ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SUMMARY

Project Name: MULTINATIONAL ETHIOPIA / DJIBOUTI
Ethiopia – Djibouti Transport Corridor Project Phase I

Country: Ethiopia and Djibouti  Project Number: PZ1-DB0-205

Division: PICU1  Project Category: Category 1

Department: PICU  Date: January 2019

1. Introduction

While Ethiopia’s export is growing, trade volume is still low relative to the size of the economy. Trade is expected to play a key role in achieving the objectives of Growth and Transformation Plan II (GTP-II) and in driving sustained poverty reduction in Ethiopia. One of the key factors that has been identified as undermining Ethiopia’s international competitiveness and constraining trade expansion is high trade costs due to poor road transport networks. The Government of Ethiopia (GoE) has been expanding the road network by implementing the Road Sector Development Plan (RSDP) since 1997 which has increased the road network from 26550 km in 1997 to 120,171 km in 2017 (an increase of 353 percent). As a result, the road density per 1000 sq. km has increased from 24.1 km in 1997 to 109.2 km in 2017. Substantial improvement has also been registered in the condition of the country’s road network. The proportion of road network in good condition increased from 22% in 1997 to 72% in 2017. The impacts include improved agricultural production and marketing, a better access to social and economic facilities, and ultimately improved welfare of the people.

The objective of the Ethiopia – Djibouti Transport Corridor Project Phase I is to provide improved and sustainable road transport infrastructure that will service Ethiopia’s key trade route, deliver bankable designed road projects in Djibouti and build capacity of the Djibouti’s Transport sector. The outcomes of the project include improved road connectivity and access to port, reduced travel times and costs, improved road safety, gender awareness, and HIV/AIDS prevention.

The Ethiopia – Djibouti Transport Corridor Project Phase I has been assigned an Environmental and Social (E&S) categorisation of 1 following guidance within the AfDB’s Integrated Safeguards Systems (ISS). The categorisation is informed by the potential significant direct and indirect environmental and social impacts associated with the proposed project’s component and associated activities. In line with the ISS and GoE’s requirements as stipulated in the EIA Proclamation and Directive, a full environmental and social assessment was undertaken to assess the project’s potential E&S impacts, to develop a robust Environmental and Social Management Plan (ESMP) in line with the Mitigation Hierarchy. To enable assessment of climate change impacts, the project has been screened and categorized as Category 2 using AfDB’s Climate Safeguards System (CSS) and a number of climate adaptation and mitigation measures have been proposed to be reflected in the project design.

2. Policy, Legal and Administrative Framework

The Constitution of the Federal Democratic Republic of Ethiopia (FDRE), adopted in August 1995, embraced the concepts of sustainable development and provides for the right to development and the right to live in a clean and healthy environment. