minutes of the meetings are presented in Appendix 4.

6.1.1 Consultation at Sheki Town

Woreda Administrators, Head of Sector Offices and local community representatives participated in the consultation held at the Dedo Woreda Administration Office. The key findings of the consultation are summarized below.

(i) Existing Road Condition and Associated Problems

- The existing gravel road including its side drainage facilities was well-designed and built in very good quality. Nevertheless, the quality of routine maintenance was not adequate enough to maintain the road in good standard, which is compatible with the volume and types of vehicular traffic that utilizes the road. Therefore, several sections of the road are badly damaged or deteriorated restraining traffic flows and resulting in shortage of transportation facilities. In addition, the current transportation cost on the road is very expensive resulting from rough condition of the road and incurring high operation and maintenance costs.

- The existing road has critical land-sliding problem at three locations - ~km 23.8-24.0, km 31.5 and km 38.5. These spots cause major impediments to traffic movement especially during wet seasons and there is a high risk of complete blockage of the road as there is a high probability of mass sliding that may totally damage sections of the road crossing through those vulnerable spots.

(ii) Request for Realignment in Sheki Town

- During the 2012 consultation, the most important issue raised by the participants was the request for realignment of the road in Sheki Town to follow the route of an old road that passes through the centre of the Sheki town, which is a business centre and market place. They stressed that locating the project along the mentioned route would facilitate greatly the development of the town by promoting trade and other business activities and facilitating transportation of goods and agricultural products to/from the town.

- Locating the project road along the requested alignment is likely to entail demolishment of a considerable number of business and residential housing units, relocation of public utilities such as electric and telephone poles and water supply pipelines, as well as traffic congestion especially on market days. These potential adverse effects were raised by the Consultant and discussed with the participants in detail. Although the participants fully agreed with the concerns of the Consultant, all of them strongly requested for the road project to be implemented following the route they recommended for realignment. Accordingly the design proceeded accordingly.

- However, once again in May 2016, the Consultant has held a fresh discussion with the Sheki Town and Dedo Woreda Administration on the magnitude of households to be affected and potential difficulty on utility relocation on such a large scale should their request be accepted to establish the project road through the town market area. Moreover, they were communicated that ERA has decided to allow a second road construction through the town in order to address their request while keeping the existing route used to travel to Chida.

  Hence, after a thorough discussion and deliberation an agreement has been reach that the main (primary) road would be passing through the current existing road alignment while a secondary road with 7m carriageway would be passing through the market area that later joins back with the main road. In all cases, the Administration has given its promise to arrange land replacement and other requirements and implement proper resettlement and/or rehabilitation program for the potentially to be affected people.

6.1.2 Consultation at Chida Town

The Chida town Manager, Kebele Administrators and representatives of the local community participated in the consultation held at the town administration hall. The main findings of the consultation are summarized below.

(i) The existing road is gravel-surfaced road, which is currently not in good condition. As a result, there is shortage of transportation facilities and high transportation costs incurred by the traffic operating on the existing road. Therefore, upgrading of the gravel road to asphalt road is highly appreciated and they are ready to contribute necessary support to facilitate its implementation.

(ii) The existing road has black spot at about km 55.4 – 56.0 where traffic accidents frequently occur. The main cause of this appears to be long steep gradient. Therefore, the participants recommended for detail assessment of this spot by professional and provision of appropriate solution in the engineering design in order to avoid the risk of road damage and associated accident risks. In addition, there is a tumbling/sinking spot around km 76.5 that has been causing vertical radii problem and it is a risky spot for traffic. Thus, this spot also needs close observation and provision of appropriate solution.

(iii) The existing land-sliding spots at km 24, km 31.50 and km 38.50 were mentioned as crucial problems. These spots were considered as major concern because the existing road sections at those locations could be totally damaged and become out of service.

(iv) The participants recommended for extension of the road-upgrading project up to end of the town towards south, i.e. in the direction of Amaya or Bonga. In addition, they proposed a wider road width and pedestrian walkways in the town section including parking lanes for stopping vehicles.

6.1.3 Consultation with Communities at Realignment Sections

The potentially affected local communities found along the realignments proposed to alleviate the problems related to the existing land-sliding clearly understood the extent of the problem and agree with the need to find solution. Nevertheless, they have major concerns related to loss of their landholdings and properties, thus, loss of livelihood. Their most significant concern is loss of landholdings as there is serious shortage of land in the area. As a result, they claimed that there would be little possibility to get land replacement for loss of lands. In addition, they indicated that they have little knowledge or skills in other economic activities other than agriculture, which may make things difficult for them even if they are paid adequate cash compensation for their losses.

On the other hand, the local community along the realignment at km 36.3-39.0 appreciated the potential benefits of the realignment since the road would pass closer to them, school, Kebele Office, Farmers Training Centre and DA Office. This situation would create easy access to transportation facilities and promote the services provided by the mentioned service centres.

Photo 6-1: Stakeholder consultation at Dedo W. Administration Office at Sheki town

Photo 6-2: Public consultation at Chida town (left) and members of local community consulted at the Realignment at km 23.00 – km 24.20

6.2 Public And Stakeholder Consultations Conducted During Social Survey

Public and stakeholders' consultation was carried out in January 2012 in all the major urban centers and villages crossed by the project road. Furthermore, as a way of update, new consultations have also been carried out in May 2016.

The consultations were carried out with members of the public in those towns and also number separate meetings held with woreda authorities. The objectives of the public and stakeholders' consultations were to inform the public on the potential impacts and seek the participation and contributions that are required from the public and all the stakeholders' during the construction of the project road.

The public and stakeholders' consultations were carried out in a form of formal meetings (with woreda officials, sector office heads), public gatherings (with clan leaders, elders, women representatives and PAPs) and also through informal meetings held with different sections of the community in each of the Woredas traversed by the project road.

The primary purpose of public and stakeholders' consultation is to protect the interest of Project Affected Persons (PAPs) and communities, especially the poor and vulnerable groups. It also gives opportunity for the affected people to influence the client and the contractor in the implementation of mitigation measures for the adverse impacts, maximize additional benefits, and ensure that they receive appropriate compensation.

As per the FDRE Constitution Article 43 No.2, the participation of the public in policies and projects that affect their livelihood is mandatory. Hence, public consultation should be understood that it is the constitutional rights of the public.

Public and Stakeholders' consultation aims to increase the participation of all the stakeholders', including people residing in the project area, local government officials, Kebele administrations and Woreda experts; and professionals from every sector in almost all locations where the road traverses. Stakeholders' consultation was held with the objective of influencing the identified stakeholders in each key stage of the project road construction works, and that the concerns of stakeholders are reflected in the road design and construction works. The consultation was held in every woreda capital located in the project area and in almost every rural Kebele where the project road traverses.

The public and stakeholders' consultation was carried out with different groups of public and private organizations, community groups and individuals both men and women. Some of the participants of public and stakeholders consultations include;

- Dwellers of the villages and urban centers crossed by the project road
- Religious leaders, Elders and informal leaders,
- Woreda Sector Offices,
- Kebele Administrations from both Rural and Urban Kebeles,
- Business men (Hotel and Restaurant owners, Transporters, Traders, etc),

There were 76 participants of the public and stakeholders' consultation in total and out of the above number of participants, 41 are residents from Sheki and Chida towns, and the rest were members of woreda administration and sector offices from the three woredas. The participants from the woreda administration and sector offices included 9 from Konta Special woreda, 13 from Dedo and 13 from Seka chekorsa woreda.

The public and stakeholders' consultation/discussions focused;

- On the nature of potential social impacts of the project road; on social, cultural and economic ties and networks during and after construction works
- Identification of major social impact issues, such as involuntary resettlement, community severance and vulnerable groups that are at particular risk of project impacts; and compensation for affected properties and assets.
- Data and information on the current usage and ownership of land in existing width of the road, fixed and movable structures, trees, wells and other assets, areas of significant squatting and/ or encroachment.

- Soliciting the views of local population as to how pragmatically consider their needs within the basic format of the project, and what beneficial impact they expect from the project road.
- Social composition, settlement patterns, main sources of livelihood and past history of displacement of the population, if any.

The issues of the public and stakeholders' consultation are summarized as follows;

1) The participants of the public and stakeholders' consultation in Dedo woreda (Sheki town) have requested ERA that the construction of the road to pass through the center of the town by avoiding the present route which is located in the outskirts. Both the public and the authorities have the feeling that if the road passes through the center it will highly contribute to the growth and development of the town of Sheki. They assume that the households that will be affected by the ROW in the town sections will not be significant.
2) All the woredas, traversed by the project road have agreed to provide support and assistance for people who will lose their land (farmland or residential land) by the ROW, detour and other construction purposes.
3) Although aware of the potential negative impacts, such as loss of land, house and trees, the participants of the public consultations and other members of communities fully recognize the impacts and are ready to mitigate them
4) Woreda administration offices are ready to allocate land for project affected persons and provide all necessary support
5) Woreda administration offices are willing and ready to provide special support for female headed households if affected by the construction of the project road.
6) All the three Woreda administration offices have agreed to provide all required support from them and to facilitate the smooth implementation of the construction works and provide other routine administrative supports if need be.
7) Woreda administration offices have agreed to maintain peace and security during the construction works are in progress.

In general, in all the locations where public and stakeholders' consultations were held, the public are highly supportive and positive about the upgrading of the project road and are much enthusiastic about the plan; and are looking forewords to the commencement of the construction works.

Minutes of meetings were prepared and signed stating the consensus reached regarding their opinions, commitments and cooperation to be accorded for smooth project implementation, regarding ROW and land acquisition requirements of the project etc. (Copies of the minutes of meetings are attached in Annex of this report).

Photo 6-3: Public consultation at community level (left) and consultation with woreda authorities (right)

7. POTENTIAL IMPACTS AND MITIGATION MEASURES

This section provides the assessment of the potential environmental and social impacts of the construction and operation of the Jimma - Chida road. In addition, it provides mitigation measures for the adverse impacts and enhancement measures for the positive impacts.

7.1 Positive Environmental and Social Impacts

7.1.1 Positive Environmental Impacts

The proposed road upgrading project would involve a number of major improvements in the engineering features of the Jimma – Chida road. These include improvement of horizontal and vertical curves, widening of the carriage width, provision of adequate cross and longitudinal drainage structures, provision of shoulders, provision of parking lanes and pedestrian walkways in towns and villages, asphalt pavements, and erosion protection structures. In addition, it will involve realignments to avoid spots or stretches with land-sliding problem. Moreover, it will integrate environmental mitigation and benefit enhancement measures. All these features will bring a number of positive environmental impacts, including the following:

- Shifting the road away from the landslide prone areas is expected to reduce the land-sliding problem. This benefit can be enhanced through reinstatement of the abandoned road section and tree planting.

- Upgrading of the road with asphalt pavement will minimize the prevailing dust pollution on the road, which is a nuisance to the roadside communities and that damages crops and vegetation along the road.

- Upgrading of the road with asphalt pavement will avoid the existing erosion from the gravel-surfaced road and minimize erosion from roadside ditches. This will minimize the impacts on water quality resulting from erosion of particles from the road surfaces and side drains, which would cause high turbidity and water pollution.

- With improved geometry and widened carriageway, it will improve visibility for drivers and pedestrians, which in turn will reduce accident risks for both motorized and non-motorized traffic, and facilitate traffic flows.

- With smooth surfaces and better geometry of the road, it will reduce vehicle-operating costs, which will reduce travel time and the individual vehicle's air and noise pollution.

- Provision of pedestrian walkways and parking lanes in town and village sections will bring better safety for pedestrians and non-motorized vehicles.

7.1.2 Positive Social Impacts

Development projects, such as the construction of road projects are planned for the socio-economic improvement of a nation and make significant contribution in bringing about

better life style to the community. In this respect, there are a number of potential positive impacts expected from this project and it will be worthwhile to consider them and prepare enhancement measures for intensifying and sustain their benefits.

The basic positive impact of the proposed project road is creating efficient and effective road transport access for the people living in the project influence area. The other advantages of the proposed project will directly or indirectly emanate from this basic benefit of the project.

7.1.2.1 Improved Access for Transport Facilities

The road project connects two regional states and serves as the major link with the Addis Ababa – Jimma road in the western part of the country and Addis Ababa - Sodo trunk road in southern part of the country. Despite this fact, the condition of the existing road is very much deteriorated and narrow as it is among the oldest roads in the country. As the participants of the public and stakeholder consultation at different parts of the road tried to express, vehicles do not prefer to use the existing road and as a result of this the communities in the area are facing difficulties to transport agricultural inputs and their produces.

Thus, the upgrading of the envisaged project road will reduce the transport problems that the communities have been facing for the past many years. Upgrading the road and introduction of vehicular transport facility into those previously unsupplied Woredas would minimizes both the cost and time required for travelling to social service giving institutions, administrative centers and to market centers.

7.1.2.2 Poverty Reduction

The construction of the road will have significant contribution in contributing to poverty reduction/alleviation in the project road corridor. Due to the construction of the road, social service facilities will improve, agricultural produces could easily be transported to nearby markets, household income will be created and new jobs and income generating activities will also flourish. These and associated benefits will definitely contributed to poverty reduction/alleviation and facilitate growth and development.

7.1.2.3 Growth in Micro & Small scale businesses

In the project road corridor, there are very limited opportunities for off-farm and market based economic activities. Income generation schemes that are currently practiced by communities are mainly traditional, similar and uniform, and meant mostly to meet daily needs only. Hence, with the construction of the project road, it is believed that some of these traditional forms of income generating activities will be transformed into micro and small scale level of production.

7.1.2.4 Employment opportunities for local communities

The upgrading of the project road is expected to create employment opportunities and job for the local communities. The youth and women residing in the project area will benefit from the employment opportunities created due to the upgrading of the road. It can be

assumed that this will be a significant contribution to the reduction of poverty at the household level.

The employment (semi-skilled and unskilled labor) of the local community in the construction of the project road should be encouraged from the project area and more opportunity or priority in employment should also be given for women and in particular to female headed households. If such employment mechanisms are adopted the project would contribute to the creation of jobs and income, and improvement of the local economy; increase the revenue capacity of the project area, and will also bring in skills and knowledge to the locality.

The generation of employment through physical works expected as direct positive effects of the road construction. At local level, the population can benefit from job opportunities created following the development activities in the area.

In the process of employment, the contractor is also expected to respect and abide with the Labor code of the country; and give priority to the employment of the local population, and specifically to women.

The measures of reinforcement include, employing large proportion of women in both casual and semi-skilled workers from the local population and maintain legally acceptable work safety regulations.

7.1.2.5 Growth of Income Generating Activities

The growth and development of income generating activities is one of the positive impacts of the upgrading of the project road to the local community. There will be temporary income opportunities to be created for the residents in the project area during upgrading works. Businesses such as, catering services (or small bars and restaurants) located along the project road and near construction camps, etc. could earn additional income due to the presence of large numbers construction workers. More traffic movement could also contribute to an increase in income-generating activities in the town sections located along the project road.

The income also generated due to the construction of the project road is expected to improve the lives of the local population and further contribute to create wealth in the project area.

7.1.2.6 Employment of Women

One of the positive impacts of the upgrading of the project road is to create employment opportunity for women. Women in road projects could work as daily laborers, time keepers, store keepers and in similar other activities during the project implementation. It is recommended that the contractor should give priority for women in the employment of unskilled and casual laborers. By giving priority to women workers the project will contribute to reduce the dependency of women on men and also encourages women to learn new skills.

To the employment of women, ERA and local authorities need to ensure that women are not left out during employing local labor force and women workers be assigned in those jobs that fit to their biological and physical conditions.

7.1.2.7 Increased Agricultural Production and Productivity

The upgrading of the project road will create subsequent increase and utilization of agricultural inputs and services that will result in increased production and productivity. Hence, with increased production and productivity farmers will be able to earn higher farm gate prices for local produce, resulting in higher incomes to the farming households.

It is also true that with the upgrading of the project road, improved and increased market opportunities would be created for crop production and livestock; increased prices for agricultural products and this in return will contribute to increased household income and expenditure as well.

7.2 Negative Impacts on Physical Environment

Potential impacts on physical environment include impacts on land under various uses, increased risks of soil erosion and soil pollution, land-sliding, disfiguring of landscape, impacts on water resources (like increased sedimentation, water pollution), and air and noise pollution. These possible impacts are assessed and described in the following sections.

7.2.1 Impacts on Air Quality

Implementation of the proposed road-upgrading project is expected to bring impacts on air quality due to emissions of particulate matters, notably dust, and exhaust gases and noise from vehicles and machines. The main products of the combustion of motor fuels are carbon dioxide and water. However, inefficient engine operation results in the production of other pollutants, such as Nitrogen oxides (NO_x), Carbon monoxide (CO), Hydrocarbons (HC), Sulfur dioxide (SO_2) and lead. The amount of exhaust emissions depends on several factors, including fuel composition, level of engine maintenance, type and age of vehicle, and road geometry and terrain conditions. Dust and toxic air pollutants are known to cause some human health problems such as respiratory diseases, eye inflammations, skin irritations, and various types of allergies. There is also a risk of affecting the nature as the accumulation of particulates in the atmosphere and deposition on plant leaves could reduce photosynthesis and plant growth.

Impacts during Construction Phase

During the implementation stage, construction vehicles and machinery will cause an increase in dust and exhaust emissions at the project site as well as on existing roads used for hauling materials. Dust and noise pollution problems are considered to be most significant along most sections of the road as many people live and work close to the road esp. in the towns and villages. Construction traffic, particularly the trucks used for the transport of construction materials, will increase traffic flows greatly, and this will proportionally increase the amount of dust and exhaust emissions as well as noise levels. The emissions will contain a large amount of pollutants due to the use of heavy machinery and vehicles.

In addition, excavation and earthmoving operations, mining of quarry and borrow materials and their haulage to the construction sites or processing plants, aggregate production and asphalt mixing activities will generate dust and gaseous emissions that will affect air quality. The dust, exhaust emissions and noise generated by all these activities could affect adjacent residential areas, businesses, crops, education and health facilities, water supply points and religious properties (mosques and churches). The road corridor is densely populated and intensively farmed, and contains many sensitive areas including mosques, churches, schools, health units as well. Therefore, the increased air and noise pollution could affect many people and the above indicated sensitive receptors.

Extraction of rock for aggregate production and masonry works may involve blasting activities, which is likely to generate dust and noise pollution problems around the quarry sites. In addition, operation of stone crushing plants for aggregate production is likely to generate significant dust emission to the surrounding environment. If the quarries and crusher sites are located in the vicinity of settlement areas and/or croplands, dust and nuisance noise can cause significant impacts on the residents around the sites as well as crop production. Continued exposure to dust can cause public health problems like infections of respiratory system and diminished crop yields as well as its quality.

The impacts are localized and on a shorter or medium term, depending on the complexity of the road works and the production of construction materials. In the towns and villages, the impacts are considered as significant whereas the impacts in other places are predicted to be moderate.

Impacts during Operation Phase

After completion of the road works, dust levels will be minimized because the road would be bituminized and traffic will use the asphalt road instead of gravel roads. During the operation phase, the upgraded road will reduce the vehicle operating cost, which will reduce the individual vehicle's air and noise pollution. On the other hand, the impact of noise and exhaust emissions will tend to increase since the traffic volume would increase. These increased emissions will impact on the air quality but this will to some extent be modified by the road upgrading which will tend to reduce the vehicle fuel consumption which will reduce an individual vehicle's air and noise pollution. In overall, the impact on air quality is a long term effect, but is expected to be low in magnitude and effect.

Mitigation Measures

Emissions of particulate matters, pollutant gases and noise shall be reduced to acceptable levels by adopting the following measures:

- Use of modern and well-maintained equipment (with mufflers where appropriate), regular maintenance of diesel powered machinery and vehicles to reduce excessive exhaust emissions
- Restriction of traffic speeds and applying water regularly on dusty roads in a more stringent way in towns and villages as well as near other sensitive receptors such as schools, health care facilities and religious places
- Regular maintenance of emission intensive plants like stone crusher and bitumen mixer and application of dust suppressant mechanisms

- Locating the aggregate production and bitumen mixing plants at a minimum distance of 1.5km from sensitive areas such as residential areas, health units, schools, religious places, and drinking water supply sources
- Regular wetting/spraying water of quarry and stone crusher sites during their operations in order to reduce dust emission and its effects on local population and the surrounding environment
- Construction workers must comply with relevant health and safety standards pertaining to noise and emissions, such as wearing ear protection when operating plants or heavy machinery
- Implementing well-designed traffic management plan that considers traffic safety and working hours for materials transport thereby minimize transport-related disturbances to local residents and road users, and reduce traffic accidents
- Carrying out noisy construction activities during normal working hours, and
- Avoiding burning of materials such as tiers, plastic, rubber products or other materials that creates heavy smock, hazardous smoke or nuisance odor and disposing of any volatile chemicals to the air.

7.2.2 Impacts on Soils

The proposed road-upgrading project is likely to cause some impacts on soils, including increased risks of soil erosion, soil compaction and soil pollution. During construction, land clearing and earthworks to widen the carriage width, improve the alignment, construct new culverts and side drains or replace the existing old and substandard structures, and to construct detour and access roads, campsites and other site facilities will disturb the soil structure and ultimately expose it to erosion by runoff water. In particular, construction of the realignment (new road) sections will involve more extensive earthworks that will expose proportionally more area of land or soil to erosion. Also, runoff water concentrated in roadside ditches and diversion drains may cause erosion in the structures themselves and in downstream areas. This is already an existing environmental problem, which is likely to intensify during construction until erosion protection measures are implemented.

The topographic and climatic condition of the project area can exacerbate the rate of soil erosion. The project road traverses mostly rolling, hilly and mountainous terrain. In addition, the project area is characterized by high intensities of rainfall. These situations are likely to increase the risk of soil erosion. On the other hand, the project area has a good potential for grassing and establishing vegetation on erosion prone areas as it has favourable climate like availability of rainfall, and fertile soils.

In addition, disposal of spoil materials generated from excavation works onto adjacent lands or on down-slope may affect productive soils or land, which is under agricultural use or vegetation cover. Moreover, soils can be impacted due to compaction by heavy-duty equipment used in the construction works and dump trucks used for hauling of construction materials. The use of unpaved access roads and detours will also have compaction or trampling effects on soils. Besides increased soil erosion and compaction, the project may cause soil pollution by hazardous substances like oils, fuel and detergents

due to accidental spillage, leakage of equipment and vehicles, or improper disposal of used oils.

Potential impacts on soils will be minimized through the following mitigation measures:

- Carrying out earthworks during the dry season to reduce soil exposure to erosion and reduce alteration of drainage systems that would contribute increased erosion,
- Using 'half-width' construction method where technically feasible thereby reducing soil compaction, trampling and pollution due to use of detours,
- Designing and construction of appropriate physical structures such as paved side-drains, diversion drains, check dams, culverts and sufficient turnouts to reduce the concentration of water flows, erosion and scouring along and downstream of the structures,
- Construction of interceptor ditches or cut off drains behind the top of cut slopes to protect vulnerable slopes from erosion and slope instability problems,
- For the side drains and diversion ditches with slopes and soils vulnerable to erosion, design and construct of physical structures such as check dams, mitre drains, and other energy dissipating structures like chutes and cascades.
- Reducing the time exposed surface remains bare by implementing grassing or re-vegetation by other plants following completion of the construction works,
- Minimizing works/ operating equipment beyond the imperative area shown in the engineering design,
- Avoiding locating culverts and side-drains in such a way that they would release runoff water onto slopes vulnerable to erosion, and for unavoidable cases, providing erosion protection structures,
- Removal of pavement materials used on detour and access roads, loosening the compacted soils using ripper, and spreading topsoil to restore the soils compacted to productive state,
- Avoiding disposal of excavation materials onto adjacent areas or down-slopes where it could productive soils used for agricultural activities or growing trees or vegetation,
- Establishing grasses or other suitable plant species on erosion-prone areas such as cut and fill slopes and other exposed surfaces. Plant species that are capable of reinforcing the soil profile by increasing its shear resistance include the following:

  ***Grass species**:* Vetiver Grass, Kikuyu Grass*,* Bermuda Grass*, Pennisetum sphacelatum,* Elephant Grass (mainly for gully treatment).

  Trees and shrubs: *Cordia africana (Wanza), Acacia abyssinica (Girar), Albizia schimperiana* (Sassa) and *Erythrina brucei (Korch), Sesbania sesban, Leucaena leucocephala*

- Preventing contamination of the soil by oil, fuel, used oil or other pollutants, or waste water through regular maintenance and servicing of construction vehicles in demarcated areas designed to contain fuel and oil spillages, proper storage hazardous substances (fuel, oils, detergents) and proper disposal of used oils in a manner approved by the Resident Engineer.

7.2.3 Impacts on Landscape Quality and Slope Stability

There will be certain impacts on landscape quality in relation to earthworks for increasing the road width and construction of realignment sections, exploitation of construction material sources, establishment of camps and materials processing and storage sites (stone crushing and asphalt mixing plants), and spoil disposal. In particular, disfiguring of the landscape at borrow pits and quarry sites, spoil disposal places and materials processing plant sites is expected to be significant. The extent of impacts at other locations is likely to be low to moderate.

The existing road has critical land-sliding problem at three locations, including at ~km 23.80 to km 24.00, at km 31.50 and at km 38.50. There is also tumbling/sinking spot around km 76.50. These spots caused major impediments to traffic movement especially during wet seasons and there is a high risk of complete blockage of the road as there is a high probability of mass sliding that may totally damage sections of the road crossing through those vulnerable spots. In the design for the road upgrading, realignments have been considered to provide a sustainable solution for the land-sliding problem at those locations. In addition, minor slope instability problems can be expected at some spots that could be triggered due to cutting in vulnerable slopes for widening the road. Moreover, slope instability problem may encounter at locations where inappropriate disposal of excess spoil materials esp. on steep slopes was practiced.

Potential disfiguring of landscape quality and slope instability can be minimized through the following mitigation measures:

- Considering realignment for the sections of the road, i.e. km 23.8-24.0, km 31.50 and km 38.50, to avoid the existing land-sliding problem,
- Planting suitable tree species on landslide vulnerable areas – trees and shrubs listed in section 6.3.2 and Gravillea robusta, Schinus molle and Neem are potentially appropriate species for this purpose.
- Planting appropriate grass species on cut slopes and fill slopes - appropriate grass species recommended for this purpose include Vetiver Grass and Kikuyu Grass,
- To the extent possible, use of existing material sources that have been used for the road maintenance and by previous road projects such as the Addis-Jimma, Jimma-Bonga and Sodo-Chida road projects, and open lands for contractor's site facilities to minimize the impacts caused by exploitation of new material sources and establishment of campsites,
- Restoration of borrow sites and areas of Ccontractor's' site facilities through back-filling, landscaping and re-establishing vegetation cover,

- Avoiding indiscriminate disposal of surplus or unsuitable excavation materials by depositing it only at approved disposal sites and, on completion, by landscaping and planting such sites with appropriate tree, shrub or grass species to improve the aesthetic quality of those sites,

- Reserving spoil materials and utilizing it in back-filling of quarries or borrow pits when exploitation of those sites is over,

- Designing and constructing appropriate slope stabilizing structures like retaining walls or gabions at the vulnerable sections, and

- Controlling surface water infiltration to reduce seepage forces by providing adequate side ditches, interceptor drains, and diversion drains.

7.2.4 Impact of flood

Few stretches of the flat sections along the project road that are prone to seasonal flooding may require high fill to raise the road above the flood level. It also requires installing pipe/box culverts to balance the flood on both sides of the road. Major flat areas are located at about km 2, around km 7+2-8.0. These areas are not permanent wetlands, but when heavy rain falls it retain some flood for sometimes.

Proposed mitigation measures include raising the road above flood level and installing box/pipe culverts to balance the flood. Provide appropriate drainage line and regularly clean pipes and culverts during the operation phase.

7.2.5 Impacts on Land under Various Uses

Among the potential impacts on land resources is loss of land under various uses. As the Jimma-Chida road is designed to be upgraded basically following the existing road alignment, the impact on land under various uses will be fairly limited. This impact is basically related to land requirement for widening of the carriage width, alignment improvements and realignments to meet the requirement of the recommended design standard and to avoid stretches that have a land-sliding problem. As most section of the road runs through densely populated and intensively farmed area, the potentially affected land is dominantly under crop production, plantation trees and settlements. The potentially affected land is used for production of a variety of crops including cereals such as maize, sorghum, wheat, barley and teff, pulses (field pea, faba bean), root crops (potatoes & Godere/Yam), and perennial crops mainly Enset, Coffee and Chat. The potentially affected trees are dominantly Eucalyptus trees and others include Cypress, Gravillea, fruit trees like Avocado, and several species of indigenous trees such as Cordia, Fig trees (F. vasta & F. sur), Erythrina, Albizia, Croton, Prunus, Hagenia, Ekebegia, etc. The loss of land due to land acquisition for the above-indicated project activities will be permanent.

The extent of land requirement for widening of the road width and alignment improvements would be estimated after the detail engineering design was carried out. However, a rough estimate of the land requirement for the realignment sections can be made at this stage. Realignments are proposed at three locations that cover a total length of about 5.5km. Assuming a 30m right-of-way, a total of about 16.50ha of land would be affected due to the land taking for the realignments. The potentially affected land is

predominantly agricultural land, which is used mainly for production of cereal crops such as teff, wheat, barley and sorghum as well as perennial crops mainly Enset, Coffee and Chat. In addition, some area of grazing land and some housing units will be affected.

In addition, there will be land requirement for temporary project activities, including campsites, construction material sources (borrow pits and quarries), materials processing sites, detours and access roads as well as spoil disposal sites. These activities are likely to affect productive lands that could be under agricultural uses/crop production, livestock grazing or covered by trees or vegetation.

Impacts on land under various uses will be reduced or compensated through the following measures:

- Designing the road upgrading following the existing road alignment as far as it is technically feasible to minimize alignment improvements/realignments and the extent of additional land requirement,
- Adopting 'half-width' construction method particularly for sections passing through prime agricultural lands and areas covered by perennial crops such as Enset, coffee, Chat etc. or indigenous trees forest to reduce the impacts due to land taking for detour roads,
- Limiting land acquisition and earthmoving activities to the imperative area necessary for the road works,
- Avoiding side-tipping of excavation materials onto adjacent farmlands or on lands under other uses by disposing all spoil or excess materials in approved spoil disposal areas with appropriate landscaping and establishing vegetation after completion of the works,
- Avoiding designing and construction of culverts and side-drains in such a way that they would release runoff or flood water onto lands under agricultural or other uses,
- Restoration of areas affected due to temporary activities like detours and access roads to productive state by removal of pavement materials, loosening of compacted soils and spreading of the topsoil preserved for this purpose; the topsoil removed from the road widening and other areas shall be stockpiled for re-use on embankment slopes and restoration of temporary affected area, and
- Payment of reasonable compensation for loss of farmlands, grazing areas, and trees and other properties according to the pertinent government laws (Proc. No. 455/2005 and Regulations No. 135/2007), which deal with compensation issues for expropriation of landholdings for public projects.

7.2.6 Impacts on Water Resources

The Jimma-Chida road crosses four major perennial rivers and several streams and minor drainage channels. Fortunately, the existing bridges on the major rivers are expected to be maintained with some maintenance works. This is advantageous in terms of minimizing impacts on water resources and other valued environmental components such as flora (esp. indigenous trees), aquatic fauna (esp. fish), and soils. Nevertheless, the road-

upgrading project would involve replacement of several culverts and installation of new ones. Thus, the activities involved in the construction of the cross drainage structures and the road may cause some adverse impacts on the streams and rivers crossed by the road.

The likely impacts on water resources include increased sediment loading and water pollution risks of the streams, rivers and wetland spots crossed by the project road. The main potential causes of increased sedimentation of water bodies include excavations for foundation of culverts, increasing the road width, and construction of realignment sections and roadside ditches and diversion drains. Other possible causes include disposal of excavation materials on riverbanks or in river-courses and mining of sand from river-bed. Presumably, excavated materials can easily be transported into watercourses through runoff water erosion or direct disposal into watercourses. These situations may greatly contribute to increased sediment loading of the rivers and streams crossed by the project road.

Several sections of the existing road have already actually interfered with natural drainage systems and altered surface water flow patterns. The road embankment or roadside drains have intercepted surface or subsurface flows and resulted in concentration of runoff water in the side drains and diversion drains that in turn has caused erosion or siltation problems along some sections. Fortunately, most of the erosion prone sections of side ditches and diversion drains were properly paved with concrete lining or stone pitching; thus, significant erosion problem was not noticed along those sections except where the structures were damaged due to lack of maintenance. The proposed road improvement project is not expected to bring major changes to surface or subsurface drainage systems other than that have already caused by the existing road except along the realignment sections. Nevertheless, the volume of surface water flow is expected to increase due to reduction in infiltration due to sealing of the road surface and side ditches by asphalt pavement and lining with concrete works or stone pitching respectively. The project area is characterized by a high rainfall and mostly hilly and rolling terrain. As a result, it can generate a high volume of runoff water that may cause significant erosion and gully formation in downstream areas unless it was adequately controlled by providing erosion control structures like check dams, cutoff drain, energy dissipation structures and directed to streams, rivers or other natural drainage systems.

Implementation of the proposed road project may affect the water quality of water bodies (rivers, streams and springs) found in the impact zone. The main possible sources of water pollution are spillage of fuel and oil into watercourses, improper disposal of used oil, and release of hazardous wastes and chemicals from garages and workshops. In addition, unrestrained discharge of sewage and other fluid wastes at campsites may cause water pollution through surface runoff into watercourses or infiltration into the groundwater.

Mining of sand from river-courses for concrete and masonry works is another possible source of adverse impacts on water resources. Extraction of sand from river-courses is expected to bring some impacts like changes in the morphology of the river-bed. In addition, there could be water pollution risks through leakage of fuel or oils from the equipment and trucks that would excavate and haul sand respectively.

Although not as significant as the impacts during the construction period, there could be some impacts on water resources during the operation phase. Possible impacts are related to increased traffic volume that may produce more spills of pollutants such as fuel and oil. These pollutants together with road runoff may cause pollution of the rivers and streams crossed by the project road or in downstream of the road alignment.

Potential impacts on water resources can be minimized through the following mitigation measures:

- Execution of earthworks for construction of the road and drainage structures during dry seasons to reduce interference in river flows and reduce erosion, sedimentation and water pollution risks.
- Avoidance of dumping excess excavation materials on riverbanks or in river courses, but depositing it only at approved disposal sites.
- Proper siting of spoil disposal sites – avoiding locating nearby streams and rivers, wetlands, drainage lines or slopes where the materials could be exposed to runoff or flood water and transported to water bodies.
- Proper handling of hazardous substances such as oil, fuel, detergents and cement to avoid water pollution risks due to spillages. Among the precautions to be taken is that the Contractor's dispensing points of fuels and lubricants shall have drip pans, and for the dispensing of petroleum products fuel funnels shall be used.
- Avoidance of leakages from vehicles and construction equipment through regular and effective maintenance.
- Proper disposal of solid and liquid wastes generated by construction camps and workshops by providing proper sanitary facilities and maintaining them in good condition until the camps are closed.

7.2.7 Impacts on Water Supply Systems and Competition for Water

There are traditional irrigation schemes that are based on Gibe, Offole and Unta rivers through river diversion and motor pumping; the rivers are located at km 4.3, km 8.7 and km 23.3 respectively. Since the schemes are located at upstream and/or downstream of the road crossing point, they are not expected to be affected by the road construction activities. Nevertheless, care should be taken not to affect the schemes due to location of detour roads.

At Sheki town (~km 17.6-21.7) there are water supply pipelines that either cross the road or run along the road. Those pipelines are likely to be affected during the construction of the road. In addition, there is a protected spring source at km 22.6 RHS located below the road on hilly terrain. This water supply source could be affected during the road works unless necessary precaution was taken. Moreover, there is a hand pump at ~km 7.2 LHS that should be protected from damage by the road works.

Photo 7-1: Some potentially affected water supply schemes – Water supply pipeline crossing the road at ~km 19.5 at Sheki town (left), protected spring source at km 22.60, 10m RHS below the road (middle) and hand pump at ~km 7.20, 10m LHS located at edge of a wetland spot (right)

Certainly, water will be required for the road works like for compaction and concrete works, as well as for the contractor's campsites. The water required for the road works can be abstracted from the major rivers (Gibe, Unta & Gojeb) and perennial streams without causing appreciable impacts on human, livestock and irrigation water supplies as well as environmental flow requirements. However, drinking water supply for the contractor's campsites requirements could be a constraint. The existing water supply sources are not be expected to meet the existing users' water demands and the road project's campsites requirements. Therefore, the Contractor may need to develop his own water supply sources for the campsites requirements.

Potential impacts water supply systems and existing water uses shall be avoided or minimized through the following mitigation measures:

- Relocation of the affected water supply pipelines before the commencement of the road works in order to avoid interruption of drinking water supply for the local population.
- Taking maximum care to avoid impacts on the protected spring water source located at km 22.6 RHS and hand pump situated at km 7.20 LHS.
- The Contractor shall not use water from the existing water supply sources used by the local communities for human, animal or irrigation purposes unless its adequacy is proved and permitted by the relevant local authorities, district water offices or local community.
- The Contractor shall be responsible for making his own arrangements for water supply for campsites requirements and other purposes without affecting the quality and quantity of water sources of existing users.

7.2.8 Impacts of Hazardous Substances/Wastes

Among the expected adverse impacts of implementation of the envisaged road project is the impacts related to use of hazardous substances such as fuel, oil and detergents, and disposal of hazardous wastes like used oil from garages and workshops as well as fluid and solid wastes generated by construction camps. Spillage of fuel and oil at dispensing points of fuel and lubricants as well as from equipment and vehicles at construction sites may cause environmental pollution including contamination of soil and water resources, both surface water and groundwater. Similarly, discharge of hazardous wastes and chemicals from garages and workshops may result in soil and water pollution. Moreover, release of sewage and other liquid wastes at campsites like due to overflow of septic tanks or direct discharge of wastes to open fields may cause serious environmental pollution. Such hazardous substances, chemicals and/or wastes may result in contamination of water resources that are sources of water supply for human as well as animals. Therefore, this situation may have adverse effects on human as well as animal health. Furthermore, pollution of water bodies may affect aquatic life and the functioning of aquatic ecosystems.

Proposed mitigation measures include the following:

- Locating campsites away from environmentally sensitive areas like streams and rivers at a minimum distance of 1.5km,
- Construction of lined septic tanks at all campsites and discharge of all liquid wastes generated by camps into the septic tanks with regular inspection and servicing of the septic tanks in order to avoid overflow to the surrounding environment,
- Preventing environmental pollution by hazardous substances such as oil, fuel and detergents through proper storage and handling of the substances due to spillages. Among the precautions to be taken is that the Contractor shall install drip pans and fuel funnels at dispensing points of fuels and lubricants.
- Avoidance of leakages from construction equipment and vehicles through regular and effective maintenance, and
- Proper collection of used oil and other chemicals and safe disposal through accredited oil reprocessing or disposal agency or in other manner approved by the Engineer.

7.3 Negative Impacts on Biological Environment

7.3.1 Impacts on Vegetation and Flora

The planned road-upgrading project is expected to be implemented basically following the alignment of the existing road. This situation is advantages in terms of reducing impacts on vegetation, forests or indigenous trees. No realignments were proposed along the sections that traverse important forest areas. Nevertheless, the road project is proposed to involve realignment at three locations that cover a total length of about 5.5km, several minor alignment improvements and increasing of the road width. These activities are

expected to cause loss of several indigenous trees, numerous plantation trees and secondary vegetation that are found along the realignments and on the existing roadsides. In addition, exploitation of construction material sources and construction of access roads and detour roads are likely to cause some loss of natural vegetation and trees.

The sections or locations where loss of vegetation or trees is expected and the main potentially affected tree species are indicated below:

- Km 0.5-3.3: Secondary growth trees and shrubs mainly *Croton*, *Erythrina*, *Vernonia, Maesa, Myrica, Pterolobium* etc. and many eucalyptus trees found on the roadsides will be affected due to increasing the road width,
- Km 1.9 LHS: A large canopy *Albizia schimperiana* and 2 medium *Cordia africana* trees (one each) located at ~2-3m LHS may be affected due to widening of the road width,
- Km 2.5-2.7: Some *Croton*, *Cordia* and *Erythrina* trees located on LHS edge are likely to be affected caused by the road width widening works,
- Km 11.5 & km 11.7 medium size Fig trees (*Warka*) trees at ~2m RHS & ~4m RHS respectively may be affected due to widening,
- Km 13.4 a large *Sapium ellipticum* tree on RHS (~2m) may be affected due to widening,
- Km 13.5: Medium size *Cordia* trees 3 in number at ~2-4m LHS may be affected due to road widening,
- Km 14.5-14.6: Large *Cordia* (2), *Albizia* (1), and several Cypress, Gravillea and Avocado trees at 2-5m LHS may be affected due to widening,
- Km 16.2 a cluster of medium & big Fig trees (*Warka*) 5 in number at 2m to 5m RHS are likely affected due to road widening (see Photo 4 middle in section 4.2.1),
- Km 16.6: a large *Acacia* tree (1) at 4m RHS may be affected due to road widening
- Km 21.4-21.9: Secondary growth trees, bushes and shrubs mainly *Croton*, *Erythrina, Maesa, Myrica, Calpunia, Senna and Pterolobium* spp. on both sides will be removed due to road widening and the need to improve sight distance or visibility,
- Km 23.3-24.5 /New/Realignment section: Several small and medium size trees including *Cordia* (dominant), *Albizia*, *Millettia, Erythrina, Acacia, Prunus, Ficus*, *Croton, Ehretia, Bersama, Maesa,* and *Myrica* spp. will be affected due to new road construction,
- Km 25.5-25.6: *Acacia* (~7) and *Cordia* (1) trees at 3-5m RHS may be affected if major widening was designed on RHS,

- Km 29.1-29.3: *Dombeya* trees (~5 in number) located on RHS edge are likely to be affected due to increasing the road width,
- Km 30.0: A large Fig tree (*F. sur/ Shola*) and a clump of bamboo thicket located on RHS edge may be affected due to increasing the road width,
- Km 31.0-32.6 /New/Realignment section: Some small and medium size trees including *Erythrina, Prunus, Hagenia (Kosso), Ephorbia (Kulkual), Dombeya, Apodytes, Ekebrigia, Croton,* and *Avocado* spp., and many Cypress and Eucalyptus trees will be affected due to construction of this new section of the road,
- Km 34.2-34.6: Some trees including *Croton, Erythrina, Dombeya, Maesa* and *Myrica* found on both sides are possibly affected in relation to widening of the road width,
- Km 35.1-35.2: Some trees including *Dombeya, Croton,* and *Acacia* located on RHS may be affected due to road widening,
- Km 37.3: A big *Erythrina* tree located at ~2m RHS is possibly affected,
- Km 37.6: A few trees of *Ficus sur* (*Shola*) on LHS and *Erythrina* on RHS found on stream banks may be affected,
- Km 36.3-39.0 /New/Realignment section: Several indigenous trees of variable size (small to large) including *Ekebergia, Croton, Erythrina, Ficus, Dombeya, Apodytes, Millettia,* etc., Highland bamboo, and many exotic trees (Eucalyptus, Cypress and *Gravillea*) will be affected due to construction of this new section of the road,
- Km 43.1: 2 big *Podocarpus* (*Zigba*) trees at ~5m and 8m LHS – major widening or alignment improvement on LHS may affect such conservation priority indigenous tree sp.,
- Km 46.6-50.7: Some indigenous trees may be affected due to increasing the road width. This stretch requires particular attention since it passes through a protected high forest. Therefore, it is recommended that major widening or alignment improvement along this section shall be minimized in order to avoid damages to the forest and loss of indigenous trees.
- Km 63.0-67.0: Increasing the road width and possibly alignment improvement around km 65 may affect some Acacia trees (*A. polyacantha & A. seyal*), which are the dominant species in this part of the Savannah woodland,
- Km 61.7 and km 67.0-67.2: Some riverine trees such as *Albizia, Ficus, Syzygium, Celtis, Cordia and Acacia* spp. could be affected in relation to increasing the road width and the need to improve sight distance by removing the vegetation on roadsides esp. at curvatures,

- Km 67.2-74.0: Several trees including *Terminalia, Combretum, Ficus*, *Acacia, Syzygium*. *Stereospermum, Piliostigma, Entada* etc. are likely to be affected in relation to increasing the road width and exploitation of material sources,

- Km 74.8-77.1: Some indigenous trees (mainly *Cordia, Ficus, Ehretia*, *Syzygium,* and *Acacia* spp.) that are located on the roadsides are possibly affected in relation to the road widening works, and

- Km 77.3-77.7: Some *Cordia* trees (~5 in number) mixed with dense alignment eucalyptus plantation found on RHS edge will be affected unless the road widening requirement would be made on opposite side, which in turn would affect many eucalyptus trees but comparatively less significant.

The magnitude of the affected natural vegetation or indigenous trees can be expected to be moderate. However, it can be reduced by adopting some mitigation measures and the unavoidable losses compensated through replanting program. Therefore, the significance of the impacts on natural vegetation and indigenous trees after mitigation is expected to be low.

Mitigation Measures

The mitigation measures recommended to minimize loss of vegetation and important trees and to mitigate or compensate for unavoidable losses include the following:

- For sections of the existing road containing important indigenous trees on roadsides, designing and implementing widening/improving the road to one side only, where technically feasible, that is to opposite side of the side containing trees. The locations recommended to be considered for this mitigation include the following, but not limited to:

    - Km 1.90: widening the road on RHS to protect the indigenous trees (*Albizia* & *Cordia*) found on LHS,

    - Km 2.5-2.70: widening the road on RHS to preserve the indigenous trees (*Croton*, *Cordia* and *Erythrina*) located on LHS edge,

    - Km 11.50 & km 11.70: widening the road on LHS to save the Fig trees situated on RHS,

    - Km 13.40: widening the road on LHS to protect a large *Sapium* tree on RHS,

    - Km 13.50 & km 14.5-14.6: widening the road on RHS to save indigenous trees (*Cordia & Albizia*), fruit trees (Avocado) as well as important exotic trees (Cypress, Gravillea & Eucalyptus) found on LHS,

    - Km 16.2: widening the road on LHS to conserve a cluster of large canopy Fig trees (*Warka*) found on RHS edge – this is highly important spot,

    - Km 25.5-25.6: widening/improving the road on LHS to save *Acacia* and *Cordia* trees found on RHS,

- Km 29.1-29.3: widening/improving the road on LHS to protect *Dombeya* trees located on RHS edge,
- Km 30.0: widening/improving the road on LHS to conserve a large Fig tree and a bamboo thicket located on RHS edge,
- Km 43.1: widening/improving the road on RHS to conserve big *Podocarpus* trees found on LHS,
- Km 46.6-50.7: Avoidance of major widening or alignment improvement is required to avoid impacts on the protected forest and indigenous trees, and
- Km 77.3-77.7: widening/improving the road on LHS to protect indigenous trees as well as dense eucalyptus plantation found on RHS edge

- Adopting 'half-width' construction method for sections passing through areas containing important indigenous or exotic trees or vegetation or through protected forests that would be affected if detour roads were constructed,
- Limiting earthworks and earthmoving activities to the imperative area necessary for the road works to avoid any unnecessary loss of trees or vegetation,
- Avoiding side-casting of excavation materials on down-slope where it may affect trees/ vegetation,
- Careful site selection for borrow pits, quarries, materials processing plants site and campsites to avoid areas containing important trees or vegetation cover, and
- Replanting appropriate tree species at areas affected due to temporary activities and at locations to be recommended by the Woreda Natural Resources Conservation or Environmental Protection Experts to compensate for trees/vegetation lost. In the planting program, indigenous tree species shall be given priority in species selection. Tree species recommended for planting program include *Cordia africana, Hagenia abyssinica, Erythrina brucei, Albizia spp., Acacia abyssinica,* etc. According to the information obtained from Dedo Woreda ARDO, the seedlings of these species are raised at the nursery sites found along the project road. These include Offole NS (km 8.60), Meteso NS (~km 38.0), and Dilbi NS (~km 44.0 at some km on LHS). Other species that can be used for the planting program include *Sesbania, Lukaenia, Neem, Gravillea,* etc. Those species have multipurpose uses including environmental conservation and fodder for livestock or ornamental value.

7.3.2 Impacts on Fauna

Impacts during construction phase

During construction, potential impacts on fauna and habitats will be related to:

- loss/disturbance of habitats due to increasing the road width, realignments, construction of detour and access roads, and exploitation of borrow pits and quarries,

- increased noise pollution generated by construction equipment, plants and vehicles, and
- animal killings due to collisions with construction vehicles and hunting by the project workers.

Since the road-upgrading project would be implemented basically following the existing road, the extent and significance of habitat loss/disturbance due to land acquisition for the road right-of-way and clearance of vegetation or removal of trees would be low. Since all the realignments are located in agricultural lands and settlement areas, habitat losses due to construction of these new sections will be minimal. In view of the total area of habitats available in the corridor, loss of habitats due to the project activities can be assumed to be insignificant or low. In addition, construction material sources (borrow pits and quarries) and campsites are not likely to be located in sensitive habitats or in habitats used by vulnerable or sensitive wildlife species.

Nevertheless, there could be noticeable disturbances to wildlife inhabiting the habitats found adjacent to the road and material sources due to increased noise pollution resulting from intensive operation of heavy-duty equipment and construction vehicles esp. dump trucks involved in haulage of construction materials. The project activities will intensify the existing noise pollution caused by the normal traffic operating on the exiting road. However, the project activities are not expected to cause serious or significant impacts on most of the wild animals inhabiting the road environment or other potentially affected areas since they are already adapted to human disturbances and noise pollution. Monkeys (Grivet monkey, Patas monkey, Anubis baboon and Colobus monkey) are the dominant wildlife in the road corridor and these species are less sensitive to noise pollution and habitat disturbances. Nonetheless, impacts on birdlife could be important as habitat disturbances/ losses and noise pollution may affect the nesting and breeding success of some bird species.

Less disturbed habitats are found in the corridor of km 48 – 52 (protected high forestland) and ~km 65.0-71.0 (savannah woodland and riverine forest). Since the road project will not involve any alignment changes along these sections, it is not expected to cause any appreciable impacts on habitats provided that construction material sources and contractor's site facilities shall not be located in these areas. However, wildlife could be disturbed by noise generated by heavy-duty equipment and vehicles involved in the road works and transportation of materials respectively. The wildlife population in the impact zone can be significantly reduced due to the noise disturbances. In addition, the nesting and breeding success of the bird species that used to inhabit the roadside habitats can be significantly affected.

Impacts on aquatic fauna are likely to be minor since the road project would cause minimal disturbances of watercourses/water flows as the bridges on the major rivers would be maintained. Nevertheless, minor impacts are expected due to increased turbidity and sedimentation of streams and rivers during construction and for a short period after construction.

Aquatic fauna can be affected due to increased turbidity and sedimentation of streams and river, and disturbance of watercourses/water flows during construction of culverts and

bridges. Since the existing bridges on the major rivers (Gibe and Gojeb) are expected to be maintained, the extent of disturbances in the river courses or in river flows would be low. Thus, the extent of impacts on the aquatic fauna (such as fish, hippos, crocodile & monitor) is expected to be low or minor, if any it will be a temporary effect.

Impacts during Operation Phase

During the operation phase, there will be some impacts on wildlife in relation to possibly increased vehicular movements and noise pollution. After improvement of the road, traffic volume and speed is likely to increase, and this situation may increase the rate of animal fatalities. In addition, wild animals and birds inhabiting the road environment could be disturbed by noise pollution generated by vehicular traffic. These situations to some extent may affect wildlife movements or habitat use patterns of wildlife across the road or within the road corridor. Nevertheless, these impacts are not expected to be serious and significantly affect wildlife numbers or threaten the survival of any species.

Mitigation Measures

Potential impacts on wildlife will be minimized through the following mitigation measures:

- Avoiding selection of material sources (quarry and borrow sites), materials processing plants site and campsites within important wildlife habitats such as the corridor of km 48-52 and km 65-71,
- Strict prohibition of illegal hunting by the workforce and killing of wild animals due to deliberate killings or reluctances of drivers like over speeding of vehicles,
- Avoiding disposal of excavation materials on down-slope and locating spoil disposal sites where these may affect wildlife habitats and cause obstruction to wildlife movements,
- Posting appropriate signs in the important wildlife areas and applying speed limits for sections passing through those areas, and
- Taking precautions to avoid any fire accident and control any fire incident due to contractor's activities.

7.4 Road and Traffic Safety Issues

Traffic accident data obtained from project Woredas traffic offices for year 2014/2015 and 2015/2016 are tabulated below:

Table 7-1: Traffic accident registered along the project road in 2014/2015

Accident level/Severity	Dedo Woreda	Konta Woreda
Death	2	10
Severe Accident	2	19
Minor Accident	1	33
Property Damage	4	20
Loss of property in terms of money	67,300 ETB	4,927,100 ETB

Table 7-2: Traffic accident registered along the project road in 2015/2016

Accident level/Severity	Dedo Woreda	Konta Woreda
Death	2	13
Severe Accident	3	15
Minor Accident	0	25
Property Damage	3	-
Loss of property in terms of money	394,000 ETB	100,200 ETB

The above data indicates that traffic accident is more in Konta Woreda than Dedo woreda, and it is expected to increase during the construction phase due to the increased number of vehicles moving in the project area.

During construction, there will be increased traffic volume on the project road and commensurately this may result in increased accident risks to the roadside communities, road users and domestic animals. Since the road construction works will take place during the road in operation, traffic accidents may occur due to complete or partial closure of the road and use of detours with narrow width and/or poor sight distances to drivers. In particular, the dump trucks transporting construction materials could create more safety risks for road users and villagers.

There is an increased risk of traffic injuries particularly along the sections that run through towns, villages and densely populated rural areas that comprise a large proportion of the project road. In particular, the risk of traffic accident is likely to be high on the market days at Sheki, Meteso, Dilbi and Chida towns where a large number of pedestrians and animals would use the road; Photos below illustrate this situation. As the pedestrians tend to use the carriageway and their awareness to traffic safety is very low, they can easily be involved in traffic accidents due to collisions with vehicles. This would be a potential risk both during the construction as well as operation phases of the road project with relatively higher risk during the operation phase due to increased traffic speeds.

Photo 7-2: Traffic on the road on market days – a highly crowded road section at **Sheki town near the marke**t Site at km 18.70 (left) and people & animals travelling to/from market at Sheki town around km 19.20 (right)

Some sections of the road traverse steep terrain or densely settled areas where provision of detour roads may not be practicable or too costly. Therefore, construction of those sections of the road may require partial closure of lanes and this may create traffic safety hazards.

During the operation phase, the bituminized pavement will provide a smooth road, which may lead to the tendency of drivers using a too high speed. It is likely that a higher driving speed can result in an increased number of traffic accidents. Particular areas of concern are towns and villages, and the schools aside the road where pedestrians and in particular pupils/children are highly in danger.

Mitigation Measures

Potential road and traffic safety problems will be minimized by implementing the following mitigation measures:

- Developing and strictly following a well-designed work program and traffic management plan (TMP) that would consider local conditions like the normal traffic, terrain, weather and socio-economic conditions,
- Provision of necessary information such as speed limits, direction, hazard locations, sensitive sites (e.g. schools, villages, animal crossing paths etc.) by putting appropriate signals and hazard markings,
- Assigning traffic regulators or traffic police to control traffic flows at critical sections or periods where/when traffic safety is a serious issue,
- Awareness training of operators of equipment and construction vehicles in traffic safety measures,
- Establishment of speed limits and controls for construction vehicles and discipline for the drivers,

- Providing appropriate information on the location of risky areas to potentially affected local residents and prohibiting such areas for safety reasons, e.g. borrow pits and quarries, and stone crusher and asphalt mixing plant sites, and
- Provision of awareness education for the local population in traffic safety measures at public meetings, social gatherings, schools, etc.

7.5 Negative Impacts On Socio-Economic Environment

The major potential impact of the project road on the socio-economic environment and on the livelihood of the communities is due to land acquisition. As is the case for most other similar projects, the project road will entail displacement of considerable number of households from their current dwellings. The extent of disruption and damage to the natural, economic and cultural resource base depends on the planning, and design of the project. The planning and design of a project should consider the socio economic and environmental issues to avoid and/or minimize the damages to be caused due to the construction of the road. It is, therefore, important to identify the socioeconomic components that are likely to be affected by the project. This would assist to propose appropriate remedial measures in advance for those factors that may have adverse impacts, and for their timely inclusion in the design of the project.

The land requirement may entail relocation of some houses located along the project road and in the Right of Way. However, it may not require for involuntary resettlement of the local population because it will only take strips of land in some sections of the project road corridor.

In places where there is a need for land acquisition appropriate compensation has to be provided for lost assets, for lost income basis and other requirements based on Ethiopia's laws and regulations of the major provisions in the FDRE Constitution and as to the Proclamation for the Expropriation of Land Holdings for Public Purposes and Payment of Compensation (Proclamation No. 455/2005).

The details of land acquisition (permanent and temporary dispossessions), number of Project Affected Persons (PAP), Compensation estimates for the affected assets, etc. has to be presented and addressed in the Resettlement Action Plan (RAP).

7.5.1 Impact on Houses and Structures

Along the road and within the right of way there are housing units that will be affected due to the widening of the ROW. Residents of the affected houses will require to be relocated and similarly, those businesses that are located inside the ROW will also be affected. The impact on houses destabilizes the life of the affected people for some period.

7.5.2 Impact on Businesses

In most rural and urban sections of the project road, several businesses, such as, shops and restaurants, tea rooms and open markets will be affected by the project road due to widening of the ROW.

Therefore, it will be worthwhile in the future to adopt appropriate compensation, rehabilitation as mitigation measures for the people who will be affected by the project in accordance with government rules and procedures provided for the purpose.

7.5.3 Impact on Farm land

The loss of land could be both temporary and permanent. The temporary loss includes loss of land and settlement for access road and detour. The permanent loss includes loss of land and settlement for the widening of the ROW, construction of campsites, quarry and borrow pits.

7.5.4 Impact on Public Utilities

As is the case for other similar road construction projects, it is expected that the Jimma-Chida road project is likely to involve relocation of public utilities such as electric and telephone poles, and water supply pipelines, especially in most cases in the town sections where the specified services are available. This is mainly true for the towns of Sheki and Chida. The impact on the above public utilities will cause disruption of the services by the utilities and may affect the users for a number of days until they are reconnected. Experiences from other road construction projects shows that once the client, in this case ERA, is ready and willing to provide compensation for the utilities, the service providers in most cases will not take much time in reconnecting the services to the public.

As indicated in section 6.2.6, among the public utilities that will be affected include water supply lines at Sheki town and similarly there are also other water supply pipelines that either cross the road or run along the road. In addition, there is a protected spring source at km 22.6 RHS located below the road on hilly terrain and this water supply source could be affected during the road works unless necessary precaution measure will be taken. Moreover, there is a hand pump at ~km 7.2 LHS that should be protected from damage by the road works.

Since the detail design work is undergoing it is not possible to list down all public utilities that will be affected by the road construction works at the moment.

7.5.5 Exposure to HIV/AIDS and Other Sexually Transmitted Diseases (STDs)

As it is well known Road construction and other similar type of project workers and truck drivers are considered to have high potential for the spread of HIV/AIDS and other sexually transmitted diseases due to their mobility, age, access to cash, etc. This is partly because construction workers are mostly young, sexually active group of the population, mobile and are partly because they are forced to live in hotel rooms and in construction camps which are located far away from town centers and from the local population.

It is obvious that the presence of large number of workforce at road construction site attracts sex workers to the area and also entices young girls from the locality to go into the business. Hence, this makes the project area highly vulnerable and easily exposed to the spread STDs and HIV/ AIDS transmitting factors.

In this regard, as preventive measures are to create awareness raising and education campaigns about HIV/AIDS among the construction workers and local population to make

them informed. This has to be done on the one hand by the contractor, responsible for workers and on the other hand by the communities residing along the project road targeting specially women and sex workers.

Condoms shall be provided at subsidized rate or for free to construction workers and health facilities must be supported with supply of condoms. To have an effect in the long-term, schools should include information campaigns and/or special courses.

Woreda administrations, Urban and Rural Kebele administrations, Woreda health offices, HIV/AIDs Prevention and Control Office, Elders and NGOs operating in the area need to work jointly to create impact and bring major attitudinal and behavioral changes.

7.5.6 Impacts on Cultural and Archaeological Sites

The only sites of cultural or religious value known to be found along the project road are mosques and churches. There are several mosques that are located close to the road. These are found at about km 5.0 (~50m RHS), km 5.2 (~15m RHS), km 15.5 (~8m LHS), km 20.6 (~10m RHS), km 20.8 (~10m RHS), km 30.7 (~30m RHS), km 44.4 (~7m RHS), and km 55.5 (~10m LHS). In addition, there is a church called Meteso St. Urael Church found close to the road at about km 35.50 (at ~50m LHS) on hilly terrain below the road. Furthermore, there is a graveyard/cemetery around km 38 along a realignment section. With careful engineering design and construction methods, none of the religious properties is expected to be affected by the road project.

Along the project road, there are no other identified physical and cultural resources defined as movable or immovable objects, and sites of archaeological, paleontological, historical or religious value.

During construction works sometimes there is a possibility of coming across areas where there are places of cemeteries, findings of human remains, fossils and artifacts could be excavated it has to be immediately reported to the Regional Culture and Tourism Bureau, and at the same time report to the Federal Conservation and Preservation of Cultural Heritages Authority and seek approval on how to continue the construction works.

7.5.7 Occupational Health and Safety Issues

Road construction work by its nature is a hazardous job, and hence it requires adopting appropriate occupational health and safety measures. The contractor by all means take maximum care in applying the internationally accepted standards and recognized occupational health and safety guidelines.

Some of the occupational health and safety issues include appropriate care for storage of chemicals and explosives and provision of training to workers handling it to avoid inhalation of chemicals and easily be exposed to it.

The contractor is also required to provide workers with protective clothing and equipment and create awareness on safety issues; at the same time the contractor is also responsible to create awareness among the local community on the hazardous nature of chemicals, explosives it is using during the construction works.

The provision of first aid kits near camp sites, workshops and also inside vehicles is highly recommended.

7.6 Development Potentialities and Problems

The project area has very high development potentials in the areas of agriculture in both crop and livestock husbandry; and in mineral resources. Konta special woreda is one of the major cattle and sheep supplier woredas. Its main supply route is to Jimma and Addis Ababa market.

The natural resource and mineral potentials have not yet fully exploited and the only mineral resources that is being exploited the coal mine in Dedo and which is expected to produce several tons in the coming few years. The exploration of coal from the area will create more jobs to the local population and contribute to the revenue of the woreda and the region.

In its agriculture potentials, all the three woredas produce cash crops, such as, coffee, chat and perennial crops. They also produce cereal and root crops.

The project area has also attractive landscape covered with different types of natural vegetation and trees.

Some of the major problems that hinder the socio economic development in the project area include poor road condition and lack of transport facilities; and limited economic activities outside of agriculture and credit facilities.

8. CONSIDERATION OF ALTERNATIVES

8.1 Proposed Alternative Routes

8.1.1 Description of the Alternative Routes

The Consultant has identified three possible alternative routes for the proposed Jimma – Chida road upgrading project. These are designated as Alternative Route 1, Route 2 and Route 3 that are shown in the figures below. A brief description of each alternative route is given below.

Alternative Route 1

Alternate Route 1 basically follows the alignment of the existing road. However, it involves realignments at three locations that is at approximately km 23.0-24.2, km 31.0-32.6 and km 36.3-39.0 that cover a total length of 5.4km. These realignments are proposed to avoid existing land-sliding spots that are located at km 23.8-24.0, km 31.5 and km 38.5. This route is the shortest alignment that has a total length of 81km. Of the total length, 75.3km (93%) travels along the existing road and the remaining 5.4km follows a new route, which is indicated above.

This route starts at the outskirt of Jimma town, and generally runs southern direction and terminates at Chida town. Between Jimma and Chida, the route traverses through several small towns and villages. The alternative route crosses two large rivers, namely Gibe at km 4.30 and Gojeb at km 69.0, as well as two medium rivers, namely Offole at km 8.7 and Unta at km 23.3.

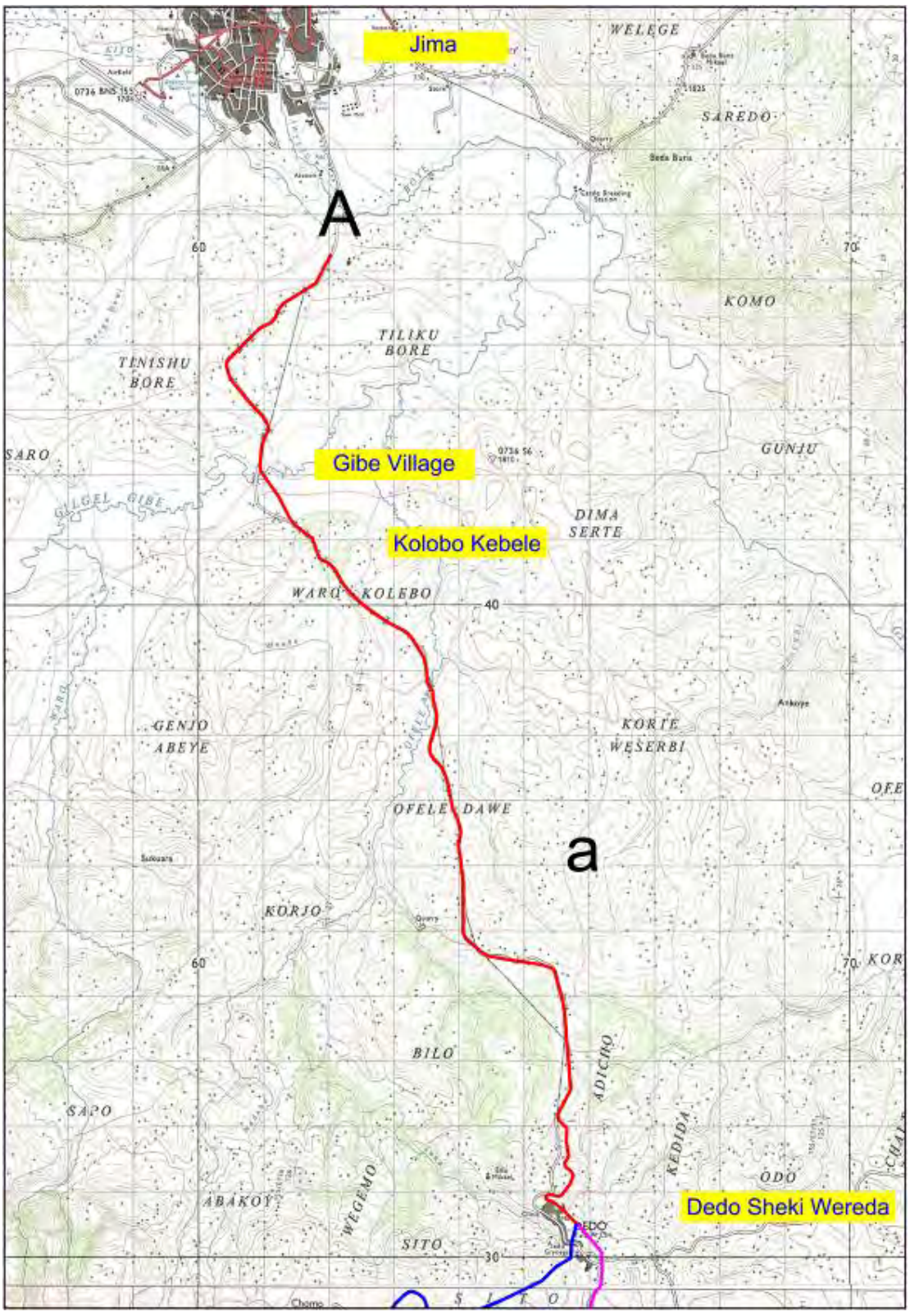
The terrain traversed by this route is dominantly mountainous terrain comprising about 64% and the remaining portion is considered to be rolling The corridor of this alternative route is mostly densely populated and intensively used for agricultural activities except the corridor of about km 48-52 that traverses a protected forestland and that of about km 59-70, which is the Gojeb river valley.

Alternative Route 2

This is the longest alternate route that has a total length of 103.2km. Similar to Route 1, it follows the existing road for the first 18.80 km section, and turns to right hand side and travels along a new alignment for 11.40 km length. Then, it crosses the existing road and runs on left hand side along a new route for 8.87km, after which it crosses to right hand side and follows a new alignment for 14.18km. Afterwards, it goes along the existing road for 6.80km and turns left to follow a new route until it joins the Sodo-Chida road at about km 90. Eventually, it follows the Sodo-Chida road for about 13km length and terminates at Chida town. In summary, of the total length (about 103km) of this route, about 64.6km (63%) follows a new alignment and the remaining 38.6km (37%) goes along the existing road.

Between Jimma and Chida, this route passes through Sheki town at km 18.80, and Dilbe and Aba villages at about km 54 and km 90 respectively. However, it bypasses Meteso and Kirara villages which are among the major villages served by the existing road. Thus, socially this route is the least acceptable. In terms of drainage structures, this alternative

route crosses two large rivers, namely Gibe at km 4.30 and Gojeb at about km 82.00, as well as many small rivers and streams most of which need to be provided with new structures, culverts or bridges.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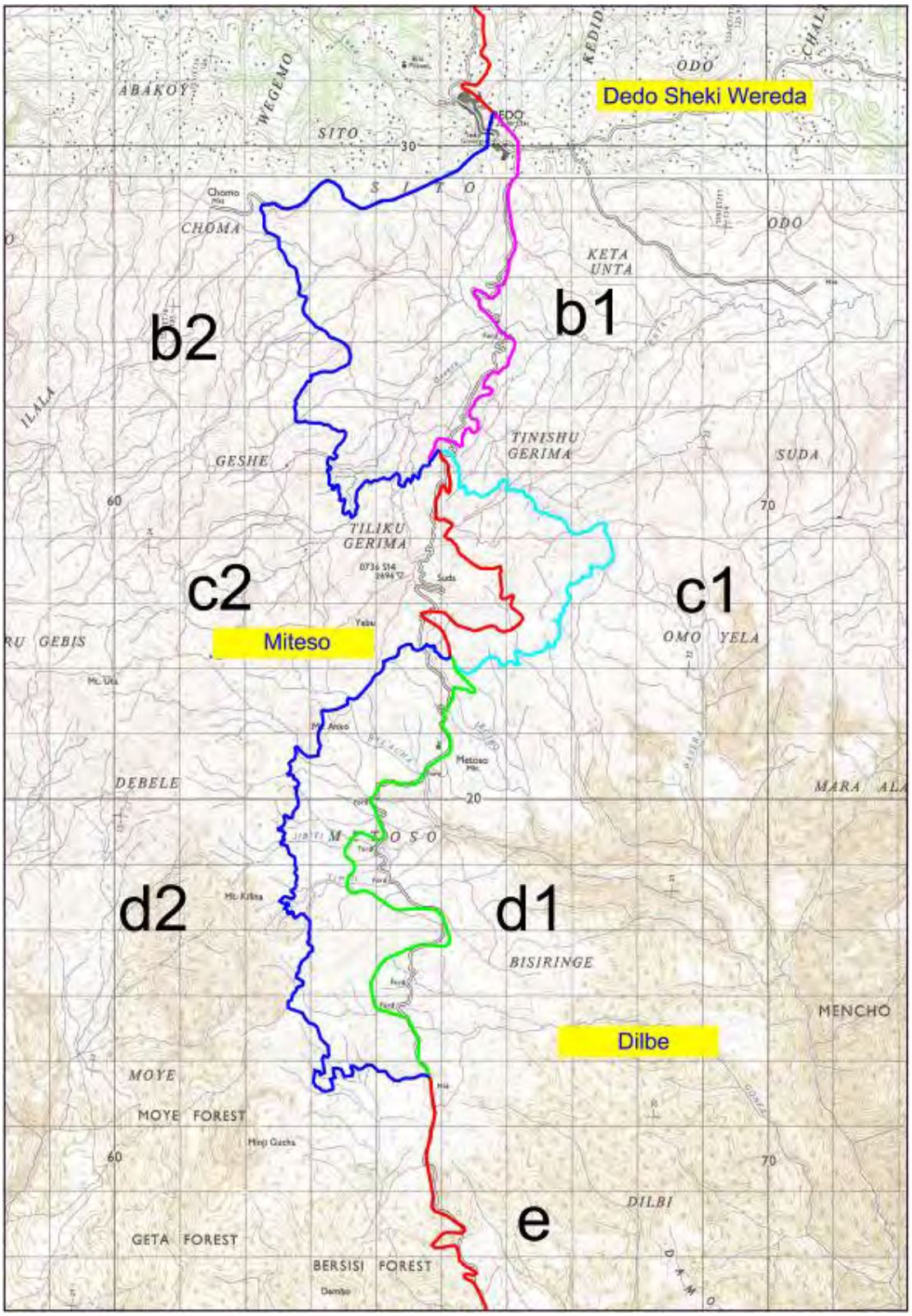
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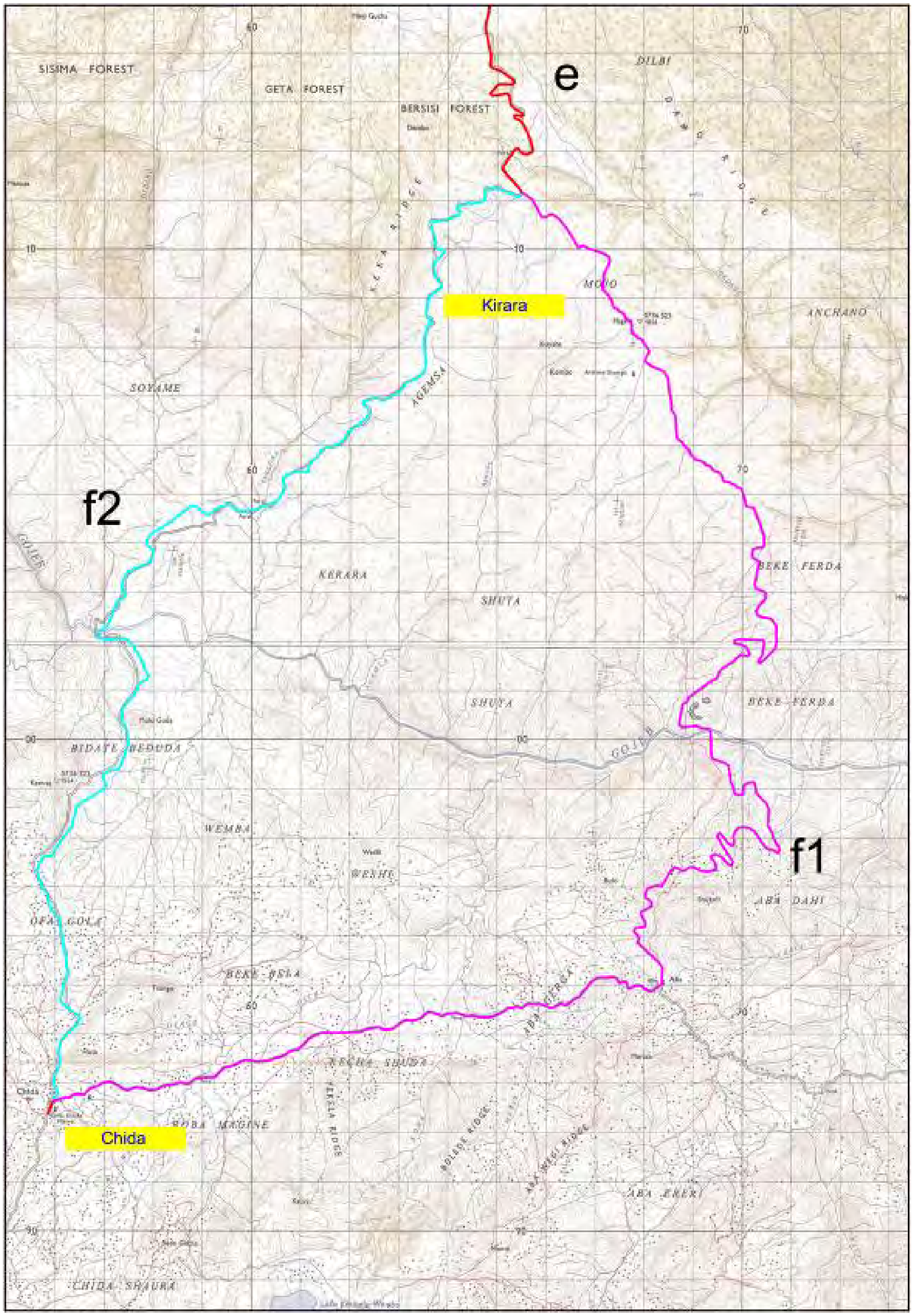
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BEKE FERDA
SHUYA
BIDATE BEDUDA
WEMBA
OFA GOLA
ABA DAHI
BEKE BELA
BOBA MAGINE
ABA ERERI
CHIDA SHAURA

This route mostly passes through rolling and mountainous terrain that comprises about 54% and 36% respectively. The remaining small portions run through flat and escarpment terrain that consists of about 9% and 2% respectively. Similar to Route 1, the corridor of this alternative route is densely populated and intensively farmed except the section from about km 57 to km 60 that run through a protected forestland and about km 68 to km 75 that traverses Gojeb river valley.

As most section of this alternative route follows a new alignment, its construction would involve huge earthworks, which is expected to require a largest area of land and generate a largest quantity of spoil materials. In addition, it would involve a largest number of new drainage structures (culverts and bridges) including a new large bridge on Gojeb River. Because of its long total length and longest new road section, it is expected to cause most significant environmental and social impacts. On the other hand, its socio-economic benefits or social acceptability would be the lowest because it bypasses two major villages located along the existing road.

Alternative Route 3

This alternate route follows the alignment of Route 2 for the first 60.10km, then the alignment of Route 1 for the last 26.50km. Thus, it has a total length of 86.60km, of which 52.10km (60%) length runs along the existing road and the remaining 34.45km (40%) along a new route.

In addition to Jimma and Chida towns, this route connects Sheki town, and Dilbe and Kirara villages. Nevertheless, it bypasses Meteso village, which is amongst the major villages connected by the existing road. Thus, this route is not socially acceptable.

In terms of drainage systems, this alternative route crosses two major rivers, namely Gibe and Gojeb at the existing bridges, and several small rivers and streams of which those located between km 20 and km 53 should be provided with new crossing structures.

Most portion of this route traverses rolling and mountainous terrain that consists of about 45% and 40% respectively. The rest small portion travels through flat (9%) and escarpment (5%) terrain. The corridor of this alternative route is densely populated and intensively farmed except the stretches that run through a protected forestland at about km 57 to km 61 and Gojeb river valley at about km 68 to km 79.

8.1.2 Environmental Appraisal of the Alternative Routes

The Consultant has identified the potential environmental and social impacts of the proposed alternative routes and qualitatively evaluated their significance in order to recommend the route which is environmentally and socially acceptable. The comparison of the alternatives is summarized in Table 8.1 below. Based on this assessment, Alternative Route 1 is the best alignment for the proposed road upgrading project. In overall, implementation of the proposed road upgrading project along Alternative Route 1 is anticipated to bring moderately significant environmental and social impacts. On the other hand, execution of the project along either of the other two alternative routes is predicted to cause highly significant environmental and social impacts. In addition, Route 1 has the highest social acceptability whereas Route 2 and 3 are socially least accepted.

Therefore, Alternative Route 1 is recommended to be adopted for the planned Jimma – Chida road-upgrading project.

Table 8-1: Comparison of Potential Socio-environmental Impacts of Alternative Routes

No.	Main Potential Environmental Impacts	Impact Significance by Alternative Route		
		Route 1	**Route 2**	**Route 3**
1	**Negative Impacts on Physical Environment**			
1.1	Land acquisition & impacts on land under various uses	Mode. (−)	High	High
1.2	Impacts on soils (soil erosion, impairment & pollution)	Moderate	High	High
1.3	Damaging of landscape quality due to cut-& fill-slopes, quarry & borrow pits, spoil disposal, materials processing sites, etc.	Moderate	High	High(−)
1.4	Impacts on slope stability (land-sliding)	Low(+)	Moderate	Moderate (−)
1.5	Interference with drainage systems & impacts on water resources like increased sedimentation	Moderate	High	Moderate (+)
1.6	Water pollution by hazardous substances and fluid wastes from campsites	Low(+)	Moderate (+)	Moderate
1.7	Air pollution from dust and exhaust emissions	Moderate(+)	High	High
1.8	Noise pollution from equipment and construction traffic	Moderate	High	Moderate(+)
1.9	Exploitation of quarry & borrow material sources	Moderate(+)	High(+)	High
1.10	Generation of construction spoils & environmental impacts of these	Moderate(+)	High(+)	High
	Overall Impacts on Physical Environment	**Moderate**	**High**	**High**
	Likelihood for mitigation and restoration	**High**	**Mode. (−)**	**Moderate**
2	**Negative Impacts on Biological Environment**			
2.1	Impacts on protected forests	Low	Low	Low
2.2	Impacts on indigenous trees & other flora	Low(+)	Moderate (+)	Moderate
2.3	Impacts on wildlife habitats and fauna	Low	Moderate	Low(+)
	Overall Impacts on Biological Environment	**Low**	**Moderate**	**Low(+)**
	Likelihood for mitigation and restoration	**High**	**Moderate**	**Moderate**
	Overall Negative Environmental Impacts	**Moderate**	**High**	**High**

No.	Main Potential Environmental Impacts	Impact Significance by Alternative Route		
		Route 1	**Route 2**	**Route 3**
3	**Negative Impacts on Socio-economic Environment**			
3.1	Loss of agricultural lands	Low	V. High	High
3.2	Resettlement/relocation of residential and business houses	Moderate	V. High	High
3.4	Loss of plantation trees mainly eucalyptus trees	Moderate	High	High
3.5	Impacts on public utilities – water supply, electric & telephone poles	Moderate	Moderate	Moderate
3.6	Impacts on public health – HIV/AIDS & other STIs	High	High	High
3.7	Accident risks from construction traffic	Moderate	Moderate	Moderate
3.8	Impacts on cultural properties	Moderate	Moderate	Moderate
3.9	Impacts of campsites and access roads	Moderate	V. High	High
	Overall Negative Socio-economic Impacts	**Moderate**	**High**	**High**
	Likelihood for mitigation and restoration	**High**	**Moderate**	**Moderate**
3	**Positive Socio-environmental Impacts (Operation Phase)**			
3.1	Reduction/avoidance of the dust pollution prevailing on the existing road	High	Low	Moderate
3.2	Alleviation of existing land-sliding problem	High	High	High
3.3	Reduction of existing roadside erosion and siltation problems	High	Low	Moderate (−)
3.4	Improvement of road and traffic safety	High	Low	Moderate
3.5	Enhancement of socio-economic development	High	Moderate (−)	Moderate
	Overall Positive Socio-environmental Impacts	**High**	**Low**	**Moderate**
	Summary:			
	Environmental acceptability of the alternative route	**High (1)**	**Low (3)**	**Low (2)**
	Social acceptability of the alternative route	**High (1)**	**Low (3)**	**Low (2)**

Note: **Route 1 = Segment (a b1 c2 d1 e f2), Route 2 = Segment (a b2 c1 d2 e f1), Route 3 = Segment (a b2 c1 d2 e f2)**

8.2 The "Without Project" Scenario

From most aspects of the biophysical environment as well as some aspects of socio-economic environment like impacts on farmlands, housing units and public utilities, the

"without project" scenario is preferable to project implementation, since it would avoid creation of any of the adverse impacts associated with the project. However, the potential socio-economic benefits of upgrading the road at the local as well as national levels would be foregone. As highlighted during the consultations with key stakeholders, upgrading of the road is highly needed to alleviate the existing transportation problems and to facilitate social and economic development activities in the influence region. In addition, upgrading of the road is needed to alleviate existing environmental problems like land-sliding, dust pollution, roadside erosion and siltation problems, and traffic accident risks related to poor condition of the road.

To conclude, from socio-economic viewpoint plus some aspects of environment, the "without project" option is not acceptable. As it is revealed in this EIA study, the potential socio-economic benefits of the road-upgrading project are high, and the adverse environmental and social impacts are manageable and can be reduced to acceptable levels. Therefore, the proposed road-upgrading project can be implemented by adopting appropriate socio-environmental mitigation and compensation measures to prevent or minimize the potential negative environmental and social impacts.

9. ENVIRONNEMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

9.1 Environmental Management Plan

9.1.1 General

This section of the EIA Report provides an Environmental and Social Management Plan (ESMP) that comprises the set of mitigation and monitoring measures recommended to be adopted to prevent, reduce or offset the main potential adverse impacts identified in this assessment. In addition, it provides the responsibilities for their implementation and time framework as well as cost estimate where required. The proposed mitigation and monitoring actions will be applied during the subsequent stages of the project, and these include:

- Detailed Engineering Design Stage,
- Pre-construction/Preparation for Construction Stage,
- Project Construction Stage,
- Project Decommissioning Stage, and
- Project Operation and Maintenance Stage.

Therefore, the ESMP specifies what actions shall be taken during each stage of the road project.

Details of the proposed ESMP are provided in Table 8.1 below. It comprises the following:

- Main environmental and social impacts expected to arise due to the project features or activities,
- Key avoidance, mitigation, offset or compensation measures for each potential impact,
- Recommended timing for implementation of the mitigation measures,
- Organizations/ parties responsible for implementation of the mitigation measures,
- Organizations/ parties responsible for monitoring of the proper implementation of the mitigation actions, and
- Where necessary or possible, cost estimate of the mitigation and monitoring activities.

9.1.2 Institutional Arrangement and Responsibilities for Implementing ESMP

The institutional responsibilities for implementing the ESMP specified in Table 8.1 are briefly described below and the details are shown in Table 8.1.

Ministry of Environment, Forestry and Climate Change (MEFCC)

As a competent organization at the Federal level, EPA is fully responsible for ensuring that the EIA process is carried out in accordance with the relevant laws and guidelines. Nevertheless, since May 2009, the Environmental Units of Sector Ministries and Agencies are designated to ensure that EIA is carried out for development projects under their mandate, and to evaluate and take decisions on EIA Reports and ensure the implementation of EIA recommendations or the ESMP. Therefore, MEFCC's involvement in the implementation of the ESMP of the Jimma - Chida road project is expected to be very limited. Yet, upon request, MEFCC's can be involved in some aspects such as review of the EIA Report, Environmental Monitoring Reports and Environmental Auditing Report, as well as in conducting Environmental Auditing for the road project.

Regional Environmental Protection Agency (REA)

The REAs relevant for the Jimma - Chida road project are the Oromia Bureau of Land and Environmental Protection (OBoLEP) and the SNNP Bureau of Land Administration and Environmental Protection (SNNP BoLAEP). The OBoLEP and BoLAEP, mainly through their branches at woreda level, will be responsible for implementing the environmental mitigation and monitoring measures specified in Table 8.1. Besides the responsibilities indicated in the Table, the Woreda Environmental Protection Offices will conduct awareness creation for the woreda level implementers of the ESMP and coordinate their activities.

ERA's Environmental Monitoring and Safety Branch (EMSB)

The EMSB will carry out the environmental management and monitoring activities specified in Table 8.1. These include:

- Ensuring inclusion of environmental protection structures or features in the detail engineering design and appropriate environmental clauses in the contract agreement for Contractors,
- Ensuring assignment of a qualified Environmental Inspector in the Construction Supervision Consultant Team and Environmental Supervisor on the Contractor's side,
- Involving in site selection and approval for material sources (quarries & borrow sites), access roads and contractor's site facilities so that environmentally sensitive areas are considered and avoided to the extent possible,
- Reviewing environmental monitoring reports to be submitted by the Supervision Consultant and take necessary actions,
- Conducting periodic project site supervision to oversee environmental performance of the project or status of environmental protection measures and if required provide guidance for the Consultant Team esp. the Resident Engineer and

Environmental Inspector on matters that would require improvement or particular attention,

- Conducting environmental supervision or auditing after completion of the construction, but before the Contractor handover the project and approve the handing over of the project with respect to implementation of the ESMP, and
- Carrying out environmental monitoring during the operation phase and ensuring failures are sufficiently repaired in time.

Construction Supervision Consultant (CSC)

The main responsibilities of the CSC will be reviewing of the Contractor's Site Environmental Management Plan (SEMP), work plans, method statements, etc. and their approval, and making sure that these and other environmental protection requirements included in the contract document are in fact fully complied with. In addition, the CSC is responsible for a day-to-day observation of all site activities and occurrence of any unforeseen issues. If unforeseen issues are observed, the CSC will recommend appropriate actions to the Contractor or other implementer(s) to overcome or mitigate the problems in time; if necessary the CSC will seek the advice of the EMSB or report the issue(s) to the EMSB for necessary actions. Details of the responsibilities of the CSC are shown in Table 8.1 below.

Construction Contractor

The Construction Contractor will be responsible for implementing appropriate mitigation measures for most of the negative impacts associated with the road works, extraction, haulage and processing of construction materials, establishment and operation of campsites and other site facilities, operation of contraction traffic, and other project activities. The environmental mitigation measures to be implemented by the Contractor are specified in the ESMP (Table 8.1) and Environmental Clauses that will be part of the contract agreement. Based on the ESMP given in this EIA document, the environmental clauses given in the contract for construction, and update site conditions and project features, the Contractor shall prepare a detailed Site Environmental Management Plan (SEMP) before the commencement of the road works. The SEMP submitted by the Contractor will be reviewed by the CSC and submitted to ERA/ERA's EMSB for further review and approval. Moreover, based on new emerging environmental and social issues at the time of construction including the nature, magnitude and significance of the issues observed, the Contractor might be required to continually update the SEMP. The Supervision Consultant will determine this requirement and enforce the Contractor to update his SEMP as deemed necessary.

Other Stakeholders

There are several other institutions or parties that will involve in the implementation of the proposed ESMP. These include agencies responsible for public utilities such as EEPCO, ETCO, and Drinking Water Supply Offices, Woreda and Kebele Administration Offices, Woreda Agriculture and Rural Development Offices, Woreda Health Offices etc. The responsibilities of each organization are specified in Table 9.1-1.

9.1.3 Updating of the ESMP

The construction contract should include obligations for the Contractor to prepare a detailed Site Environmental Management Plan (SEMP) during the preparation for construction, i.e. prior to the commencement of the road works. The SEMP should reflect the environmental and social issues and their mitigation measures identified in the EIA study. It should also consider the environmental and social issues that were uncertain during the EIA study. For example, site specific issues related exploitation of material sources (quarries and borrow sites), access roads, detours, campsites etc. In addition, the SEMP should consider any changes in the project features as well as changes in the baseline environmental conditions since the EIA was conducted. As indicated above, the SEMP might need to be updated at the time of construction based on new developments.

The Supervision Consultant will instruct the Contractor to prepare and submit a standard SEMP, and upon submission, review and comment for improvement. When the SEMP is to the satisfaction of the Consultant, he will submit it to ERA/ERA's EMSB for further review and approval. In addition, the Consultant will monitor and ensure the proper implementation of the SEMP. Furthermore, he may instruct the Contractor for updating it based on new emerging situations.

9.1.4 Consequences to Contractor upon Failure to Implement EMP

In order to make sure that the environmental clauses included in the contractual agreement are binding and effectively implemented, it is strongly recommended that the contractor provides a security in form of a (bank) guarantee of sufficient amount, e.g. 2% of the contract price, which may be forfeited in part or in total in case of contractor's failure/non-compliance and the money shall be used to repair/mitigate environmental/social damages/impacts.

Table 9-1: Environmental and Social Management Plan

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
I	**Detailed Design Phase**						
1	Compliance of the EIA study with Government and financer's safeguard policies and guidelines	High	Ensure that the Government and funding agency environmental protection and social welfare requirements/ safeguard policies are fully complied with in the EIA.	During feasibility & engineering design	Design Consultant	ERA's EMSB	Part of the design consultancy cost
2	Consideration of environmental issues in engineering design	High	Thoroughly understand the environmental mitigation measures recommended in the EIA study and incorporate them in the detailed engineering design and tender document. These measures include erosion protection and slope stabilization structures, energy dissipation structures, check dams etc.	During detail engineering design	Engineering Design Team	ERA's EMSB	As above
3	Existing land-sliding problem on the road	High	Designing realignment for the sections of the road that have existing land-sliding problem, i.e. km 23.80 - 24.00, km 31.50 and km 38.50, km76.50. Incorporate in design features to stabilize the slide prone areas by constructing retaining walls and gabions.	As above	As above	As above	As above
4	Impacts on indigenous trees found on roadsides		For sections containing valuable indigenous trees on roadsides, designing widening/improving the road to one side only to save the trees (see section 6.3.1 for the details).	As above	As above	As above	As above

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
5	Inclusion of environmental clauses in the contract document for contractor	High	Include appropriate environmental clauses in the contract document for contractor to allow control of environmental impacts of project activities.	As above	Design Consultant	As above	As above
6	Bill of quantities (BoQ) for environmental mitigation measures	High	Provide priced BoQ for environmental mitigation measures included in the contract document for contractor.	As above	As above	As above	As above
II	**Pre-Construction Phase**						
1	Loss of land under various uses like crop production, grazing, plantation trees esp. at realignments	High	Payment of fair compensation for loss of farmlands, grazing areas, trees etc. due to land taking for the project according to the pertinent government laws.	Prior to start of construction	ERA through Compensation Committee	Woreda Administration Office (WAO)	To be included in RAP
2	Loss of properties such as residential and business housing units, trees, etc.	High	Payment of cash compensation for the affected properties based on the current market value or according to the pertinent government laws (Proc. No. 455/2005 & Regulations No. 135/2007).	Before commencement of construction	ERA through Compensation Committee	Woreda Administration Office	To be included in RAP
3	Relocation of public utilities such as electric & telephone	High	• Relocating electric and telephone poles and transmission lines located in the impact zone. • Relocating the affected water pipelines and	As above	EEPCO, ETCO, WWSPOs &	As above	As above

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
	poles & lines, water supply pipelines		distribution points in towns and villages.		ERA		
III	**Construction Phase**						
1	Air and noise pollution	High	• Use of modern and well-maintained equipment, & regular maintenance of machinery and vehicles, • Restriction of traffic speeds and applying water regularly on gravel roads & other dusty roads,	Throughout construction period	Construction Contractor	Resident Engineer (RE)	Part of the Contractor's obligations
1	Air and noise pollution (continued)	High	• Regular maintenance of emission intensive plants like stone crusher and bitumen mixer and application of dust suppressant mechanisms, • Locating the aggregate production and bitumen mixing plants at a minimum distance of 1.5km from noise or dust sensitive areas, • Complying with relevant health and safety standards pertaining to noise and emissions, such as wearing ear protection when operating plants or heavy machinery, • Implementing well-designed traffic management plan that considers traffic safety and working hours for materials transport, • Carrying out noisy construction activities during normal working hours, • Avoiding burning of materials such as tiers, plastic, rubber products or other materials that creates heavy	Throughout construction period	Construction Contractor	RE	Part of the Contractor's obligations

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			smock, hazardous smoke or nuisance odor and disposing of any volatile chemicals to the air.				
2	Impacts on soils including increased soil erosion, soil compaction and soil pollution	High	• Carrying out earthworks during the dry season to reduce soil exposure to erosion and alteration of drainage systems, • Using 'half-width' construction method to reduce soil compaction and pollution due to use of detours,	Throughout construction period	Construction Contractor	RE & Environmental Inspector (EI) of the CSC	Part of the Contractor's obligations
2	Impacts on soils (continued)	High	• Construction of physical structures such as paved side-drains, diversion drains, check dams, culverts and sufficient turnouts to reduce the concentration of water flows, erosion and scouring, • Reducing the time exposed surface remains bare by implementing grassing or re-vegetation by other plants following completion of the works, • Avoiding locating culverts and side-drains in such a way that they would release runoff water onto slopes vulnerable to erosion, • Removal of pavement materials used on detours and access roads, loosening the compacted soils using ripper, and spreading topsoil to restore the soils compacted to productive state, • Avoiding disposal of excavation materials onto adjacent areas or down-slopes where it could productive soils used for agricultural activities or growing trees or vegetation,	Throughout construction period	Construction Contractor	RE & EI	They part of the Contractor's obligations including part of the engineering items, good construction methods and materials handling technique

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			• Preventing contamination of the soil by oil, fuel, used oil, bitumen or other pollutants, or wastewater through regular maintenance and serving of vehicles & equipment, proper storage of hazardous substances (fuel, oils, detergents) and proper disposal of used oils.				
			• Establishing grasses on cut and fill slopes and other exposed surfaces (see section 6.2.2 for recommended species).	After completion of works	Construction Contractor	RE & EI	2,677,500.00
3	Impacts on landscape quality and slope stability	High	• Use of existing material sources that have been used for the road maintenance and by previous road projects in nearby areas, • Avoiding indiscriminate disposal of surplus or unsuitable excavation materials by depositing it only at approved disposal sites, • Use of open lands for contractor's site facilities to minimize the impacts caused by exploitation of new material sources and establishment of campsites, • Building appropriate slope stabilizing structures like retaining walls or gabions at sections vulnerable to slope instability problem, • Reserving spoil materials and utilizing it in back-filling of quarries or borrow pits when exploitation of those sites is over,	During construction and following completion of works	Construction Contractor	RE & EI	Part of the Construction Contractor's & CSC's contracts & given under item 2 above for grassing

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			• Planting suitable tree species on landslide vulnerable areas (see sections 6.3.2 and 6.3.3 for list of appropriate spp.). • Planting appropriate grass species on cut slopes and fill slopes (see sections 6.3.2 for list of appropriate spp.), • Controlling surface water infiltration to reduce seepage forces by providing adequate side ditches, interceptor drains, and diversion drains.				
3	Impacts on landscape quality and slope stability (continued)	High	• Restoration of borrow sites and areas of contractors' site facilities through back-filling, landscaping and re-establishing vegetation cover, • Landscaping and planting spoil disposal sites with appropriate tree, shrub or grass species to improve the aesthetic quality of the sites,	When use of those sites is ceased	Construction Contractor	RE & EI	3,000,000.00
4	Impacts on land under various uses		• Adopting 'half-width' construction method particularly for sections passing through prime agricultural lands and areas covered by perennial crops or important trees to reduce the impacts due to land taking for detour roads, • Limiting land acquisition and earthmoving activities to the imperative area necessary for the road works, • Avoiding side-tipping of excavation materials onto adjacent farmlands or on lands under other uses, • Avoiding construction of culverts and side-drains that	Throughout construction period	Construction Contractor	RE & EI	They are part of the Contractor's obligations

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			they would release runoff or flood water onto lands under agricultural or other uses, and • Restoration of areas affected due to temporary activities like detours and access roads to productive state by removal of pavement materials, loosening of compacted soils and spreading of the topsoil preserved for this purpose.				
5	Impacts on drainage systems and water resources including changes in surface and subsurface water flows, increased sedimentation and water pollution	Modera te	• Execution of earthworks/excavation works during dry seasons to reduce interference in river flows and reduce erosion, sedimentation and water pollution risks, • Avoidance of dumping excess excavation materials on riverbanks or in river courses, • Proper siting of spoil disposal sites – avoiding locating nearby streams and rivers, wetlands, drainage lines or slopes where the materials could be exposed to runoff or flood water and transported to water bodies, • Proper handling of hazardous substances such as oil, fuel, detergents and cement to avoid water pollution risks due to spillages. • Avoidance of leakages from vehicles and equipment through regular and effective maintenance, • Proper disposal of solid and liquid wastes generated by camps and workshops by providing proper sanitary facilities and maintaining them in good condition until the camps are closed.	Throughout construction phase	Construction Contractor	RE & EI	Part of the Contractor's cost items

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
6	Impacts on water supply systems	High	Relocation of the affected water pipelines before the start of the road works to avoid interruption of drinking water supply for the local population.	During preparation for construction	Woreda Water Offices & ERA	RE, EI and WAO	Part of RAP
6	Impacts on water supply systems and competition for water (continued)	High	• Arranging separate water supply sources for campsites requirements and other purposes without affecting the quality and quantity of water sources of existing users, • Taking maximum care to avoid impacts on the protected spring water source located at km 22.60 RHS and hand pump situated at km 7.20 LHS, and • Avoiding using water from existing water supply sources used by the local communities unless its adequacy was proved and permitted by the relevant local authorities, district water offices or local community.	During pre-construction and construction phases	Construction Contractor	RE, EI and Woreda Water Offices	Part of the Contractor's cost
7	Impacts on vegetation and flora - loss of indigenous trees, plantation trees and other vegetation resources	High	• For sections containing important indigenous trees on roadsides, implementing widening/improving the road to one side only to save the trees (see section 6.3.1 for the details), • Adopting 'half-width' construction method for sections passing through areas containing important indigenous or exotic trees or through protected forests that would be affected if detours were constructed, • Limiting earthworks and earthmoving activities to the imperative area necessary for the road works to avoid	During construction	Construction Contractor	RE, EI & Woreda LEPO	Part of Contractor's contract

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			any unnecessary loss of trees or vegetation, • Avoiding side-casting of excavation materials on down-slope where it may affect trees/ vegetation, & • Careful site selection for borrow pits, quarries, materials processing plants site and campsites to avoid areas containing important trees or vegetation cover.				
			• Replanting appropriate tree species at areas affected due to temporary activities and at locations to be recommended by the Woreda Natural Resources Conservation or Environmental Protection Offices to compensate for trees/vegetation lost.	Following completion of works	Construction Contractor	EI & WNRCO or LEPO	1,500,800.00
8	Impacts on habitats and fauna	Low to Modera te	• Avoiding locating quarry and borrow sites, materials processing plants site and campsites within important wildlife habitats such as the corridor of km 48 – 52 and km 65 –71, • Strict prohibition of illegal hunting by the workforce and killing of wild animals due to deliberate killings or reluctances of drivers, • Avoiding disposal of excavation materials on down-slope and locating spoil disposal sites where these may affect wildlife habitats and cause obstruction to wildlife movements, • Posting appropriate signs in the important wildlife areas and applying speed limits for sections passing	During site establishment & construction phase	Construction contractor	RE, EI & LEPO	Part of Contractor's obligations

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			through those areas, and • Taking precautions to avoid any fire accident and control any fire incident due to contractor's activities.				
9	Road and traffic safety issues - safety hazards to roadside communities, animals, road users and project workers	High	• Developing and implementing a well-designed work program and TMP that would consider local conditions like the normal traffic, terrain, weather and socio-economic conditions, • Provision of necessary information such as speed limits, direction, hazard locations, sensitive sites by putting appropriate signals and hazard markings, • Assigning traffic regulators or traffic police to control traffic flows at critical sections or periods where/when traffic safety is a serious issue, • Awareness training of operators of equipment and construction vehicles in traffic safety measures, • Establishment of speed limits and controls for construction vehicles and discipline for the drivers, • Providing appropriate information on the location of risky areas to potentially affected local residents and prohibiting such areas for safety reasons	Prior to start of construction and throughout construction	Construction Contractor	RE in collaboration with Woreda Traffic Police	Part of the Contractor's obligations
			• Provision of awareness raising education on public health & traffic safety issues especially at schools, churches and social or public gatherings.	As above	W. Health Office & WRTO	Zone Road Transport Office	150,000.00

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
10	Traffic accident risks to road users, pedestrians & animals when the improved road is taken into operation	High	Posting proper traffic signs and speed limits at appropriate locations.	Before the improved road starts operation	Contractor &	RE & WRTO	Part of Contractor's contract
			Provision of awareness education on traffic safety issues especially at schools, churches and social or public gatherings.		Woreda Road Transport Office	Zone Road Transpor t Office	Given above
11	Impacts of construction camps and materials processing sites	High	• Careful selection of camps & materials processing sites in such a way to avoid sensitive areas such as protected forests, important trees and wildlife habitats, critical slopes, community water supply points, settlement areas, etc. • Taking photographs of the campsites before the construction of any structures in order to compare the level of environmental degradation before and after the establishment of the campsites and to plan rehabilitation work. ▪ Establishing campsites with appropriate and standard sanitation facilities including imperviously lined septic tanks. ▪ Proper treatment of all wastes and disposal in a priory designated place under the control of the Engineer and Woreda Health Offices (WHOs). ▪ Dismantling the camps and rehabilitation of the areas as per the surrounding nature once construction is completed.	During site establishment, throughout construction period and after completion of construction	Construction contractor in consultation with ERA and Woreda Administration and local community	RE & EI in collaborati on with Woreda LEPO	Part of the Contractor's obligations

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			• Provision of health care services, potable water supply, garbage disposal and sanitation facilities for the camps. • Maintaining proper management and discipline in the camps.				
12	HIV/AIDS prevention and control	High	• Provision of health education focusing on HIV transmission and prevention methods, • Avoidance of discrimination in work places due to HIV/AIDS and provision of counseling services • Provision of free counseling and distribution of condoms & leaflets to workforce and vulnerable group of nearby communities	Throughout construction period	Sub-contractor specialized in such activities in collaboration with WHOs	RE & EI/ Sociologist of the CSC in collabo-ration with Zone HO	4,000,000.00
13	Occupational health and safety issues	High	• Storing any explosives and chemicals in a safe place and making notification during blasting activities • Provision of protective equipment such as goggles, helmets, gloves and other masks for the workers who directly involved in physical works such as welding, steel bending, stone crushing, masonry, concrete, carpentry works and other similar activities, • Minimizing dust emission by watering the road during construction, • Provision of first-aid in the work places and clinics at the campsites, • Posting appropriate and clearly visible signs and hazard markings that provide information on speed	Throughout construction period	Construction contractor	RE & EI/Sociologist in collaboration with Woreda Health Offices and Traffic Police	Part of the Contractor's obligations

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			limits, direction, hazard locations, active construction sites, and other sensitive sites, and • Provision of education to personnel of the contractor about safety procedures and emergency response plans associated with tasks.				
14	Unforeseen issues		• Identification of unforeseen environmental & social issues/impacts and proposing corresponding mitigation measures, • Advising the construction contractor regarding unforeseen environmental & social issues on how to minimize such impacts and mitigate the unavoidable impacts	Throughout construction phase	EI of the CSC	ERA's EMSB	Part of the supervision cost
IV	**Commissioning Phase**						
1	Impact from un-cleaned salvages, wastes, unused construction materials, un-reinstated quarries and borrow areas, access and detour roads	High	• Reinstatement of quarry and borrow areas, detours and access roads, and draining if any water was impounded at those sites and any other places modified by project activities. • Cleaning all the salvages and waste materials from campsites, materials processing sites etc. and damping in appropriate and authorized places, • Removal of all the temporary camps and loosening the compacted soils in such a way that the land would continue giving services which were discontinued due to the project, and	Following the completion of the road works	Construction Contractor	RE & EI in collaboration with Woreda LEPO and ERA's EMSB	Part of the Contractor's contract

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
			• Verifying that the work as built meets all significant environmental requirements before the project was officially accepted.				
V	**Operation Phase**						
1	Road and traffic safety issues	High	• Monitoring the safety/effectiveness condition of traffic safety signals and hazard markings on the road, • Monitoring accident risks/rates, • Provision of awareness education about traffic safety issues for local communities esp. at schools.	During operation and maintenance phase	Road Safety Authority, Woreda Traffic Police or Road Transport Office	ERA's EMSB & Woreda LEPOs	Part of the road operation and maintenance cost
2	Erosion, scour or siltation problems, failure of drainage structures or environmental mitigation structures	High	• Conducting periodic monitoring of the road condition, and proper functioning of the installed erosion protection and drainage structures, • Monitoring of roadside erosion and erosion at the downstream of culverts, drainage ditches and other drainage structures, • Conducting timely maintenance of the road and erosion protection structures	As above	ERA's District	EA's EMSB in collabo-ration with Woreda LEPO s	Part of the road operation and maintenance cost
3	Siltation of drainage structures	High	• Follow up of the risk/rate of siltation in culverts, roadside drains, diversion drains etc. and implementing de-silting program.	As above	ERA's District	ERA's EMSB & WLEPOs	As above

S.No	Environmental/ Social Issue/ Impact	Signifi-cance	Recommended Key Mitigation Measures	Duration of Implementation	Responsibility for Implementation	Respon-sibility for Monitoring	Cost Estimate (Birr)
4	Soil and water pollution	Low to Moderate	• Monitoring any contamination of soil and water by spills of hazardous substances along the road.	As above	ERA's District	As above	As above
			Sub-total of Environmental Mitigation and Management Costs[1]				**11,328,300**

[1]This cost does not include the RAP cost & the cost of physical structures that are considered as part of the engineering cost.

9.2 Social Management Plan

Social Management Plan is prepared outlining mitigation and monitoring activities/responsibilities that acts as a guide to those planning, preparing, constructing and operating the proposed project.

The Ethiopian Roads Authority, Western Region Directorate is the responsible body for the social management plans prepared for this road project. It measures the social benefits and impacts during construction and after construction works of the project road. The implementation of the management plan mainly will be that the Environmental & Social Management Team (ESMT) of ERA and local administrative bodies.

Social management plan activities will be required for the following project phases:

a. Pre–Construction phase (Engineering design and tender document preparation);

b. Construction phase; and

c. Road operation phase

To ensure the proper implementation of social avoidance/mitigation measures as well as all safety/health issues, sufficiently detailed social articles and clauses have to be formulated in the EIA and become an integral part of the works contract.

The social management plan during the tender period comprises the following principal activities:

- Clarification of tender queries, in relation to social issues of the tender document.
- Examination, request for clarification, evaluation and comparison of the socially relevant sections presented in the tender document.

9.3 Environmental Monitoring Plan

Environmental monitoring will be required both during the implementation and operation phases of the project to ensure the proper implementation of the EIA recommendations as well as to detect any unforeseen environmental issues. Environmental monitoring will help to detect the scale and extent of impacts caused by the project over time and to assess whether mitigation actions have been properly and timely implemented and are working as expected. Monitoring of environmental parameters will identify potential problems from the road development activities and will allow for prompt implementation of effective corrective measures.

The main issues or components to be covered in the environmental monitoring program include the following, but may not be limited to:

- Site selection/location of quarry and borrow material sources and their operation and hauling condition,

- Acquisition of land for the project requirements and rehabilitation measures after completion of works,
- Site selection, establishment and operation of contractor's site facilities (like workers campsites, stone crusher & asphalt mixing plants, workshops, materials casting places),
- Handling of soils/excavation materials exposed to erosion and rate of soil erosion and siltation,
- Drainage and water resources like modification of drainage systems/alteration of surface or subsurface water flows, water pollution,
- Impacts on water supply systems such as pipelines, protected springs & hand pumps, and competition for water,
- Spoil or excess excavation materials disposal condition like location of disposal sites, impacts on land use, landscape quality, water resources etc.,
- Management or disposal of wastes generated from campsites, workshops/garages, used oils etc.,
- Impacts on protected forests, indigenous trees as well as plantation trees and
- Road and traffic safety issues.

The proposed environmental monitoring plan (EMP) is provided in Table 8.2 below. During the construction phase, the results of monitoring should be reported, clearly addressing any specific concerns/issues quarterly to the ERA's EMSB/representative. The Environmental Inspector (EI) shall work closely with the Resident Engineer (RE) in order to ensure that the construction works are according the contract obligations including environmental protection measures. The RE oversees that the technical specifications are met during construction while the EI monitors internally that the implementation of the EMP on site. It is recommended that the EI shall compile the monitoring results concerning environmental mitigation and management activities. The quarterly report may comprise the following issues, but not limited to:

- Results or status on implementation of the environmental management actions by the contractor in the specific period against the Site Environmental Management Plan submitted by the contractor,
- A description of any environmental accident or developments which could potentially develop into a non-conformance event by the contractor,
- A description of exceptional conditions on site whether they be weather condition, personnel related, machinery related, or otherwise stipulated,
- Minutes of meetings, if any, with stakeholders on any outstanding issues related to the road construction works, and

- Proposed solutions for any outstanding/unforeseen issues/impacts detected during the monitoring.

After evaluating the monitoring results and the proposed solutions for unforeseen issues, the ERA/EMSB may approve the proposed solutions or come up with other appropriate solutions.

External monitoring can be carried out by representative experts from each Woreda/Zone Land and Environmental Protection Offices, Health Offices and Woreda Administration Offices.

During the operation period, the institutions or bodies assigned for monitoring should report the results to ERA/ERA District Office as per the monitoring requirements together with proposed solutions for any outstanding issues. Then, ERA's District Office reports to ERA's EMSB, and the EMSB, if necessary, together with any other concerned party/parties approves the solutions proposed by the monitoring organizations or propose other suitable solutions.

Table 9-2: Environmental Monitoring Plan

Ser. No	Socio-environmental Issues	Indicators/Parameters to be Measured/ Monitored	Location/ Project Component	Frequency	Responsibility for Monitoring	Cost Estimate in Birr
I	**Pre-construction Phase**					
	Inclusion of appropriate environmental clauses in the contract document	Checking whether mitigation measures compatible to predicted impacts are properly included in the contract document	At ERA Head Office	Once during the document evaluation	ERA's representative	Part of the routine work
	Displacement of people and loss of properties	Compliant from the affected people	In towns, villages and other settlement areas along the project road	Once before the start of the construction work	A team comprises of representatives from each Woreda LEPOs	20,000(daily allowance for Woreda experts & transport cost)
II	**Construction Phase**					
	Impacts on water quality by construction activities and improper disposal of wastes from campsites and construction areas	Water quality parameters such as EC, pH, TDS, Turbidity, oil, grease, petrol and diesel leakages	Rivers, streams, springs and wells	Once before construction, 2 times per year during construction and once after the completion of construction	Water quality expert from Zonal Water Department	100,000 (for analyzing 6 water samples at a time & 2 times per year, 500 Birr per sample; and per diem for 2 experts & transport cost.
	Impacts on land under various uses due to land taking	Area of land affected in ha	Along the project road, access roads, and at	Once per year	A team having 2 members representatives	40,000 (daily allowance experts& transport

Ser. No	Socio-environmental Issues	Indicators/Parameters to be Measured/ Monitored	Location/ Project Component	Frequency	Responsibility for Monitoring	Cost Estimate in Birr
	for the RoW, access road, quarry and borrow sites and camp sites, etc.		campsites, borrow & quarry sites		from Each Woreda LEPOs	cost
	Soil erosion	Area exposed to erosion	Cut and fill areas and steep slopes	Once per year	Representative from each Woreda LEPO	Could be done at the same time with the above activities
	Impacts on forests, indigenous trees and roadside plantation trees	• Area of forestland affected • Number of indigenous trees felled/removed, • Species type & number of tree seedlings raised, planted and number survived or well established	Along the project road & access roads, at quarry & borrow sites, campsites, materials processing sites	Twice per year	Woreda NRCDO	60,000 (daily allowance for experts& transport cost)
	Disposal of construction spoils	• Number of unauthorized spoil disposal sites & impacts caused, • Number of spoil disposal sites properly managed and landscaping measures taken.	Spoil disposed sites along the project road	Once per year	Representative from each Woreda LEPOs	Could be done at the same time with the above activities without additional cost
	Health condition of the people along the project road and	Overall health and sanitation situation of the project area including construction camps	Construction campsites, working areas and nearby	Twice per year	Two representatives from each Woreda Health Office	40,000 (daily allowance experts& transport

Ser. No	Socio-environmental Issues	Indicators/Parameters to be Measured/ Monitored	Location/ Project Component	Frequency	Responsibility for Monitoring	Cost Estimate in Birr
	status of HIV/AIDS		towns and villages			cost
III	**Construction Completion Phase**					
	Aesthetic value and landscape	Un-rehabilitated areas and leftovers	Throughout the project route, contractor's site facilities and quarries and borrow pits	Once before officially terminating construction contract	A team consist of a representative from each W. Administration, W. LEPO, and from ERA and may be from financing agency	60,00 (daily allowance for experts and transport cost)
IV	**Operation Phase**					
	Erosion, sedimentation of drainage structures, l traffic signals, sight distance issues and roadside weeds	Surface area, length or number of sites affected by erosion, number of blocked drainage structures, number of traffic signals damaged, etc.	Along the project road	Once per year	Operation and maintenance Department of ERA or ERA's District Office	Part of routine work
					Sub-Total Cost	**320,000**

9.4 Environmental Mitigation, Management and Monitoring Costs

The mitigation measures proposed in Chapter 6 and 7 comprise engineering features and socio-environmental mitigation and compensation. The engineering features will be considered in the engineering design and will be implemented as part of the construction items; thus, these will not require separate costs as they are considered as part of the engineering item and good engineering practices. They can be implemented following proper organization/planning of works and construction methods, which shall be specified in the tender document, technical specifications and construction contract documents.

Several of the mitigation measures specified in this EIA document shall be incorporated in the engineering design and included in the BOQ and contract documents for the Contractor. Others will be included in environmental clauses that will be part of contract documents for the Contractor.

Some socio-environmental mitigation measures will have separate cost items and these include the following:

- Reinstatement of quarry and borrow pits, campsites and materials processing sites through backfilling, landscaping and establishment of appropriate vegetation
- Bio-engineering measures (grassing of road embankments, cut slopes & other erosion prone areas) to stabilize slopes and/or prevent erosion,
- Replanting of trees and shrubs to replace or compensate for trees and other vegetation removed or to prevent erosion, stabilize slopes and/or improve the visual quality of areas impacted by project activities,
- Awareness creation programs on traffic safety and public health issues for the local community as well as project workforce to minimize accidents related to road and traffic safety hazards and spreading of sexually infected diseases, and
- Environmental monitoring activities and capacity building.

Indicative cost estimates for the above outlined socio-environmental mitigation measures are given in Table 8-3 below. The environmental mitigation, monitoring and capacity-building costs are estimated to be around 13.6 Million Birr. It should be note that the costs related to physical construction works are referred to be included in the engineering design cost estimates, while the costs related to resettlement and compensation for loss of private and public properties are referred to be included in RAP.

Table 9-3: Environmental Mitigation, Monitoring and Capacity Building Costs (in Eth. Birr)

Item No	Description of Activities	Unit	Quantity	Unit Cost (Birr)	Total Amount
1	**Site restoration and artificial landscaping measures**				
1.1	Reinstatement of quarry & borrow pits, campsites and materials		Lump sum		3,000,000.00

Item No	Description of Activities	Unit	Quantity	Unit Cost (Birr)	Total Amount
	processing sites through backfilling, landscaping & establishment of vegetation				
2	**Bio-engineering measures**				
2.1	Grassing to side slopes & other erosion prone areas	Ha	15	178,500.00	2,677,500.00
3	**Biological mitigation measures**				
3.1	Replanting trees to replace trees removed or as compensation for vegetation and habitat losses	No.	67,000	22.40	1,500,800.00
4	**Health and safety measures**				
4.1	Awareness creation & provision of protectives for prevention of HIV/AIDS, other STDs and traffic safety hazards		Lump sum		4,000,000.00
4.2	Provision of awareness raising education on health & traffic safety issues		Lump sum		150,000.00
5	**Environmental monitoring and capacity building**				
5.1	Assigning Environmentalist (part of internal monitoring cost)	Man-month	12	40,000	480,000.00
5.2	Training for environmental management and monitoring actors	Lump Sum			200,000.00
5.3	External monitoring costs	Lump Sum			320,000.00
				Total=	**11,328,300**
				Contingency (20%)	2,265,660
				Grand Total	**13,593,960**

10. CONCLUSION AND RECOMMENDATION

10.1 Environmental Aspects

The assessment of potential environmental impacts of the Jimma – Chida road was against the baseline environmental features of the project impact areas as described in Chapter 4, and was based on the proposed engineering features or road improvement activities as described in Chapter 2. The impact assessment acknowledges that the proposed road upgrading of the Jimma – Chida road and its subsequent operation will bring a number of positive as well as negative environmental impacts. The key potential positive environmental effects include alleviation or reduction of the land-sliding problem, minimization of the prevailing dust pollution and its effects on roadside communities, reduction of erosion from gravel-surfaced road and its side ditches, and stresses on water quality, reduction of accident risks for both motorized and non-motorized traffic, and facilitation of traffic flows, reduction of individual vehicle's air and noise pollution, and better safety for pedestrians and non-motorized vehicles due to provision of pedestrian walkways and parking lanes along town and village sections.

On the other hand, implementation of the proposed road improvement project is likely to bring a number of adverse environmental impacts, most of which will occur during the construction phase. Most of the significant potential impacts are related to the road location in sensitive areas like settlements, prime agricultural areas and protected forests, land requirements for alignment improvements, realignments and construction material sources, the road works, extraction, haulage and processing of construction materials, opening and use of access roads, establishment of contractor's site facilities, and disposal of spoil materials. Considering the location and scale of the project, the potential impacts are not unexpected ones, but they need due attention and corresponding mitigation measures.

The potential environmental impacts that will require due attention and mitigation measures include air pollution (especially dust pollution), land-sliding, loss of agricultural lands, increased soil erosion and sedimentation of streams and rivers, impacts on roadside indigenous trees as well as plantation trees, and road and traffic safety issues/increased accident risks. Other important environmental impacts include disfiguring of landscape quality esp. at quarries and borrow pits, soil and water pollution risks, impacts on water supply systems and competition for water, and impacts on fauna. Most of the impacts are issues involved in normal road construction works, and thus, they are not unexpected ones. Nevertheless, they need due attention and corresponding mitigation and monitoring measures in order to minimize the impacts to acceptable levels.

Most of the potential impacts will occur during the construction period and thus, they are short-term in nature. Most impacts are expected to be medium in magnitude, but some are likely to be high, and moderate to high in significance. Nonetheless, they can be mitigated to acceptable levels with good engineering design and proper construction methods, as well as through application of appropriate environmental mitigation measures. Therefore, it can be concluded that there are no serious environmental issues that will prevent the proposed Jimma – Chida road upgrading project from proceeding to

the implementation stage as long as the recommended mitigation and monitoring measures are properly considered and timely implemented.

To ensure implementation, it is strictly recommended that the proposed mitigation measures shall be included in the detailed engineering design or in the tender documentation, either as contract and/or special technical specification clauses as appropriate. In addition, sufficient budget shall be allocated for the mitigation, management and monitoring actions not included in the obligations of the Contractor and the Construction Supervision Consultant, and necessary institutional/specialist arrangement is made for their implementation before the commencement of the construction works. Further, a well-planned monitoring programme should be instituted in order to follow up the proper implementation of the EIA recommendations and their effectiveness, as well as incidence of any unforeseen issues.

10.2 Social Aspects

The upgrading of the project road will create better and improved market opportunities for the sale of agricultural produce and consumer goods. When upgraded it will create better market access for the local farmers, and their produces will fetch higher market prices in comparison to the current low prices. Further, due to the introduction and availability of improved agricultural inputs, production per hectare would also increase.

The local economy would also show growth with the development of small business, investment projects; growth of urban centers, improved and efficient communication system, exposure to the advancement of technology and science through improved means of production. In general, employment opportunities will be created in the project area with the growth of the economy and improvement in the social services.

The population residing in the project area and in particular those along the project road would like the upgrading of the road to start immediately. In all the public and stakeholders' consultations held with different groups of the local community, and government officials as well as professional experts working in the project, it was clear that the local population, PAPs and other stakeholders have expressed positively about the upgrading.

The proposed project road is in harmony with all the national development policies and strategies of Ethiopia, and fulfils all requirements set forth both by the Federal and Regional Governments.

The upgrading of the project road could be successfully implemented if it properly addresses both the positive and negative social impacts that would be created during the implementation of the project.

Most social benefits are difficult to assign monetary values but are clearly part of project assets and welcomed by local people as improvements in their everyday life (e.g. less dust, better roads also for pedestrian…). Some of these impacts may be temporarily undesirable.

On the down side, the upgrading of the project road would create some negative impacts on the local population. The negative impacts are mainly related to the spread of communicable diseases, the spread of HIV/AIDS, traffic accidents and injuries. The

negative impacts could be managed if proper mitigation measures are carried out, as suggested in this report.

Road construction is inherently a relatively dangerous industry, and accidents invariably may also occur, Hence, appropriate occupational health and safety measured need to be adopted in the working environment. Similarly, the presence of construction workforces in the direct influence are of the project road, even if it is relatively small in number can impose additional strains on the existing health and other social services by reducing its effectiveness of services given for the local population.

ERA in the preparation of its tender document for the upgrading of the road needs to ensure that clauses both for the environmental and social issues are included as suggested in this study and from other relevant documents.

The monitoring of the project implementation has to be done on a regular basis by a Sociologist that is assigned by the supervision consultant. The Sociologist assigned by the supervision consultant has to copy its monitoring report to ESMT.

Generally, there are no socio economic conditions that will affect the project road from being constructed. The negative impacts identified in this study could be mitigated and the mitigation measures are strictly adhered by all concerned bodies.

11. ENVIRONNEMENTAL CLAUSES

In order to integrate the management aspects of the road project into the road construction activities, the tender document for the Jimma - Chida road construction contract shall include the following key issues and provisions but may not limited to:

11.1 Preparation of Environmental Management Plan

The road construction contractor shall update the existing EMP from the EIA report or prepare a new Site EMP that suits construction works for the entire project road. The EMP shall be updated/prepared using or based on the ERA's guideline and specifications and submitted to Engineer/Environmental Supervisor and ERA/ESMT for reviewing and approval before the road construction work commences.

11.2 Site Location and Establishment of Construction Camps

Construction camps may cause significant adverse socio-environmental effects due to their location, establishment and operation. The following activities should be specified in the contract document to minimize adverse impacts that could be associated with the location of campsites:

- The Contractor Shall select location of campsites in collaboration with local authorities, RE and with ESMT of ERA, and camps shall only be established at places/locations approved by ERA's ESMT and the RE in collaboration with local Officials and community members;
- Campsites shall be located in less productive areas away from streams and rivers (at least 500m);
- Campsites shall not be located within or close to sensitive areas such as residential areas, fertile farmlands, and forestlands;
- The RE and the contractors shall take photograph of the campsite before the construction of any structure in order to compare the level of environmental degradation before and after the establishment of the campsite and to plan rehabilitation work. Any removal of trees from the campsites shall be done in the presence of Environmentalist from the Supervision Team and a Forester from Local Forestry Department;
- Campsites shall be established with appropriate and standard sanitation facilities including imperviously lined septic tanks to reduce possible pollution of groundwater and/or surface water resources;
- All the wastes generated by campsites shall be disposes properly in designated and authorized places;
- The Contractor shall take all necessary measures and precautions to avoid any nuisance or disturbances to nearby inhabitants arising from the execution of works;
- When the camps are no more required for the project and if they are not going to be used for other purposes, i.e. if they are going to be abandoned, the Contractor shall reinstate them to their original state as closely as possible. The reinstatement shall include stockpiling the topsoil during the camps construction, removal of all

concretes/slabs and all scrap metals from the workshops, loosening the compacted soils, spreading of the topsoil, and establishing grasses or vegetation unless the sites would be used for agricultural activities immediately; and

- The Contractor shall plant appropriate tree species in the camp yard for beautification purpose; the tree species selected for the planting shall be approved by the Environmentalist of the SC and Woreda Forestry Expert.

11.3 Air Pollution

The Contractor shall implement the following mitigation measures in order to minimize air pollution, especially, dust pollution caused by the road project activities:

- The Contractor shall reduce dust from construction sites, access roads and detours by watering three times a day or as instructed by the RE in a more stringent way when the same are located in or close to sensitive areas such as towns, villages, social services, croplands, water supply points;
- The Contractor shall prevent generation of air pollutants by watering during crushing and screening of aggregates;
- The Contractor shall locate materials processing plants such as stone crusher and asphalt mixer away from settlement areas, health units, schools and religious places;
- The Contractor shall avoid burning of materials such as tiers, plastic, rubber products or other materials that creates heavy smoke or nuisance odor;
- The Contractor shall avoid disposing of any volatile chemicals to the air;
- Any vehicle with an open load carrying area used for transporting potentially dust producing materials should have properly fitted side and tail boards. Materials having the potential to produce dust should not be loaded to a level higher than the side and tail boards and should be covered with a clean tarpaulin in good condition;
- The Contractor shall provide safety equipment such as goggle, masks and other protection measures for his work force as it needed; and
- The RE shall supervise and monitor the contractor's compliance with the above conditions.

11.4 Noise Pollution

The Contractor shall implement the following mitigation measures in order to avoid excessive noise levels that could be generated due to operation of construction equipment and vehicles, blasting, concrete batching, and aggregate production.

- The Contractor shall not locate stone crusher and asphalt mixer near noise sensitive areas such as settlement areas, health units, schools, and religious places and wildlife areas;
- Construction activities that generate nuisance noise levels shall take place during conventional working hours wherever possible;

- The Contractor shall screen equipment producing high levels of noise when working near the settlement areas, clinics and religious areas;
- The Contractor shall minimize the use of explosives and promote a systematic blasting schedule;
- The Contractor shall provide safety equipment pertaining to noise, such as ear protection wear whenever necessary for the workers; and
- The RE shall supervise and monitor the Contractor's compliance with the above conditions.

11.5 Impacts of Quarry Sites, Borrow Areas, Detour Roads and Workshops

Quarry sites, borrow areas and detour roads unless carefully located, properly operated and rehabilitated after use could cause significant socio-environmental problems like loss of productive land, loss of vegetation, soil erosion, creation of mosquito breeding sites, un-aesthetic view, etc. Therefore, the contractor shall implement the following mitigation measures:

- The Contractor shall select quarry and borrow sites away from settlement areas and other socially/environmentally sensitive areas and shall not commence operation prior to approval by the RE, ERA (ESMT) and Local Authorities;
- The Contractor shall not select quarry and borrow sites near and at river bed;
- The Contractor shall not establish quarries and borrow pits in forest areas and important wildlife areas;
- The Contractor shall maintain detour roads within the ROW as much as possible;
- The Contractor shall reinstate all quarries and borrow sites and access roads after the completion of the road works, any material sites shall not be left open unless otherwise approved by the RE and/or ERA and upon request from local people to have the sites open permanently;
- The Contractor shall carefully handle hazardous substances such as fuel, oil, lubricants and cement during transport, storage and dispensing of the substances to avoid spillage and environmental pollution risks,

The reinstatement works shall include the following activities:

- The Contractor and RE/Environmentalist of the SC shall take photographs of the proposed borrow areas, quarry sites and detour and access roads before the commencement of the works;
- The Contractor shall take lists of all the tree species found in the proposed quarry sites, borrow areas and detour roads and the exact number of trees to be affected in the presence of Environmentalist from the Supervision Team and a Forester from the Woreda Forestry Unit;
- The Contractor shall preserve topsoil for later use to refill borrow sites and quarry areas and do not mix topsoil with subsoil;

- Borrows and quarries shall be reinstated (which include dumping unnecessary materials and excess cuts, landscaping/leveling/shaping, spreading the topsoil uniformly over the surface, constructing spillways if in case the sites are deep enough to hold water and putting a barrier all around the sites to prevent accidents on animals and human beings) after completion of the works;
- After reinstating, plant appropriate tree species (indigenous trees) or grasses to recover the original vegetation and to improve the ecological and aesthetic value of these sites;
- Provide proper drainage to avoid storage of water in quarry and borrow sites to reduce malaria out break through reduction of mosquito breeding sites; and
- Access roads to these sites shall be reinstated to productive state. Reinstatement work shall include: preservation/stockpiling of the topsoil, removing the applied selected/foreign materials, loosening the compacted soils and spreading the top soils.

11.6 Soil Erosion and Slope Stability

The Contractor shall implement the following mitigation measures in order to minimize potential soil erosion and slope instability due to cutting in soil or cut-to-fill works particularly in steep slope areas:

- The contractor shall protect unstable slopes with stabilizing structures such as retaining walls; wire basketry, gabions etc. as permanent installation on risk slopes;
- The contractor shall implement bioengineering techniques to protect and stabilize unstable slopes and also shall use appropriate grass species such as Vetiver Grass, Kikuyu Grass or Bemuda Grass together with physical engineering measures as soon as possible after completion of the works;
- The contractor shall install cut-off or interceptor drains above cut slopes;
- The contractor shall provide riprap, grassing on erosion prone slopes of high embankments and fill areas, toes and banks of the streams to avoid/restrict erosion;
- The contractor shall remove all dangerous and loose boulders and rocks from cut faces;
- The contractor shall limit disturbances to natural vegetation above cut slopes;
- The contractor shall pave roadside drains above 5% slope gradients and construct all energy- dissipating structures at the drainage outlets and discharging points;
- The contractor shall provide cross drainage structures as close as possible to reduce the amount of flow from side ditches and to let the flood join to the nearest stream easily without scouring the side walls;
- The contractor shall plant local variety grass species and replant slope embankments and erosion prone areas and water them until the grasses and trees are survive independently; and

- The contractor shall construct different physical erosion control measures such as paved side drain, check dams, and other energy dissipating structures such as chutes, cascades, etc.

11.7 Impacts on Soils and Water Resources

The Contractor shall implement appropriate mitigation measures to minimize potential impacts of road construction works on soils and water resources. These include the following:

- The Contractor shall avoid dumping of solid and liquid wastes from the construction areas and camps on farmlands or in streams, rivers or dry stream beds;
- The Contractor shall not block natural flow of streams, rivers and wetlands;
- The Contractor shall not select quarry sites in river beds or on river banks;
- The Contractor shall plant appropriate grass species on cut slopes and embankment/fill slopes to reduce erosion, then sedimentation of downstream water bodies and stress on water quality;
- The Contractor shall avoid pollution of soils, rivers or streams during concreting work from cement slag;
- The Contractor shall not clean/wash construction equipment in wetlands, streams and rivers, and shall not discharge waste chemicals into streams, if in case this problem happens, the contractor, at his own expense, shall be obliged to clear water until it reaches its original quality level or potable standard;
- Servicing of plants, equipment and vehicles shall be carried out at a workshop area. The workshop area should be equipped with secured storage areas for fuels, oils and other fluids. The storages should be constructed in such a way as to contain any spillages, which may occur. Similar storage should be constructed to store used fluids prior to their disposal in a designated and authorized place. Waste oils from various plants and equipment shall be collected in drums and send it to oil reprocessing companies and never dispose them into wetlands, streams and rivers;
- The contractor shall avoid conflicting with water demands for domestic and livestock consumption & give priority for domestic and livestock consumption, and not use water from low discharge springs or streams in this case the contractor shall fulfill his water requirements for campsites and construction purposes by developing own water sources;
- The Contractor shall avoid locating campsites near water sources and groundwater recharging areas;
- Careful handling of explosives and residue of fuel to avoid health risk and soil and water pollution;
- The contractor shall ensure that all the existing stream courses and drains within and adjacent to the site are kept safe and free from any debris; and

- The contractor shall officially handover all developed water sources at any locations to the Local water Department after the completion of the road construction work

11.8 Impacts on Important Trees and Vegetation

The Contractor shall take the following mitigation measures to minimize impacts on roadsides trees and vegetation particularly indigenous trees and protected forests (see baseline for their locations):

- The contractor shall not locate quarry or borrow sites wherever there are significant number of indigenous tree species or within the protected forests;
- The Contractor shall confine clearing of vegetation to what is absolutely necessary. All trees and shrubs which are not required to be cleared or removed for construction purposes should be protected from any damage that may be caused by the contractor's construction operations and equipment;
- The Contractor shall not locate campsites, quarries and borrow pits and detour roads in protected forests or other areas containing significant vegetation cover;
- The owners of potentially affected trees shall be given adequate time to harvest their trees before clearing;
- The Contractor shall transplant trees which are transplantable;
- The Contractor shall take maximum care and never cut indigenous trees that are located outside the zone approved for the road works;
- The contractor shall aware construction workforce not to cut down trees for any purpose without prior approval of the Environmental Inspector and Local Forestry Department;
- The contractor shall plant at least 15 new seedlings for each indigenous tree to be affected and water them until the Local Forester approves that they would grow independently;
- The contractor and Environmental Inspector shall take photographs of these sites before starting clearing and keep it as an official document in a separate folder; and
- The contractor shall forbid his workforces from deliberately and discriminate cutting down trees, involving in any trade activities or illegally transporting forest products. The contractor shall take the responsibility for his misbehavior of workforces and involvement in any trade activities by his workforces or transporting of any forest products by construction vehicles.

11.9 Impacts on Wildlife and Habitats

The Contractor shall take the following mitigation measures to minimize impacts on wildlife and their habitats found along the project road and other project areas:

- Avoid selection of material sources (quarry and borrow sites), materials processing plants site and campsites within important wildlife habitats such as the corridor of km 48 – 52 and km 65 – 71,
- Abstain from encroaching into areas of wildlife habitats and other sensitive areas;
- Strictly forbid his workforces from deliberately killing wild animals or due to like over speeding of vehicles, hunting wild animals for food or sport purposes, involving in any trade activities of dead or live-wild animals;
- Avoid disposal of excavation materials on down-slope and locating spoil disposal sites where these may affect wildlife habitats and cause obstruction to wildlife movements,
- Post appropriate signs in the important wildlife areas and apply speed limits for sections passing through those areas, and
- Take precautions to avoid any fire accident and control any fire incident due to contractor's activities.
- Restore affected areas (e.g. quarries and borrow pits and access roads to those sites) through replanting program;
- Create awareness among drivers to give priority for road crossing animals and abstain from running after them or chasing the animals away; and
- Aware drivers to put off light and give priority for road crossing nocturnal animals during the night time.

11.10 Traffic Management Plan (TMP)

Contractor shall prepare Traffic Management Plan (TMP) that suits construction works for the entire or sections of the road project. The TMP shall be prepared using or based on ERA's Road Safety Audit Manual and submit to RE and ERA's ESMT for reviewing and approval before the construction work commences. The main measures to be taken include the following:

- The Contractor shall provide diversions with suitable and reflecting road signs; provide barricades and delineators and flagmen to guide the traffic. For regulation of traffic, the flagmen shall be equipped with red and green flags;
- The Contractor shall provide alternative pedestrian routes where these are interrupted;
- The Design Engineer shall consult the local people as to where to construct the different engineering facilities like parking bays, foot paths;
- The Contractor shall use clear, leveled properly and meaning full traffic signs and speed limits, especially at road crossing of the people and conjunction of animals;
- The Contractor shall provide traffic awareness, especially at schools, churches and other places at certain period of construction time and introduce accident prevention methods; and

- The Design Engineer shall identify all high traffic accident areas and safety measures shall be proposed at all these areas.

11.11 Impacts on Agricultural Lands

The Contractor shall implement the following measures to minimize impacts on productive agricultural lands due to land taking for increasing road width, exploitation of borrow sites, establishment of contractor's site facilities, spoil disposal etc.:

- Abstain from locating campsites, quarries and borrow pits on fertile farmland, instead locate them in less productive areas;
- Do not establish diversion roads in productive farmland and limit the diversions within the road Right of Way;
- abstain from dumping any spoil from construction activities into farmland unless requested to do so by the farmers;
- Separate topsoil from subsoil and preserve topsoil for later use for reinstatement of borrow pits, campsites, diversion roads etc.; and
- Reinstate all the farmlands temporarily taken for various activities of road construction. Reinstatement shall include stockpiling the topsoil, removing any concretes or foreign materials, loosening the compacted soils, landscaping/leveling/shaping, spreading the topsoil uniformly over the surface. The level of reinstatement shall be approved by the RE and Environmental supervisor as well as it should satisfy the land holders.

11.12 Impacts of Construction Camps, Workshops and Storage Sites

Construction camps, workshops and materials storage sites can cause a number of significant environmental and social impacts unless the sites are carefully located and appropriate mitigation measures taken during their establishment and subsequent operation. Therefore, the Contractor shall adopt necessary precautions and appropriate mitigation measures including the following:

- The Contractor shall select the location of campsites in collaboration with local authorities, representatives of local community, the Engineer/RE and ERA's representative(s) preferably from ESMT & ROW Section,
- Locating campsites in less productive areas away from environmentally or socially sensitive areas such as streams, rivers, forestlands (esp. protected forests), residential areas, social facilities (health, education, water supply), religious places (churches & mosques) etc.,
- The Engineer/Environmental Supervisor and Contractor shall take photographs of the campsites before putting any structure at the site in order to compare the level of environmental alteration before and after the establishment of the campsites and to plan reinstatement measures. The Engineer/Environmental Supervisor and Contractor shall record the types and number of trees removed due to the establishment of campsites in the presence of representatives from Woreda LEPO, Woreda NRDCO and OFWE (Zonal Office);

- The Contractor shall establish construction campsites with appropriate and standard health care services, potable water supply, garbage disposal and sanitation facilities including imperviously lined septic tanks to reduce possible pollution impact on ground and surface water resources;
- The Contractor shall carefully handle hazardous substances such as fuel, oil, lubricants and cement during transport, storage and dispensing of the substances to avoid spillage and environmental pollution risks;
- The Contractor shall take all necessary measures and precautions to avoid any nuisance or disturbance to inhabitants arising from the execution of works;
- When the camps are no more required for the project and if they are not going to be used for other purposes or going to be abandoned, the Contractor shall reinstate them to their original state as closely as possible. The reinstatement activities shall include stockpiling the topsoil during camp construction, removing all concretes/slabs and all scrap metals from the workshops, loosening the compacted soils, and spreading of the top soils; and
- The Contractor shall plant appropriate tree species in the camp yard for beautification purpose; the tree species selected for the planting shall be approved by the Environmentalist of the Supervision Consultant and Forester of Woreda Forestry Department.
- The Contractor shall maintain proper management and discipline in the camps;
- The Contractor shall dismantle all the site facilities (camps, workshops and storage sites) and rehabilitate the areas as per the surrounding nature once construction is completed.

11.13 Impacts on Public Health

From the viewpoint of public health, the construction crews and the campsite areas are the main concern particularly in relation to the expansion of HIV/AIDS, STIs and malaria. To minimize these health problems the Contractor shall take the following measures:

- Be aware that the road traverse through malaria endemic areas and be prepared to avoid possible health risk through environmental health and hygiene management of campsites and availing clinic, chemically treated mosquito nets and medicines for the work force;
- The Contractor shall not induce malaria outbreak by creating temporary or permanent water holding areas/pools which could be favorable mosquito breeding places;
- The Contractor shall restore borrow pits and quarry areas to avoid breeding sites for mosquitoes;
- The Contractor shall provide clinics with all necessary medications in major construction camps, and First Aid kits at all working sites;
- The Contractor shall minimize dust emission by watering the road during construction at the settlement areas 3 times a day (in the morning, before lunch time and before the end of working hour) or as instructed by the RE;

- The Contractor shall take care when selecting campsites in such a way that it should not invite close interaction with local community;
- The Contractor shall provide safe water supply & appropriate waste disposal facilities including the provision of sanitary latrines in the construction camp;
- The Contractor shall provide health education mainly focusing on the HIV/AIDS control and prevention, avoid discrimination in work places due to HIV/AIDS and provide counseling service. This activity shall be executed as a sub contract by local NGOs and relevant institution;
- The Contractor shall provide free counseling and distribute condoms & leaflets to workforce and vulnerable group of nearby communities; and
- The Contractor shall take due precautions to ensure the safety of his staff and labor in collaboration with the local health offices by providing medical staff; first aid equipment and stores, sick bay and suitable ambulance service at the camps, housing, and on the site at all times throughout the period of the contract

11.14 Impacts related to Occupational Safety

During the road construction, there will be more occupational health problems associated with construction activities such as accidents from traffic or working machines, explosives, etc. To minimize these inconvenient working conditions and safety problems the following clauses shall be included in the contract document**:**

- The Contractor must ensure that the potential danger to the public (including pedestrians, all road users, and adjacent building owners and occupiers) is kept to an absolute minimum. All work sites are to be clearly sign posted and fenced, and if necessary lit at night. Safe, traffic control arrangements to provide well-signed pedestrian routes to be provided to avoid construction accidents;
- During the execution of the works the contractor shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any contractor's equipment and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works no longer required;
- Where the contractor is authorized to use explosives required for rock excavation, the explosives shall be stored, handled, and used with the utmost caution and strictly in accordance with the statutory government regulations. The contractor shall be responsible for the presentation of any unauthorized issue or improper use of any explosive and shall ensure that the handling of explosives shall be entrusted only to experienced and responsible men;
- All open excavations shall be adequately barricaded to prevent workmen or others from accidentally falling into them. Any open excavation in the road carriageway or shoulder areas shall in addition be marked at night with white painted drums (or similar) and red or amber lighted lamps, to the satisfaction of the engineer;
- Explosives and chemicals should be stored under proper security at a safe distance from the road and any inhabited premises;

- Give warning each time of his intention to blast and should station personnel on the roads and elsewhere with flags, horns and whistles and prevent persons , animals and traffic entering danger zone;
- Provide education to personnel of the contractor about safety procedures and emergency response plans associated with their task;
- The Contractor shall provide accommodation and amenities as it may be necessary for all his staff and labor including all fencing, water supply (both for drinking and other purposes), electricity supply, sanitation, cookhouses, fire prevention and fire-fighting equipment, air conditioning, cookers, refrigerator, furniture, and other requirements.
- The Contractor shall make any necessary arrangements for the transport, to any place as required for burial, of any of his expatriate employees or members of their families who may die in Ethiopia;
- The Contractor shall arrange for the provision of a sufficient supply of suitable food at reasonable price for all his staff, labor, and subcontractors for the purposes of or in connection with the contract;
- Alcoholic liquor or drugs are strictly forbidden to use in whatever means; and
- The Contractor shall pay compensation according to the laws of the country for loss or damage suffered in consequence of any accident or injury or disease resulting from his work for any workman or other person in the employment of the contractor or any subcontractor.

11.15 Disruption of Crossing Structures, Access Roads and other Services

- The Contractor shall provide appropriate crossing structures or access roads to individual houses on upslope and social facilities;
- The Contractor shall not use places used for different purposes like market places, social gatherings etc. for storage of construction materials;
- The Contractor shall not block natural or man-made drainage lines; and
- The Contractor shall not operate noisy operations near schools, public health units and religious places.

11.16 Grassing of Cut Slopes and Bare grounds

Road construction works, which involves cutting and filling, will most likely induce slope instability, bare ground and soil erosion problems. Therefore, the Contractor shall implement the following measures to minimize the impacts:

- Implement bioengineering techniques such as planting suitable grass species such as Vetiver Grass and/or Kikuyu Grass that are proved to be effective for such purposes together with physical engineering measures immediately after completion of the works; and

- Implement grassing or tree planting on erosion prone slopes of high embankments and fill areas, toes and banks of the streams to avoid/restrict erosion, and water them until the grasses and trees are survived independently.

11.17 Measures to be Taken before Commissioning

The Construction Contractor shall clean up the project environment before officially handover the project. The RE, Social and Environmental Supervisors of the SC and ESMT of ERA shall follow up the proper implementation of these activities and check that the work as built meets all significant environmental requirements before the project is officially accepted and shall report to the concerning parties.

- All the salvages and waste materials from the construction process shall be cleaned, demolished or dumped in appropriate and authorized places;
- Quarry and borrow areas shall be reinstated, drained and planted trees;
- Temporary campsites including compacted materials shall be removed and the sites reinstated to productive state so that the land continues giving services which were discontinued due to the project; and
- Certain amount of money shall be held until the completion of the cleaning activities and approval by the Engineer (RE and Social and Environmental Supervisors).

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APPENDIXES

Appendix 1: List Of Consulted Persons and Organizations

No	Name	Position and Organization	Date
1	Ato Mohammed Abdurahaman	Chief Administrator, Dedo Woreda Administration.	23/11/2011
2	" Mohammed Sani	Vice Administrator & Head of Public Affairs Off. Dedo W.	23/11/2011
3	" Biya Aba-Garo	Mayor, Sheki town	23/11/2011
4	" Awel Ahmed	Head, Dedo W. Rural Development Office.	23/11/2011
5	" Oli Hussen	Head, Dedo W. Land & Environmental Protection Office.	23/11/2011
6	" Hadi Abdurahaman	Environmental Protection Officer, Dedo W. LEPO.	23/11/2011
7	" Aliyi Ibrahim	Head, Dedo Woreda Water Resources Office.	23/11/2011
8	" Kumlachew Derese	Representative, Dedo Woreda Finance & Economic Development Office	23/11/2011
9	" Mohammed Abdela	Head, Social Affairs Office	23/11/2011
10	W/ro Tigist Bayu	Representative, Women and Children Affairs Office	23/11/2011
11	Ato Miheretu Lakew	HIV/AIDS Officer, Dedo Woreda Health Office.	23/11/2011
12	She-Jemal A/Gidi	Chairman of Garima Kebele, Dedo Woreda	25/11/2011
13	Aba Temam A/Diga	Elder & Resident of Garima Kebele, Dedo Woreda	25/11/2011
14	Aba Temam Aba Bulgu	Elder & Resident of Garima Kebele, Dedo Woreda	25/11/2011
15	Aba Zinab A/Sambi	Resident of Garima Kebele, Dedo Woreda	25/11/2011
16	Aba Fita A/Kana	Elder & Resident of Garima Kebele, Dedo Woreda	25/11/2011
17	Aba Zenu A/Gojam	Elder & Resident of Garima Kebele, Dedo Woreda	25/11/2011
18	She-Mohammednur Aba Gissa	Elder & Resident of Waro Kolobo Kebele, Dedo Woreda	25/11/2011
19	She-Salim A/Mecha	Elder & Resident of Waro Kolobo Kebele, Dedo Woreda	25/11/2011
20	Ato Esayas Shewaneh	Manager, Chida town Administration	24/11/2011
21	" Andnet Tadesse	Expert, Chida town Administration	24/11/2011

No	Name	Position and Organization	Date
22	" Worku W/Senbet	Chief Administrator, Chida town Kebele	24/11/2011
23	" Habtamu Bikamu	Deputy Administrator, Chida town Kebele	24/11/2011
24	" Tamirat Tesfa	Elder and Resident of Chida town	24/11/2011
25	" Tekle Shiferaw	Elder and Resident of Chida town	24/11/2011
26	" Tafese Mepeta	Elder and Resident of Chida town	24/11/2011
27	" Weju Chema	Elder and Resident of Chida town	24/11/2011
28	" Bekele Ketire	Elder and Resident of Chida town	24/11/2011
29	" Mamo Pola	Resident of Mojo Kebele, Konta Special Woreda	24/11/2011
30	" Ufa Chimo	Resident of Mojo Kebele, Konta Special Woreda	24/11/2011

Appendix 2: List of Flora Found in Project Area

No.	Scientific Name	Local Name (Oromifa)	Type	Family Name	Locality	Abundance	Notes
1	*Acacia abyssinica*	Laftoo	Tree	Fabaceae	a	c	
2	*Acacia polyacantha*		Tree	Fabaceae	b	c	In Gojeb valley
3	*Acacia seyal*	Wachu	Tree	Fabaceae	b	fr	
4	*Acacia sp.*		Tree	Fabaceae			
5	*Acanthus arboreus*	Shokkoruu	Shrub	Acanthaceae			
6	*Albizia grandibracteata*		Tree	Fabaceae	b	s	Riverine
7	*A. gummifera*		Tree	Fabaceae	a	fr	
8	*Albizia schimperiana*	Ambabeesa	Tree	Fabaceae	a	c	
9	*Aningeria adolfi-friedericii*	Kararoo	Big tree	*Sapotaceae*	a	s	
10	*Apodytes dimidiata*	Wondabiyo	Tree	*Icacinaceae*	a	c	
11	*Asplenium sp.*		Fern	*Aspleniaceae*			
12	*Bersama abyssinica*	Lolchiissa	Tree	Melianthaceae			
13	*Buddleja polystachya*	Anfarii	Shrub/S. tree	Loganiaceae			
14	*Brucea antidysenterica*	Komegnoo	S. tree	Simaoubaceae	a	s	
15	*Calpunia aurea*	Cekaa	Shrub/S. tree	Fabaceae			
16	*Capparis tomentosa*	Gumaroo	Shrub	Capparidaceae			
17	*Carissa edulis*	Agamsa	Shrub	Apocynaceae			
18	*Casuarina equsetifolia*	Shiwushiwe	Tree	*Casuarinaceae*	a	fr	
19	*Celtis africana*	Kaye, Mataqoma	Tree	Ulmaceae	a, b	fr	
20	*Combretum molle*	Rukeensa	Tree	Combretaceae			
21	*Combretum aculeata*		Pseudoliana	Combretaceae			
22	*Cordia africana*	Woddeesa	Tree	Boraginaceae			
23	*Croton macrostachyus*	Makaniisa	Tree	Euphorbiaceae			
24	*Cupressus lusitanica*	Gatira Ferenji	Tree	Cupressaceae			
25	*Dombeya schimperiana*	Danisa	Tree	Sterculiaceae		c	On high altitude
26	*Dracaena sp.*	Afarfatu/Serte	Pachycaual	Agavaceae			

No.	Scientific Name	Local Name (Oromifa)	Type	Family Name	Locality	Abundance	Notes
27	*Ehretia cymosa*	Uulagaa	Tree	Boraginaceae			
28	*Embelia scimperi*	Hankuu	Pseudolian a	Myrsinaceae	b	s	
29	*Entada* abyssinica	Ambalta	Tree	Fabaceae	b	fr	In Savannah WL
30	*Erythrina brucei*	Wolensuu	Tree	Papilionoideae	a	c	Endemic
31	*Eucalyptus camandulensis*	Akakilti, Barzafi Dima	Tee	Myrtaceae			
32	*Eucalyptus grandis*		Tee	Myrtaceae			
33	*Euphorbia tirucalli*	Cedaa	Shrub	Euphorbiaceae			
34	*Euphorbia abyssinica*	Adamii	Tree	Euphorbiaceae	a	fr	
35	*Ficus ovata*	Dembi	Tree	Moraceae	a	fr	
36	*Ficus sur*	Harbu	Tree	Moraceae	a	c	
37	*Ficus sycomorus ssp. gnaphalocarpa*	Oda	Tree	Moraceae	a, b	s	Woodland & remnants in FLs, GLs, settlements
38	*Ficus sycomorus spp. sycomorus*	Harbu	Tree	Moraceae	b	s	Riverine
39	*Ficus thonningii*	Dembi	Tree	Moraceae	a	s	Riverine
40	*Ficus vasta*	Qilxuu	Big Tree	Moraceae			
41	*Gravillea robusta*		Tree	Proteaceae			
42	*Galiniera coffeoides*	Miixoo	S. tree	Rubiaceae			
43	*Gardenia lutea*	Gambeloo	S. tree	Rubiaceae	b	s	
44	*Grewia bicor*	Haroresa	S. tree	Tiliaceae	b	s	
45	*Hagenia abyssinica*	Hetoo	Tree	Rosaceae	a	fr	On high altitude
46	*Hypericum revoltum*	Garamba	Shrub	Hypericaceae			
47	*Lantana salvifolia*	Kasee	Shrub	Verbenaceae			
48	*Lobelia rhynchopetalum*	Turumba	Shrub	*Lobeliaceae*	a	s	High altitude, En
49	*Macaranga kilimandscharica*	Ongoo	Tree	Euphorbiaceae	a	fr	
50	*Maesa laceolata*	Abeyii	S. tree	Myrsinaceae			
51	*Maytenus arbutifolius*	Kombolchaa	Shrub	Celastraceae			
52	*Millettia ferruginea*	Askiraa/Sootalo	Tree	Papilionoideae	a	fr	Endemic
53	*Myrica salicifolia*	Reejjii	S. tree	Myricaceae			
54	*Mimusops kummel*	Qolatii	Tree	*Sapotaceae*	b	s	Riverine
55	*Olea welwitschii*	Gagamaa	Tree	Oleacee	a	fr	In Sisima Kedo PF

No.	Scientific Name	Local Name (Oromifa)	Type	Family Name	Locality	Abundance	Notes
56	*Olinia rochetiana*	Nolee	S. tree	Oliniaceae			
56	*Phoenix reclinata*	Meexii	Pachycaual	Palmae	b	s	Riverine
57	*Phytolacca dodecandra*	Endod	Pseudolian a	Phytolaccaceae			
58	*Piliostigma thonningii*		Tree	*Caesalpiniaceae*	b	c	In Savannah WL
59	*Pittosporum viridiflorum*	Amshika	Tree	*Pittosporaceae*			
60	*Podocarpus falcatus*	Birbirsaa	Tree	*Podocarpaceae*			
63	*Polyscias fulva*	Kkaraso	Tree	*Araliaceae*	a	c	
64	*Protea gagudi*		Tree		b	s	
65	*Premna schimperi*	Urggeessaa	S. Tree	Verbenaceae	a		
66	*Prunus africana*	Omoo	Big tree	Rosaceae	a	fr	
67	*Psidium guajava*	Zeyitun	S. tree	Myrtaceae	a		
68	*Pterolobium stellatum*	Gora	Shrub	Fabaceae	a		
69	*Rhammnus prinoides*	Geshoo	Shrub	Rhamnaceae	a		
70	*Rhus spp.*	Xaaxeessaa	Shrub	Anacardiaceae	a, b		
71	*Ricinus communis*	Koboo	S. tree	Euphorbiaceae	a		
72	*Rubus steudneri*	Goraa	Pseudolian a	Rubiaceae	a, b		
73	*Salix subserrata*	Alaltu	Shrub/s. tree	Salicaceae	a		
74	*Sapium ellipticum*	Bosooka	Tree	Euphorbiaceae	a, b		
75	*Schefflera abyssinica*	Gatama	Tree	Araliaceae	a	c	
76	*Senecio gigas*	Hatsabore	Shrub	Asteraceae	a	s	Highland, endemi
77	*Senna didymobotrya*	Semamaki	Shrub	Caesalpininiodeae	a		
78	*Sesbania sesban*	Sesbania	Shrub	Papilionoideae	a		
79	*Solanum incanum*	Hiddii	Shrub	Solanaceae	a		
80	*Solanum capylacantrhum*	Hiddii	Shrub	Solanaceae	a		
81	*Stereospermum kunthianum*		Tree		b		
82	*Spathodea campulat*		Tree	Bignoniaceae	a		
83	*Syzygium guineense*	Badeessa	Tree	Myrtaceae	a, b		
84	*Terminalia brownii*		Tree	Combretaceae	b	c	Gojeb valley

No.	Scientific Name	Local Name (Oromifa)	Type	Family Name	Locality	Abundance	Notes
85	*Trema guineensis*	Alelee	Tree	Ulmaceae			
86	*Vernonia amygdalina*	Eebbicha	S. tree	Compositae	a		
87	*Arundinaria alpina*	Lemana	Grass	Poaceae	a	c	Highland bamboo
88	*Arundo donax*	Shembeko	Grass	Poaceae	a	c	
89	*Cymbopogon sp.*		Grass	Poaceae	b	c	
90	*Cynodon dactylon*	Chekorsa	Grass	Poaceae	a		
91	*Digitaria abyssinica*	Warit	Grass	Poaceae	a		
92	*Eragrostis spp.*		Grass	Poaceae	a		
93	*Hyparrhenia anthistriodes*	Bilaa	Grass	Poaceae	a		
94	*Hyparrhenia* spp.	Bilaa	Grass	Poaceae	b	ab	Predominant in Savannah WL
95	*Pennisetum sphacelatum*	Migira	Grass	Poaceae	a		
96	*Sporobolus pyramidalis*	Murii	Grass	Poaceae	b		
97	*Sorghum sp.*		Grass	Poaceae	b		
98	*Cyperus digitatus*	Caafee	Sedge	Cyperaceae	a	c	
99	*Cyperus latifolius*	Caafee	Sedge	Cyperaceae	a		
100	*Cyperus rotundus*		Sedge	Cyperaceae	a		
101	*Cyperus rigidifolius*		Sedge	Cyperaceae	a	c	
102	*Typha latifolia*	Filaa	Reed	Typhaceae	a		
103	*Persicaria senegalensis*		Macrophyte		a		

Locality: a = highland & middle altitude, **b** = lowland/Gojeb valley;

Abundance: c = common, **ab** = abundant, **fr** = frequent, **s** = some

Endemicity: ***En = Endemic***

Appendix 3: List of Fauna Found in Project Area

Appendix 3.1: List of fauna found in the project corridor other than birds

No.	Scientific Name	Common Name	Local Name (Oromifa)	IUCN Red List [2]
I	**Mammals**			
1	*Cercopithecus aethiops*	Grivet Monkey	Qalamee	LC
2	*Papio anubis*	Anubis Baboon	Daljeesa	LC
3	*Colobus guereza*	Colobus Monkey	Weenii	LC
4	*Erythrocebus patas*	Patas monkey	Canaa	LC
5	*Phacochoerus africanus*	Common Warthog	Karkaroo	LC
6	*Crocuta crocuta*	Spotted Hyena	Waraabesa	LC
7	*Hyaena hyaena*	Striped Hyena	Waraabesa	NT
8	*Hystrix cristata*	Crested Porcupine	Dhadee	LC
9	*Potamochoerus larvatus*	Bushpig	Booyyee	LC
10	*Sylvicapra grimmia*	Common Duiker	Quruphee	LC
11	*Tragelaphus scriptus*	Bush buck	Bosonuu	LC
12	*Kobus ellipsiprymnus*	Waterbuck		LC
13	*Panthera pardus**	Leopard	Qeeransaa	NT
14	*Panthera leo*	Lion	Leenca	Vu
15	*Syncerus caffer*	African Buffalo	Gafarsa	LC
16	*Canis aureus*	Golden jackal	Wangoo	LC
17	*Orycteropus afer*	Aardvark	Waldigesa	LC
18	*Genetta abyssinica*	Ethiopian Genet		LC
19	*Procavia capensis*	Rock Hyrax		LC
20	*Hippopotamus amphibicus*	Hippopotamus	Roobii	Vu; In G. Gibe & Gojeb Rivers
21	*Crocodylus niloticus*	Nile Crocodile	Naca	LR/LC; In Gojeb River
II	**Fish Species**			
22	*Oreochromis niloticus*	Tilapia fish	Kurtumii	NTL; In Gilgel Gibe River
23	*Barbus intermedius*	Barbus fish	Kurtumii	LC; In G. Gibe & Gojeb Rivers
24	*Barbus paludinosus*	Straight-fin barb	Kurtumii	LC; In Gojeb River
25	*Garra dembeensis*	Dembea Stone Lapper		LC; In Gojeb River
26	*Labeo forskallii*	Labeo fish		LC; In Gojeb River
27	*Labeo cylindricus*	Redeyed Labeo		LC; In Gilgel Gibe River
28	*Raiamas senegalensis*	Senegal Minnow		LC; In Gojeb River

[2] The Category of the Red List is based on 2011 IUCN Red List of Threatened Species.

No.	Scientific Name	Common Name	Local Name (Oromifa)	IUCN Red List [2]
29	*Bagrus docmak*	Sudan Catfish		LC; In Gojeb River
30	*Nemacheilus abyssinicus*			DD; Native to Ethiopia & Lake Turkana; In Gojeb River
31	*Brycinus macrolepidotus*	True Big-scale Tetra		LC; In Gojeb River
32	*Pollimyrus isidori*			NTL; In Gojeb River

Source: Woreda ARDO, H. Humphreys et.al. (1997), R. Woodrofe et.al. (1995), IUCN (2011) & Observation by the Consultant

Legend for IUCN Red List

CR	=	Critically endangered	**LC**	=	Least concern
EN	=	Endangered	**LR**	=	Lower risk
VU	=	Vulnerable	**DD**	=	Data deficient
NT	=	Near threatened	**NTL**	=	No threats listed for the species

Appendix 3.2: List of bird species identified from the project area

No.	Common Name	Scientific Name	No.	Common Name	Scientific Name
1	Helmented Guineafowl	*Numida meleagris*	34	Swainson's Sparrow	*Passer swainsonii*
2	Clapperton's Francolin	*Ptemistis clapperton*	35	Baglafecht Weaver	*Ploceus* baglafecht
3	Sacred Ibis	*Threskiornis aethiopicus*	36	Red-cheeked Cordon-bleu	*Uraeginthus bengalus*
4	Wattled Ibis (LC)	*Bostrychia carunculata**	37	Red-billed Firefinch	*Lagonosticta senega*
5	Hadad Ibis	*Bostrychia hagedash*	38	Abyssinian Ground-horn Bill	*Bucorvus abbysinicus*
6	Egyptian Goose	*Alopochen aegyptiaca*	39	Pin-tailed Whydah	*Vidua macroura*
7	Speckled Pigeon	*Columba guinea*	40	Tawny Eagle	*Aquila rapax*
8	Bruce's Green Pigeon	*Treron waalia*	41	Yellow-billed Kite	*Melvus aegyptius*
9	Namaqua Dove	Oena capensis	42	Yellow-billed Duck	*Anas undulata*
10	Red-eyed Dove	*Streptopelia semitorquata*	43	Black-chested Snake Eagle	*Circaetus pectoralis*
11	Laughing Dove	*Streptopelia senegalensis*	44	Bateleur	*Terathopius ecaudatus*
12	Vinaceous Dove	*Streptopelia vinacea*	45	Blue-breasted Bee-eater	*Merops lafresnayii*
13	Yellow-bill Stork	*Mycteria ibis*	46	Village Weaver	*Ploceus cucullatus*
14	Woolly-necked Stork	*Ciconia episcopus*	47	Village Indigobird	*Vidua chalybeata*
15	Marabou Stork	*Leptoptilos crumeniferus*	48	Speckled Mousebird	*Colius striatus*
16	Hamerkop	*Scopus umbretta*	49	Little Grebe	*Tachybaptus ruficollis*
17	Cattle Egret	*Bubulcus ibis*	50	Long-tailed Cormorant	*Phalacrocorax africanus*
18	Little Egret	*Egretta garzetta*	51	Lesser striped Swallow	*Cercopsis abyssinica*
19	Great Egret	*Egretta alba*	52	Wire-tailed Swallow	*Hirundo smithii*
20	Yellow-billed Egret	*Egretta intermedia*	53	Mosque Swallow	*Cercopsis senegalensis*
21	Squacco Heron	*Ardeola ralloides*	54	Ethiopian Swallow	*Hirundo aethiopica*
22	Striated Heron	*Butorides striata*	55	Barn Swallow	*Hirundo rustica*

No.	Common Name	Scientific Name	No.	Common Name	Scientific Name
23	Purple Heron	*Ardea purpurea*	56	Yellow Wagtail	*Motacilla flava*
24	Black-headed Heron	*A. melanocephala*	57	Black Saw-wing	*Psalidoprocne pristoptera*
25	Pied Crow	Corvus albus	58	Hooded Vulture	Necrosyrtes monachus
26	Thick-billed Raven	*Corvus crassirostris* LC*	59	White-backed Vulture	Gyps africanus
27	Fan-tailed Raven	*Corvus rhipidurus*	60	Rüpell's Vulture	*Gyps rueppellii*
28	Cape Rook	Corvus capensis	61	Bronze Mannikin	*Spermestes cucullata*
29	Red-billed Oxpecker	*Buphagus erythrorhynchus*	62	Common Bulbul	*Pycnonotus barbatus*
30	Lesser Blue-eared Starling	*Lamprotornis chloropterus*	63	Black-winged Lovebird	*Agapornis taranta* LC*
31	Greater Blue-eared Starling	*Lamprotornis chalybaeus*	64	Black-headed Oriole	*Oriolus larvatus*
32	Violet-backed Starling	*Cinnyricinclus leucogaster*	65	Abyssinian Oriole (Dark-headed Oriole)	*Oriolus monacha*LC*
33	Black-crowned Tchagra	*Tchagra senegalus*	66	Ethiopian Boubou	*Laniarius aethiopicus*

*****Endemic species

Source: Identification by the Consultant and N. Redman, T. Stevenson and J. Fanshawe (2009).

Appendix 4: Minutes of Public Consultations

ቀን 12/11/04 ዓ.ም

የስብሰባው ቦታ፡-በኮንታ ልዩ ወረዳ በጭዳ ማዘጋጃ ጽ/ቤት

ጉዳዩ፡- *ከጂማ ተነስቶ እስከ ጭዳ የሚያደርሰውን መንገድ በውስጡ ያሉትን የወረዳ ከተሞችና ቀበሌዎች ዲዛዩን በተመለከተ* ፡፡

የስብሰባው ተሳታፊዎች — ፊርማ

1. አቶ ተስፋዬ መኩርያ — የወረዳው ጽ/ቤት ተወካይ
2. አቶ ታምሩ ግዛው — መንገዶችና ~~ባለስልጣን~~ ትራንስፖርት ጽ/ቤት
3. አቶ መኩሪያ ዋበሎ .... — የጭዳ ማዘጋጃ ቤት ተወካይ
4. አቶ ወርቁ ወ/ሰንበት .... — የጭዳ ቀበሌ ሊቀመንበር
5. አቶ ሀብታሙ ቢ.ቃሞ .... — የጭዳ ቀበሌ ም/ሊቀመንበር
6. አቶ ታፈሰ ሜድታ ... — የከተማው ሽማግሌ
7. አቶ ፍቃዱ ኃ/ማርያም..... — ትራፊ ክ ፖሊስ
8. አቶ ወጁ ጨማላ .. — የከተማው ሽማግሌ
9. አቶ ጎሎሮ ጎባ ... — የከተማው ሽማግሌ
10. አቶ ገዘሙ አሾኞ .... — የከተማው ሽማግሌ
11. አቶ እንዳለ ሐይሉ .... — ከኢትዮጲያ መንገዶች ባለስልጣን
12. አቶ እሸቱ የሱፍ .... — ከኢትዮጲያ መንገዶች ባለስልጣን
13. አቶ ብርሐኑ ታደሰ .... — ከተባበሩት የምህንድስና አማከሪዎች ድርጅት
14. አቶ ሳሙኤል ደምሴ......... — ከተባበሩት የምህንድስና አማከሪዎች ድርጅት

በመጀመሪያ በአማካሪ ማሐንዲሶቹ በኩል የመንገዱን ዲዛይን በተመለከተ የመንገዱን ስፋት፣እርዝመት እና የውሃ ተፋሰስ ቦዮችን በተመለከተ ስታች በተጠቀሰው መልኩ ማብራርያ ተሰጥቷል፡፡

1ኛ በኮንታ ልዩ ወረዳ የጭዳ ከተማን መነሻውን ከጂማ አቅጣጫ እስከ ሶዶ መገንጠያ ያለውን 540 ሜትር መንገድ በ 14 ሜትር ስፋት ያለው ባለሁለት አቅጣጫ

አስፓልት መንገድ ፣ በ 2.5 ሜትር ስፋት የእግረኛ መንገድ በኮንክሪት ታይል ንጣፍ በግራ እና በቀኝ እንዲሁም ባለ 0.90 ሣ.ሜትር የውሃ ተፋሰስ ቦይ በዲዛይኑ ውስጥ መካተቱን ተብራርተዋል።

2ኛ የቂራራን ቀበሌ በ 900 ሜትር ርዝመት ፣በ 12 ሜትር ስፋት እና በ 0.90 ሣ.ሜትር የውሃ ተፋሰስ ቦይ በግራ እና በቀኝ በኩል በዲዛይኑ ውስጥ መካተቱ ተገልጸል።

በመቀጠልም በከተማው ማዘጋጃ ቤት ማሐንዲስ በኩል ጥያቄዎችን እንደሚከተለው ቀርበዋል።

* የመንገዱ ስፋት ከከተማው ማስተር ፕላን ጋር እንዴት ነው ተጣጥመው የሚሰራው ?

* የሚሸራተቱ መሬቶች በዲዛይኑ ውስጥ እንዴት እንደታዩ የሚሉ ጥያቄዎች ሲሆኑ በአማካሪ ማሐንዲሶች በኩል ከስር እንደተመለከተው ተገልፃል።

ዲዛይኑ ሲሰራ የኢትዮጵያ መንገዶች ባለስልጣን ለወረዳ እና ለቀበሌ ከተሞች ባወጣው መስፈርት ሲሆን በተቻለ መጠን የከተማውን ማስተር ፕላን ባማከለ መልኩ መሰራቱ ተገልጸል።

የሚሸራተቱ መሬቶችን (ቦታዎችን) በተመለከተ በአማካሪ ማሐንዲሱ በጥልቀት የአፈር ምርመራ ስራ እና የመሬቱ አቀማመጥ በጥልቀት ተመርምሮ ዲዛይን ውስጥ የተካተተ መሆኑ ተገልጸል።

በመጨረሻም የስብሰባው ተሳታፊዎች በጥልቀት ውይይት ከተደረገው በኃላ ከላይ በተጠቀሱት ሐሳቦች ላይ ስምምነት ላይ ተደርሷል ።

ቀን 11/11/04

ቃለ ጉባኤ

የስብሰባው ቦታ :- **የዴዶ ወረዳ አስተዳደር ጽ/ቤት**

ጉዳዩ:- **ከጅማ ተነስቶ አስከ ጪዳ የሚያደርሰውን መንገድ በወሰጡ ያሉትን የወረዳ ከተማዎችና ቀበሌዎችን ዲዛይን በተመለከተ**

የስብሰባው ተሣታፊዎች

1. አቶ መሀመድ ሣኒ አህመድ	ከወረዳው አስተዳደር ጽ/ቤት ኃላፊ
2. አቶ ቢያ አ/ገሮ	የሸኪ ከተማ ከንቲባ
3. አቶ ተሾመ ከበበ	የወረዳው የመሬትና አካባቢ ጥበቃ ጽ/ቤት ም/ኃላፊ
4. ወ/ሮ ነስሩ አ/ሉሌሣ	የሴቶችና ህጻናት ጉዳይ ጽ/ቤት ም/ኃላፊ
5. አቶ እንዳለ ኃይሉ	ከኢትዮጵያ መንገዶች ባለስልጣን
6. አቶ እሸቱ የሱፍ	ከኢትዮጵያ መንገዶች ባለሥልጣን
7. አቶ ብርሃኑ ታደሰ	ከተባበሩት ምህንድስና አማካሪዎች ድርጅት
8. አቶ ሣሙኤል ደምሴ	ከተማበሩት ምህንድስና አማካሪዎች ድርጅት

በመጀመሪያ በአማካሪ ማህንዲሶቹ በኩል የመንገዱን ዲዛይን በተመለከተ የመንገድን ሥፋት ፣ እርዝመት፣ ተፋሰስ እና እንዲሁም መጋቢ መንገዶችን አስመልክቶ ከታች በተጠቀሰው መልኩ ማብራሪያ ተሰታል።
በዚህም በሰረት ዲዛይኑ የተሰራው የኢትዮጵያ መንገዶች ባለስልጣን ባወጣው የዲዛይን መስፈርት መሆኑን በመጥቀስ ገለጻ ተደርጓል ::

1. በዴዶ ወረዳ የሸኪ ከተማን በ14 ሜትር ስፋት በ2.5 ሜትር የእግረኛ መንገድ በግራና በቀኝ ፣ እንዲሁም የዝን ማፋሰሻ ቦይ 90 ሣ.ሜ በዲዛይን ውስጥ መካተቱ ተብራርቷል።

ከዚህም በተጨማሪ የከተማው ከንቲባ ጽ/ቤት ዲዛይን ውስጥ ይካተትልኝ ብሎ በጠየቀው መሠረት ዲዛይን ውስጥ ከተካተተው 4.2 ኪ.ሜትር መንገድ 1.1 ኪ.ሜትሩ በተጠየቀው አቅጣጫ የተሰራ መሆኑን ተገልጻል::

2. ወረዳው ከሚያካትታቸው አራት (4) ቀበሌዎች ማለትም

- የጊቤ መንደር 700 ሜትር እርዝመት
- የኮሎቦ ቀበሌን በ600 ሜትር እርዝመት፣
- የመጦሶ ቀበሌንም 2 ኪ.ሜትር እርዝመት
- እንዲሁም የድልቢ ቀበሌን 2 .1 ኪ.ሜትር እርዝመት በ90 ሣ.ሜትር በግራና በቀኝ የ[illegible] ቀበሌዎች በተመሣሣይ ዲዛይን ውስጥ የተካተተ መሆኑ ተገልጻል::

በመጨረሻ የስብሰባው ተሣታፊዎች ከላይ በተገለጹት ማብራሪያዎች መሠረት ከተወያዩ በኃላ የጊቤ መንደር ርዝመት ሊጨምርም ሊቀንስም እንደሚችል ተገልጾ የመግባቢያ ሃሣብ ለይ ተደርሷል።

ቀን፡ 3/04/2014

ለመንግስቲ ሰራተኞች፡ ደንብ ልብስ፡ መስፋት ለማስ፡
ስታዲየም፡ ኮንስትራክሽን፡ መወያየት፡ ተደረገ፡

- የመሰብሰቢያ፡ ቦታ፡ የሸካ፡ ስታዲየም፡ ኮንስትራክሽን፡ ቢሮ፡
- ሰብሳቢ፡ አቶ ... የስታዲየሙ፡ ሳይት፡ ኢንጂነር፡
- ፀሐፊ፡ ሰለሞን፡ አ/ገፋር፡
- የመሰብሰቢያ፡ ሰዓት፡ 3፡00
- ስብሰባው፡ የተጠናቀቀበት፡ ሰዓት፡ 5፡00

በስብሰባው፡ የተገኙት፡ የኮንስትራክሽን፡ ተወካዮች፡

1. ጀሀድ፡ አ/ሰመድ
2. ጀማል፡ ሙሐመ፡
3. አ/ሬዚ፡ አ/ገፋር፡
4. አ/ጀሊል፡ አ/ገፋር፡
5. ሸምሱዲን፡ አ/ፈታ፡
6. ሀጂ፡ አ/ሣኒ፡
7. አ/ሻኩር፡ አ/ቀር፡
8. ነጂ፡ አ/ሬዚ
9. ጋሊ፡ አ/ገፋር፡
10. ዘኪ፡ ጀማል
11. ወንዱ፡ ሙዘሚል፡
12. ገለቦ አ/ፈታ፡
13. አሕመዲን፡ ሸሪፍ
14. ተለቃሬ፡ አጂቦ፡
15. ገዛሊ፡ አ/ሰመድ ጀሊል
16. ጦሀ ጦለፊ፡ አ/ፈታ
17. ሀሰን፡ አ/ሙሳ፡
18. ፈይሰል፡ ሙገዝ፡
19. አመሉ፡ አ/ጀሊል
20. አሠመድ፡ አ/ሰሙ፡
21. አ/ዘሙሚ፡ አ/ፈታ፡
22. አሊል፡ አ/ጀማ፡

ቀን፡

የመንገድ፡ ሥራ፡ [illegible]

ህብረተሰብ፡ [illegible]

[illegible]

- [illegible] የመንገድ፡ [illegible]
  - [illegible] የመንገድ፡ ሥራ፡ [illegible]
  - [illegible]
    - [illegible]
    - [illegible]
  - [illegible]
  - [illegible]
    - [illegible]
    - [illegible]
  - [illegible]

[illegible]

ቀን 6/4/2004
ቀጥር B39/593/2004

የጅማ ጭዳ አስፓልት የመንገድ ሥራ በተመለከተ ወረደዉ መንግስታዊ ጽ/ቤት ተጠሪዎች ጋር የተደረገ ውይይት::

- የስብሰባ ቦታ/ የወረደ አስተዳደር ጽ/ቤት
- የስብሰባዉ ቀን **06/04/2004**
- የስብሰባዉ የተጀመረበት ሰዓት **5:00**
- የስብሰባ የበቃበት ሰዓት **7:00**

ተሰብሳቢ አባላት	ኃለፊነት
1. አህመድ አባዱራ	የወረዳዉ አስተዳደር
2. ሙክታር አበተማም	የድርጅቱ ተወካይ
3. ሽምሱ አህመድ	የአከበቢና ጥበቃ የመሬት አስተደደረ
4. ሰለሞን ደምጤ	የከተማ ከንቲባ
5. ለጥፉ አባሳንብ	የሴቶችና ህፃናት ጽ/ቤት
6. ሱልጣን አባሉሌሳ	አስተዳደርና ጸጥታ ጽ/ቤት ሃላፊ
7.ኒዛሙዲን አባገሮ	የወረዳው ጽ/ቤት ሃላፊ
8.ነዚፍ ሼህ ከድር	የድርጅት ጽ/ቤት ሃላፊ
9.ነጋ አባ መጫ	የወረዳው ም/አስተዳደር
10.ነብዩ ቅጣው	የድርጅት ጉዳይ ጽ/ቤት ሀላፊ
11.ሰይፉ አባ መጫ	የግብርና ጽ/ቤት ም/ሃላፊ
12.ለማ ታፈሰ	የፋይናንስና ኢ/ልማት ጽ/ቤት ሃላፊ
13.ደፋሬ አቤቱ	የሰራተኛና ማህበራዊ ጉዳይ ጽ/ቤት ሃላፊ

በሰብሰባዉ ላይ ለዉሳኔና መግባባት የተደርሰባቸዉ ዋና ነጥበቦችና አሳቦች

1. በመጠናት ላይ መሰመር አቀጣጫ ለአከባቢዉ እድገትና ልማት በጣም ወሳኝ በመሆኑ ወረዳው የመንገዱ ስራ በአፋጣን እንዲጀመር አስፈላጊውን ድጋፍና እገዛ ለማድረግ ቃል ይገባል::
2. በመንገዱ ስራ ወቅት የሚያጋጥመው የንብረት መውደምና መፈናቀል ምክንያት ለአቅመ ደካማዎች ለእማወራዎች ለአንል ጉዳተኞች የወረዳው አስተዳደርና ካሳ ኮሚቴ ልዩ ድጋፍና እገዛ ያደርጋል::
3. በመንገዱ ስራ ወቅት የእርሻ ቦታቸው ሰብሎቻቸው አትክልትና ዛፎቻቸው ለሚነሱባቸው ተጎጂዎች በአካባቢው ምትክ ቦታ ሲገኝ ይህንኑ ለማመቻቸት ሃላፊነቱን ይወስዳል::
4. በመንገዱ ስራ ወቅት በአጠቃላይ ስራው ላይና በኮንትራክተሩ ሰራተኞችላይ ገሁከትና ችግር እንዳያጋጥም የወረዳው አስተዳደር የአንባቢውን ጸጥታ ለመቆጣጠር ባለበት ሃላፊነት መሰረት የመንገዱን ስራና ሰራተኞችን የሚያውኩ ሁኔታዎች እንዳያጋጥሙ ማመቻቸትና ሲያጋጥሙ በህጉ መሰረት አስፈላጊውን እርምጃ ይወስዳል::

5. በመንገዱ ስራ ምክንያት ከቤት ንብረታቸውና ከእርሻ ሽፍራቻ ለሚፈናቀሉ ሰዎች አስፈላጊውን ካሳ እንዲያገኙ በአዋጅ ቁጥር 455/97 መሰረት በወረዳው ከሚገኙ መንግስታዊ መስሪያ በቤቶች ከአንባቢው ሽማግሌዎች እንደዚሁም ከተጎጂ ወገኖች የተውጣጣ የንሳ ኮሚቴ ያቋቋማል::
6. መንገዱ በሚያልፍባቸው ቀበሌዎች ለሚገኙ የህብረተሰብ አንላት በመንገዱ ግንባታ ወቅት ስለሚሰጠው ጠቀሜታ ሊያጋጥሙ ስለሚችሉ ማህበራዊ ቀውሶች በሚመለከት በአማንሪ ድርጅቱ የጥናት ቡድን ከህብረተሰቡ ጋር ውይይት እንዲያደርግ ሁኔታዎችን ያመመቻቻል::በመንገዱ ስራ ምክንያት ከቤታቸው የሚፈናቀሉ ሰዎች ቢኖሩ የቤት መስሪያ ምትክ ቦታና ሌሎችአስፈላጊ ድጋፍና እንዲ የወረዳው ማ/ቤትና መስተዳድር ለመፈጸም ተስማምቷል::

ቀን 0-5 | 1361 | 04
ቁጥር 3 | 4 | 04

የጅማ ጭዳ የአስፓልት የመንገድ ሥራ በተመለከተ ከወረዳው መንግስታዊ ጽ/ቤት ተጠሪዎች ጋር የተደረገ ስብሰባ

- የስብሰባ ቦታ **የወረዳ አስተዳደር ጽ/ቤት**
- የስብሰባ ቀን **02/04/2004**
- ስብሰባዉ የተጀመረበት ሰዓት **5:00**
- የስብሰባ ያበቃበት ሰዓት **7:00**

- **ተሰብሳቢ አባላት**

ተሰብሳቢ አባላት	ኃላፊነት
1. አቶ መሀመድ አብዱረህማን	የወረዳው አስተዳደር
2. አቶ ረድኤት ሙላቱ	የድርጅቱ ተወካይ
3. አቶ አሊ ሁሴን	የአከባቢና ጥበቃ የመሬት አስተዳር
4. አቶ ቢያ አ/ገሮ	የከተማ ከንቲባ
5. ወ/ሮ ትግስት ባዩ	የሴቶችና ህፃናት ጽ/ቤት ኃላፊ
6. አቶ መሀመድ አብደላ	ማህበራዊና ሰራተኛ ጉዳይ ጽ/ቤት
7. አቶ ዛክር አ/ዱራ	የፀጥታ ጉዳይ ጽ/ቤት ኃላፊ
8. አቶ መሀመድሳኒ አህመድ	የወረዳው ጽ/ቤት ኃላፊ
9. አቶ ነዝፍ አብዱረህማን	የድርጅት ጽ/ቤት ኃላፊ
10. አቶ አህመድ ሐጂ	ምክትል አስተዳደር
11. አቶ በቀለ ብሩሴ	የድርጅት ህ/ጉዳይ
12. አቶ አወል አህመድ	የግብርና ጽ/ቤት ም/ኃላፊ
13. አቶ ቁምላቸዉ ደረሰ	ገንዘብና ኢኮኖሚ ልማት ጽ/ቤት ኃላፊ

- **በስብሰባው ላይ ለውሳኔ ና መግባባት የተደረሰባቸው ዋና ዋና ነጥቦችና ሃሳቦች**

1. በመጠናት ላይ የሚገኝ የመንገዱ መስመር (አቅጣጫ) ለወረዳው እና ለአከባቢው እድገትና ልማት በጣም ወሳኝ በመሆኑ ወረዳውየመንገዱ ስራ በአፋጣኝ እንዲጀመር አስፈላጊውን ድጋፍና እገዛ ለማድረግ ቃል ይገባል ::| ይኸው በመጠናት ላይ የሚገኘው የመንገዱ መስመር በወረዳው ዋና ከተማ መሀል አቋርጦ እንዲወጣና የህብረተሰቡ የረጅም ጊዜ ጥያቄ እልባት እንዲያገኝ ለማድረግ የመንገዱ መስመር ጥናት በከተማው መሀል አቋርጦ እንዲያልፍ የወረዳው አመራር አካል እና የከተማው ማህበረሰብ አስፈላጊውን ድጋፍ ለማድረግ ዝግጁ መሆኑን በድጋሚ ቃል እንገባለን::
2. በመንገዱ ሥራ ወቅት የሚያጋጥመው የንብረት መውደም እና መፈናቀል ምክኒያት ለአቅመ ደካሞች ለእማወራዎችና ለአካል ጉዳተኞች የወረዳው አስተዳደርና "የካሣ ኮሚቴ" ልዩ ድጋፍና እገዛ ያደርጋል::
3. በመንገድ ሥራ ወቅት የእርሻ ቦታቸው (እርሻ) ሰብሎቻቸው አትክልትና ዛፎቻቸው ለሚነሱባቸው ተጎጂዎች በአከባቢው ምትክ ቦታ ስገኝ የወረዳው አስተዳደር ይህንኑ ለማመቻቸት ኃላፊነቱን ይወስዳል::
4. በመንገድ ሥራ ወቅት በአጠቃላይ ሥራው ላይ እና በኮንትራክተሩ ሰራተኞች ላይ ሁከትና ችግር እንዳያጋጥም የወረዳው አስተዳደር የአካባቢው ፀጥታ ለሞቆጣጠር ባለበት ኃላፊነት መሰረት የመንገዱን ሥራና ሰራተኞችን የሚያወኩ ሁኔታዎች እንዳያገጥሙዉ ሁኔታዎችን ማመቻትና ስያጋጥሙ በህጉ መሰረት አስፈላጊውን እርምጃ ይወስዳል::
5. በመንገዱ ሥራው ምክኒያት ከቤት ንብረታቸው እና ከእርሻ ስፍራቸው ለሚፈናቀሉ ሰዎች አስፈላጊውን ካሣ እንዲያገኙ በአዋጅ ቁጥር 455/1997 መሰረት በወረዳው ከሚገኙ መንግስታዊ መ/ቤቶች ከአከባቢው ሽማግሌዎች እንደዚሁም ከተጎጂ ወገኖች የተወጣጣ የካሣ ኮሚቴ ያቋቁማል::

6. መንገዱ በሚያልፍባቸው የገጠርና የከተማ ቀበሌዎች ለሚገኘው ህብረተሰብ በመንገዱ ግንባታ ወቅት ለሚሰጠው ጠቀሜታ እና ሊያጋጥሙ ስለሚችሉ ማህበራዊ ቀውሶች በሚመለከት የአማካሪ ድርጅት የጥናት ቡድን ከህብረተሰቡ ጋር ውይይት እንዲያደርግ ሁኔታዎችን ያመቻቻል::
7. በመንገዱ ስራ ምክኒያት ከቤታቸው የሚፈናቀሉ ሰዎች ቢኖሩ የቤት መስሪያ ምትክ ቦታና ለሌሎች አስፈላጊ ድጋፍና እገዛ የወረዳው መስተዳደርና ማዘጋጃ ቤቱ ለመፈፀም ተስማምተዋል::
8. የወረዳው መስተዳደር ለመንገድ ሥራ እንዲያገለግሉ የተመረጡትንና ወደፊት የሚመረጡትን የካምፕ ቦታ የአፍርና የጠጠር ስፍራዎች የውሃና እንደዚሁም ሌሎች የመንገዱ ግንባታ አስፈላጊ የሆኑትን በኮንትራክተሩና በኢትዮጵያ መንገዶች ባለስልጣን ሙያተኞች የተመረጡትን ስፍራዎች ለማዘጋጀትና ለማስተባበር ቃል ገብቷል ::

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ቀን 4/4/2004 ዓ.ም

ከጅማ ሚዛን የመንገድ፡ ደረጃ ማሻሻያ፡ ዘርፍ፡ ስለሚተገበሩ ከአካባቢያዊ፡ ከማህበራዊ ሸኮ ወረዳ ከመስተዳድር ጋር የተደረገ

ውይይት

- የስብሰባው ቦታ፡- በሸኮ ወረዳው፡ አስተዳደር ቢሮ
- የስብሰባው ሰዓት፡- 9:00
- ተሰብሳቢ፡ አካላት፡- እነ ሪፖርት ላይ ተገኝተዋል
  1- አቶ ተስፋዬ መኮንን ፡- ሰብሳቢ/አስተዳደር/
  2- አቶ ፋንታሁን አሰፋው ..ግብርና ቢሮ
  3- » ጌታቸው ደስታ ፡- ከድርጅት ቢሮ
  4- » ንጋቱ ሽፈራው ፡- ከግብርና »
  5- » ከበደ መላኩ ፡- ከህብረት ስራ
  6- » እሸቱ በቀለ ፡- ሴቶችና ወጣቶች
  7- » ሙሉጌታ ከበደ ፡- ፖሊስ ቢሮ
  8- » ሐብታሙ ገዛ ፡- ፋ/ኢኮ/ልማት
  9- » አቶ ወንድሙ ደበበ ፡- ጤና ቢሮ

የውይይቱ፡ አጀንዳ

- ከጅማ - ሚዛን፡ የመንገድ፡ ደረጃ፡ ማሻሻያ ዘርፍን፡ ከአካባቢያዊ፡-

ውይይትና ውሳኔ

የሸኮ ወረዳው፡ ከአስተዳደር፡ ተወካይ፡ አቶ ተስፋዬ መኮንን ከመንገድ ማሻሻያ፡ ዘርፍ፡ ስለሚተገበሩ፡ ስለአካባቢያዊ፡ ከማህበራዊ፡ ለተሰብሳቢዎቹ ማስተዋወቅ፡ ከዚያ፡ የእርሻ፡ ሰብሰባ፡ ከአካባቢያዊ፡ ጉዳዮች፡ ፍሰቱ፡ የመጠራት፡ አቶ፡ ሪፖርት፡ ሰጥተዋል፡ ውይይቱን፡ በመክፈት፡ ለተሳታፊዎች፡ ከመንገድ፡ ጋር፡ ተያይዞ፡ ያሉትን፡ ችግሮች፡ እንዲያብራሩ፡ እንዲሁም ሀሳባቸውን እንዲያቀርቡ፡

አቶ፡ ፋንታሁን፡ ከመንገድ፡ ጋር፡ በሚያያዝ፡ ያለውን፡ ችግር፡ ሲገልፁ፡ የመንገድ፡ መገንባት፡ ለአካባቢያዊ፡ እንደ ተጽእኖ፡ ውሃ እንደ ማህበረሰቡ፡ እንደ ሥራ፡ የመሬት፡ ሰዓት፡ ከማህበረሰብ ጠቀሜታው ማግኘት፡ እንዲሁም ውሃ፡ በግብርና፡ አፈር፡ ከጎርፍ፡ ከመሸርሸር፡ የሰብል፡ ከማሳው፡ በሚያዝ፡ የመንገድ፡ ሥራ፡ ችግር፡ ከእርሻ፡ ሰብሎችን፡ ውሃ፡ ማስወገድ ገበያ፡ ከመደበኛ፡ አካባቢዎች፡ የሚገኙትን፡ ማስተካከያ፡ ሥራዎችን፡ ሥራቸውን፡ የአካባቢውን/የደን ሀብት/ ከቀበሌው፡ በተቀናጀ፡ ሁኔታ፡ ለማቅረብ፡ ጥራት፡ ችግር፡ ሁሉ ቀርቧል፡ ከዚህም ጋር፡ በተያያዘ፡ የአካባቢ ከደረጃ ጋር ሥጋት፡ መቀየር፡ ከልትቶችን፡ ተቀብሏል፡፡

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አቶ፡ ከበደ፡ ኃይሉ፡ ለመቀጠልም፡ በመንግሥት፡ ላይ፡ ያለውን፡ ደግሞ፡
ሲገልፁ፡ የመንግሥት፡ ደርጅቶችን፡ የመስቀል በአመራሮች፡ በአቶ ሀብቴ ጋሻ ስብሰባ
ተገለጸው፡ እንደ ደንቡ፡ ከደርጅቶቹ፡ ለአገሪ፡ ሠራተኛው፡ በዚ፡ ጋሻ ስብ
ሰባ ተገለጸው በአመራር፡ የሀብቶች፡ ተገለጸው፡ ከመሪዎች፡
የጋሻ ስብሰባ፡ ደግሞ የአዲሱን፡ ሠራ ቀበሌ፡ ሠራተኛ፡ የመንግሥቱ፡ ለደግሞ
መንቀሳቀስ፡ አልቻለም፡ ስለዚህ፡ ጋሽ መንግሥቱ፡ ሲገልፅ፡ የተቀጠለ፡
የጋሻ ስብሰባ፡ ተገለጸው፡ ስለመሠረተ ደግሞ ይቀርብ ነበር።

አቶ ከበደ ሰብለ፡ ሲገልፁ፡ የመንግሥት፡ ደርጅት፡ አዲስ መሾም፡ ለመሠረት
ያለውን፡ መሠረቱ፡ ተገኝቷል፡ ደግሞ፡ በተለይ ይቀርብ ነበር።

ለመቀጠልም አቶ ከበደ ሠራዊ፡ ከመንግሥት፡ ጋር፡ ያለውን መቀጠል
ሲገልፁ፡ የመንግሥት፡ ደርጅ፡ ስለ ደርጅ፡ በተቀጠለ፡ ሀብት፡ ለመሠረት፡
የመሠረቱን፡ ሥርዓት፡ ለአገሩ፡ ጊዜ፡ ሠራ፡ መቀበል፡ ገበያ፡ የመቀጠል
እንደ፡ ይደረግ፡ ነበር። ከመሆኑ፡ መንቀሳቀስ፡ እንደ፡ ሠራ ቀበሌ፡
የሀብቱ፡ ተገለጸው፡ ከመሪዎች፡ ሠራ ደግሞ፡ የመደረጉ፡ ጉዳይ፡
ለአገሩ ስብሰባ፡ የጋሻ ስብሰባ፡ ተገለጸው፡ የመንግሥት፡ ደብዳቤ፡ የሰው
ልጅ ሠራዊቱን፡ መገለፅ፡ ይቀርብ ነበር።

አቶ ጌታቸው፡ ደሳለ፡ ያለውን፡ ደግሞ ሲገልፁ፡ የመንግሥት፡ ደርጅ፡
ከከበደ፡ የተገኘ፡ ሠራ ልጅ መሠረቱ፡ የመሠረት፡ መሠረቱ፡ ደርጅ
የ ተቀጠለው፡ ተገለጸው፡ የሠራተኛ፡ በአመራሮቹ፡ ከተቀጠለው
የ ተቀበለውን፡ ከከበደ ጋሻ፡ ይቀርብ ነበር። ለተመለከተ፡ የመንግሥት፡ መንግሥት
ደህንነት፡ ከሰገ ጋሻ፡ ይቀርብ ነበር፡ ሀብቱ፡ ለመሠረት፡
ሠራተኛ፡ ለተቀበ ጋር፡ የመደረጉ፡ ጋሻ፡ ለመሠረት፡
መንግሥቱ፡ ደረሰ፡ መገለፅ፡ ይደረግ ነበር። ለመንግሥት፡ ጋሻ ስብ
ሰባዎች፡ ያለው፡ ሠራዊቱ፡ ደርጅ፡ የተቀበ መንግሥቱ፡ እንደ መሠረ
ት ለመሠረት፡ ላይ፡ የመንግሥት፡ ደርጅ መደረግ፡ የተቀበ መንግሥቱ፡ እንደ
ሥራ ይደረግ፡ ተገለጸ።

አቶ ተሰማ፡ መንግሥ፡ በመሠረት፡ የመንግሥት፡ መቀጠሉን፡ ሲገልፁ፡
አቶ ተሰማ፡ መንግሥት፡ የመቀበል፡ መሠረትን፡ ገብረው፡ የሰገ
የሰጠውን፡ መሠረቱ፡ ከደግሞ፡ የመከበር፡ መሠረቱን፡ ገበያ፡ ጋሻ፡ በተደ
ረጀው፡ መሠረቱ፡ የመንግሥት፡ መሠረተ፡ ደርጅ፡ ከደርጅቱን፡ በደ
ቀበሌ፡ ለአገሩ፡ ደርጅ፡ ከዲሰው፡ እንደቀበለ፡ ሲሠራ፡ ይሁ፡ መንግሥ
ገጽ፡ ለአገሩ፡ ደርጅ፡ ከዲሰው፡ መቀበል፡ ከሰደሰ፡ ጋሻ፡ ከመሠረት ይቀበል፡
ደርጅቱን፡ መሠረቱ፡ መሠረቱን፡ ከመሠረት፡ የመንግሥት፡ ደግሞ
ተገለጸ። በተመለከተ፡ ለአገሩ፡ መንግሥቱ፡ የመንግሥት፡ ደግሞ
ተገለጸ። በተመለከተ፡ ለአገሩ፡ መንግሥ - ጋሻ ያለው፡ መንግሥት፡ ጋሻ፡
ያለ፡ ለመሠረት፡ ለአገሩ፡ መንግሥት፡ ተቀበለ፡ መሠረት፡ ከሰጠ፡ ተገለጸ።
ደግሞ፡ ያለው፡ ለመሠረት፡ ተቀበለ፡ መሠረት፡ መንግሥት፡ ተገለጸ።
ደግሞ፡ የመንግሥት፡ መሠረት፡ በአቶ ሀብቴ፡ ጋሻ ስብሰባ፡ ሰገ፡
ይሁ፡ ደግሞ፡ የመንግሥት፡ ተገለጸ፡ ሠራዊቱ፡ የመንግሥት፡ በመንግሥቱ፡ በጋ፡ በመሠረት
ይደረግ፡ ተገለጸ። ተቀበለ፡ የመንግሥት፡ በመንግሥቱ፡ በጋ፡ በመሠረት
የመንግሥት፡ ደግሞ፡ ከደረጀ፡ ይገባል፡ ተገለጸ።

[illegible]

[illegible]

[illegible]

1) [illegible]

2) [illegible]

3) [illegible]

4) ሀብት፡ [illegible]

5) [illegible]

6) [illegible]

7) [illegible]

8) [illegible] ውይይት ተደርጓል።

በቀጠሮው፡ ግንቦት፡ ቀን፡ በ፩ ደረጃ ቀን፡ የተቋቋመውን፡ ኮሚቴ፡ ተወካይ ሚገባ ከጉዳዩ፡ ወክሎ ምስክርነቱን፡ የተገኘ ሰዎች፡ በህይወት፡ ግንቦት ቀን የተቋቋመውን፡ በመንገድ፡ ምንጭ፡ ምንጮችን፡ ከምሪታቸው፡ የአርሶአደሩ፡ ከአቶ ጅራር የግል ምሪት ሰዎች ጉዳይ፡ ደረጃው፡ የሚከብ ክልል፡ ተወካይ፡ ከዶ፡ ሊጅ ነው፡ ለወረዳው፡ ከምክትል፡ ሰሚ፡ በመሰረት፡ በመንግስት፡ ደረጃ፡ የአርሶአደሩ፡ መሰተጓጐር፡ ምን፡ ከጉዳይ ሰዎች፡ ቀደም ያሉ፡ በመረጃን፡ በተጠቃሚ፡ የሚመሩትን ሥራ፡ ያስከሰ፡ ጉዳዩ፡ ሰሚ፡ ከደ ገበሬ፡ በማከት፡ ከአርሶተቀባዩ ከመሬቱ ጋር፡ በዚ፡ ምንዛሬ፡ በማሟቷቸው፡ በ፳ኛው፡ ግንቦት ቀን፡ ወክሎማቸው፡ ገልፀዋል።

ለ8ኛው፡ ግንቦት፡ ቀን፡ የተገለፀው፡ የጠጠርጅርጋና፡ ሚገዳ፡ ምንጭ ወቅት፡ ከመገበር፡ ለመሬቱ፡ እንደሚገልፁ፡ ደረጃቸውን፡ ይህ፡ ጉን ተከታይ፡ የግል፡ ሀብት፡ ቀርቦ፡ ከቶ፡ ሊጅ ነው፡ መሬት፡ ለወረዳ፡ ዳግ፡ ጣቢያ ከነ፡ የከመበሬ፡ ሥራ-ምሁር፡ በማድ ቀን ወረዳው፡ በምክትሉ፡ ምክትል፡ የሚተገበር፡ መከበሩ፡ ጉዳዩ፡ ይደረግበታል፡ ተከራክሏል።

በአጠቃላይ፡ ከቀረበን፡ 8 ግንቦት ቀን፡ የአሁ ወረዳው፡ ከመሬቱ ክምሪት፡ የተለያዩ፡ ለሰዎች፡ የመንገድ፡ ምንጭ፡ ሠራተኛ እንደሰዎች የአርሶአደሩ፡ መሰተጓጐር፡ ከአከባቢው፡ ደረጃ፡ እንደሚገባበት፡ በመስማማት፡ ውሳኔ፡ ተወስኗል። ——

ቀን 4/4/2004

ከጂማ ጭዳ የመንገድ ደረጃ ማሳደጊያ ዙሪያ ስለአተገባበሩ አስመልክቶ ከኮንታ ልዩ ወረዳ አመራሮች ጋር የተደረገ

የስብሰባው ቦታ በልዩ ወረዳው አስተዳደር ጽ/ቤት

ተሰብሳቢዎች

1. አቶ ተስፋዬ መኩሪያ የዋና አስ/ሪ ተወካይ ---------- ሰብሳቢ
2. ,, ፋንታሁን ጣሳቸው ግብርና ጽ/ቤት ---------- አባል
3. ,, ጌታቸው ደስታ ከድርጅት ጽ/ቤት ----------,,
4. ,, ንጋቱ ኬሀሞ ከግብርና ጽ/ቤት ----------,,
5. ,, አዲሱ ወልዴ ከህብረት ሥራ ----------,,
6. ,, ክበበው በለጠ ሴቶችና ህፃናት ጽ/ቤት ----------,,
7. ,, አለማየሁ አየለ ት/ት ጽ/ቤት ----------,,
8. ,, ብርሃኑ ኑሩ ከፋ/ኢ/ልማት ጽ/ቤት ----------,,
9. ,, ወልዴ ደልቡ ከጤና ጽ/ቤት ----------,,

የመነጋገሪያ አጀንዳ :- ከጂማ -ጭዳ የመንገድ ደረጃ ማሳደጊያ ዙሪያን አስመልክቶ

1. በ[illegible] ላይ የሚገኝ የመንገዱ መስመር (አቅጣጫ) ለወረዳው እና ለአካባቢው እድገትና ልማት በጣም ወሣኝ በመሆኑ ወረዳው የመንገዱ ስራ በአፋጣኝ እንዲጀመር አስፈላጊውን ድጋፍና እገዛ ይደረጋል ፣
2. በመንገዱ ሥራ ወቅት የሚጋጥመው የንብረት መውደም እና መፈናቀል ምክንያት ለአቅመ-ደካሞች ለእማወራዎችና ለአካል ጉዳተኞች የወረዳው አስተዳደርና የካሣ ኮሚቴ ድጋፍና እገዛ ያደርጋል ፣
3. በመንገድ ሥራ ወቅት የእርሻ ቦታቸው (እርሻ) ሰብሎቻቸው አትክልትና ዛፎቻቸው ለሚነሱባቸው ተጎጂዎች በአካባቢው ምትክ ቦታ ስገኝ የወረዳው አስተዳደር ይህንኑ ለማመቻቸት ኃላፊነቱን ይወስዳል ፣

4. በመንገድ ሥራ ወቅት በአጠቃላይ ሥራው ላይ እና በኮንትራክተሩ ሰራተኞች ላይ ሁከትና ችግር እንዳያጋጥም የወረዳው አስተዳደር የአካባቢው ፀጥታ ለመቆጣጠር ባለበት ኃላፊነት መሰረት የመንገዱን ሥራና ሰራተኞችን የሚያወኩ ሁኔታዎች እንዳያገጥመው ሁኔታዎችን ማመቻቸት ኃላፊነቱን ይወስዳል ፣
5. በመንገዱ ሥራው ምክንያት ከቤት ንብረታቸው እና ከእርሻ ስፍራቸው ለሚፈናቀሉ ሰዎች አስፈላጊውን ካሣ እንዲያገኙ በአዋጅ ቁጥር 455/1997 መሰረት በወረዳው ከሚገኙ መንግስታዊ መ/ቤቶች ከአካባቢው ሽማግሌዎች እንደዚሁም ከተጎጂ ወገኖች የተወጣጣ የካሣ ኮሚቴ ያቋቁማል ::
6. መንገዱ በሚያልፍባቸው የገጠርና የከተማ ቀበሌዎች ለሚገኘው ህብረተሰብ በመንገዱ ግንባታ ወቅት ለሚሰጠው ጠቀሜታ እና ሊያጋጥሙ ስለሚችሉ ማህበራዊ ቀውሶች በሚመለከት የአማካሪ ድርጅት የጥናት ቡድን ከህብረተሰቡ ጋር ውይይት እንዲያደርግ ሁኔታዎችን ያመቻቻል ፣
7. በመንገዱ ስራ ምክንያት ከቤታቸው የሚፈናቀሉ ሰዎች ቢኖሩ የቤት መስሪያ ምትክ ቦታና ድጋፍና እገዛ የወረዳው መስተዳደርና ማዘጋጃ ቤቱ ለመፈፀም ተስማምተዋል ፣
8. የወረዳው መስተዳደር ለመንገድ ሥራ እንዲያገለግሉ የተመረጡትንና ወደፊት የሚመረጡትን የካምፕ ቦታ የአፍርና የጠጠር ስፍራዎች የውሃና እንደዚሁም ሌሎች የመንገዱ ግንባታ አስፈላጊ የሆኑትን በኮንትራክተሩና በኢትዮጵያ መንገዶች ባለስልጣን ሙያተኞች የተመረጡትን ስፍራዎች ለማዘጋጀት ለማስተባበር ቃል ገብቷል ::

የተሰብሳቢዎች ሥምና ፊርማ

1 ----------ተስፋዬ መኩሪያ
2. ---------- ፋንታሁን ከካቴ
3. ---------- ጌታቸው ደስታ
4. ---------- ንጋቱ ኬሀሞ
5. ---------- አዲሱ ወልዴ
6. ---------- ክበበው በለጠ
7. ---------- አለማየሁ አየለ
8. ---------- ብርሃኑ ኑሩ
9. ---------- ወልዴ ደልቡ

ሥዕሎቻችን ለተለከ ቀን እንለጠፍን መሰጠፉ መንገዱ
ዳሊቪወን የሠለጠ ካሆ ለዘ ገንዘቡ ለንዛወን
ለተወሰነ ቀን እየሰጠን እንለጠፋለን።
ከወደፊቱ መሐመድ፡ያስ ሀላ አያብስ ለመንገዱ ከሀ
ደሉ ንጉሣቸ ለዓን መንገዱ ቀናሣወ የምሰጠ አንዲት
መስቀመጥ እንደሚከናወኑ መንግስት ያለቀመጠ
ከዋቢ አከከ ለሀገሩ መሠረት ከንብረት ቢቂ
የእድገቱ መሠረት እንደሚሆኑ ለሀገሩ ወኔ ያለ ለብዙ
ለኪዳኑ መሠረት ያለበት እንደሚሆን ለሀገሩ
ለማድረግ እንደሚያደርግ ለመንገድ ለእያንዳንዱ ለንብ
ለእኔ መሠረትነት እንደሚሆን ለሀገሩ ከገጠሩ
እናሳስባለን

በደ/ብ/ብ/ሕ/ክ/መ/ በኩንቱ ዞን
የ...ደ ከተማ ቀበሌ አስተዳደር

የተሰብሳቢ አባላት ስም ዝርዝር

ስም	ስራ	ፊርማ
1. አቶ አስራት አደጋው	ገበሬ	[illegible]
2. 〃 አያሌ አንዳርጌ	〃〃〃	[illegible]
3 〃〃 አብቻለው ገመዳ	〃〃	[illegible]
4 ወ/ሮ ደመቀች መለሰ	ነጋዴ	[illegible]
5 አቶ መ/ብርሃን ዳዕሞ	ገበሬ	[illegible]
6 ቢሰጠኝ ሙሉጌታ	〃〃	[illegible]
7 አቶ ታደሰ መዴሳ	〃〃	[illegible]
8 〃〃 ሀይሉ ደሬሳ	〃〃	[illegible]
9 〃〃 ተስፋዬ ገበሬ	ነጋዴ	[illegible]
10 〃〃 አለሙ ቻጋሞ	ነጋዴ	[illegible]
11 ወ/ሮ ፈለቀች ሙሉጌታ	ባለጉዳይ	[illegible]
12 〃〃 በቀለች ሀይሉ	〃〃	[illegible]
13 አቶ መንበረ ወዳጆ	〃〃	[illegible]
14 〃〃 አያሌ ነጋሽ	ገበሬ	[illegible]
15 〃〃 አንዳሉ ከበደ	ተማሪ	[illegible]
16. 〃〃 ሀብታሙ ገቢሳ	ቀ/ጥ/አ/ር	[illegible]
17 〃〃 መርቆ መ/ብርሃን	ቀ/አ/ር	[illegible]
18 ወ/ሮ መሪቆ ታገለ	ነጋዴ	[illegible]
19 〃〃 ደመቀች ወዳጆ		
20 አቶ አለሙ ኢታ	ነጋዴ	[illegible]
〃〃 ፋንታዬ ወርቁ ተርፋ ሁሴን	ሀብ	[illegible]

ቀን 14/3/2003

- የስብሰባ ቦታ ፦ [illegible]

- የስብሰባው ተሳታፊዎች ስም ዝርዝር

ስም	ፊርማ	ኃላፊነት
1, [illegible]	[illegible]	የወንዶች [illegible]
2, [illegible]	[illegible]	" " [illegible]
3, [illegible]	[illegible]	[illegible]
4, [illegible]		" [illegible]
5, [illegible]		[illegible]
6, [illegible]		[illegible]
7, [illegible]		" "
8. [illegible]		" "
9. [illegible]		[illegible]
10. [illegible]		[illegible]

የስብሰባው አጀንዳ

* [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

1. [illegible] [illegible] [illegible]
- [illegible]

- [illegible] [illegible] [illegible]
* [illegible] [illegible]
- [illegible] [illegible] [illegible]

@ [illegible] ስራ [illegible] [illegible] [illegible]
ሀሳብ

[illegible] - [illegible] [illegible] ይደረጋል።
- [illegible] [illegible] [illegible]።
-

[illegible] ፦ [illegible] [illegible] [illegible] [illegible]።
[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] ፦ [illegible] [illegible] [illegible] [illegible]
ይደረጋል።
- [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] ይደረጋል።

[illegible] [illegible]

[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]። [illegible]
[illegible]።

[illegible] የደሴ ከተማ ቀበሌ አስተዳደር

ከተባበሩት የመንገድና አማካሪዎች (AEC) ጋር የተካሄደ ስብሰባ ቃለ ጉባኤ

- የስብሰባ ቦታ ወረዳ አስተዳደር ጽ/ቤት
- ስብሰባው ቀን 13/03/2004 ዓ.ም
- የተጀመረበትሰዓት 8:00 ያለቀበት ሰዓት 11:00

በስብሰባው ላይ የተገኙ አባላት

ስም	የመ/ቤቱ ስም	የስራ ደርሻ
1. አቶ መሀመድ አብዱራማን	የወረዳው አስተደደሪ	ሰብሳቢ
2. አቶ አረቦ ሰምቦ	የተ.ም አማካሪዎች (AEC)) ተወካይ	አባል
3. አቶ ነዚፍ አብዱረማን	የድርጅት ጽቤት ኃላፊ	አባል
4. አቶ አወል አህመድ	የግብርና እና ገጠር ልማት ኃላፉ	»
5. አቶ አሊ ሁሴን	የአከባቢ ጥበቃ መሬት አስተዳደር	»
6. አቶ ቁምላቸው ደረሰ	የገ/ኢ/ል/ጽቤት	»
7. አሊይ ኢብራሂም	የውሃ ማዕድንና ኢነርጅ ጽ/በት	»
8. ወ/ሮ ትግስት ባዩ	የሴቶችና ህፃናት ጽ/ቤት	»
9. አቶ ቢያ አብዲሳ	የከተማ ከንቲባ	»
10. አቶ መሀመድ አብደላ	የማህበራዊና ሠራተኛ ጉዳይ ጽ/ቤት	»
11. መሀመድ ሳኒ አህመድ	የወረዳው ጽ/ቤት ኃላፊና የህ/አስተዳደር	»

የስብሰባው አላማ

ከወረዳው አመራርና ከጅማ-ጭዳ የመንገድ ሥራ ፕሮጀክት የድዛይን ሥራ ተወካይ (AEC) ጋር የተደረገ ውይይትና ውሳኔ:-

ሀ. የወረዳው ቁልፍ ችግር

ለ. የመንገድ መስመር ለውጥ

ሐ. አውንታዊ ጥቅም (Possetive imact)

መ. አሉታዊ ተፅዕኖ (Negative Impact)

የተነሱት ሀሳብና ውስኔ

ሀ. የወረዳው ቁልፍ ችግር:- የመሰረተ ልማት ችግር

- የመንገድ ችግር
- በቂ የመጠጥ ውሃ አቅርቦት
- የትምህርትና የጤና እንድሁም
- የበጀት ችግር

ሀ. **<u>የወረዳው የቆዳ ስፋት እና ከህዝብ ብዛት ጋር ያላት የመሠረተ ልማት አቅርቦት</u>**
የማይመጣጠን ሲሆን በአሁን ሰዓት አገልግሎት በመስጠት ላይ የሚገኘው መንገድ ጠጠር በመሆኑ ካለው የመኪና ትራፊክ ምልልስ ብዛት ጋር የማይመጣጠን እንድሁም የመንገድ መንሸራተት መስመጥ የትራንስፖርት አገልግሎት በወረዳው ክረምትና በጋ ማግኘት አስቸጋሪ በመሆኑ ማህበረሰቡ ለኢኮኖሚና ማህበራዊ ችግሮች ተዳርጓል።

ለ. **<u>የዋና መንገድ መስመር ለውጥ በተመለከተ:-</u>**

የዋና መንገድ መስመር ለውጥ ማድረግ አስመለክቶ መንገድ ረዥም ዕድሜ እንዲኖረው እና ብዙሃኑ የከተማና የገጠሩን ህዝብ ተጠቃሚ እንድሆን ለማድረግ አስፈላጊነው። ስለሆነም ከድርጅቱ ተወካይ የቀረበው የነበረ መንገድ ለውጥ አባለቱ የተስማማ ስሆን ከዚህ በፊት የነበረው ዋና መንገድ ከተማውን ወደ ጎን ትቶ በጀርባ በማለፍ ባህበረሰቡ ከፍተኛ ጥያቄና ሰሞታ በመንግሥት ላይ ስያቀርብ መቆየቱ ይታወሳል። ስለሆነም በአድስ የመንገድ ዳዛይን ቅየሣ የሚሠራው አስፓልት መንገድ በከተማው መሀል አቋርጦ እንድወጣ ብዘሃን ማህበረሰብ ከመንገድ ማህበራዊ እና ኢኮኖሚያዊ አገልግሎት እንድያገኝ ተሸከርካሪዎችም አስፈላጊውን አገልግሎት ለማግኘት እንድችሉ የመንገድ ለውጥ በማድረግ ዋና ከተማ መሀል ለመሀል ማለፍ ወሳኝ እንደሆነ እና ህብረተሰቡ በተለያዩ ጊዜ ለኢትዮጵያ መንገድ ሥራ እና ለናተው መስሪያ ቤት በደብዳቤ ቁጥር -3/1106/04 ቀን 08/03/04 የጠየቀን መሆኑ ይታወሳል።

ስለሆነም የወረዳው አመራር እና ማህበረሰብ አስፈላጊውን ድጋፍና ትብብር የማያደርግ መሆኑን በስፋት ተወያይቶ በስምምነት ላይ ተደርሷል።

ሐ. **<u>የመንገድ በአስፓልት የመሠራቱ ጥቅም</u>** (Possative Impact)

- በወረዳችን በቂ የትራንስፖርት አገልግሎት ይኖራል።

- ማህበረሰቡ በተመጣጣኝ ዋጋ የትራንስፖርት አገልግሎት ያገኛሉ

የእንቨስትመንት ፍልሰት ይጨምራል።

የኢኮኖሚ ግባታችን ያስድግልናል።

በአጠቃላይ ማህበራዊና ኢኮኖሚያዊ ችግሮች በመቅረፍ ለአገራችን እድገት ከፍተኛ አስተጸ አለው።

መ. **<u>የመንገድ በስፓልት መሠረቱ አሉታዊ ተጽኖ (Nagative impact)</u>**

- አዋራ

- የትራፍክ ጫና መብዛት

<u>መፍተ</u>:-

በአከባቢው በቂ የውሃ አቅርቦት የውስጥ ለውስጥ ለውጥ መንግድ መኖሩ መንገድ ነባርና ስፋት ስላለው አውንታዊ ተጽኖ የጎላ አይደለም::

በአጠቃላይ የጅማ መንገድ ስራ በእስፓልት መሠራቱ ለወረዳው ህዝብ በአገሪቱ በአሁኑ ሰዓት በብዛት በመስፋፋት ላይ ለሚገኙ ለእንቨስትመንት ሥራ እና ለኢኮኖሚ እድገት ወሳኝ በመሆኑ የጅማ ጭዳ የዋና መንገድ አስፓልት ሥራ በወረዳው ዋና ከተማችን መሀል ለመሀል እንድያልፍና በተጨማሪም መንገድ ለውጥ ድዛይን ላይ የቀረበውን አመራሩ እና ማህበረሰቡ ሚስማማበትና የረዥም ጊዜ ጥያቄን ራዕይ ያሳካ ስለሆነ አስፈላጊውን ድጋፍ እናትብብር የሚናደርግ መሆናችንን እናረጋግጣለን::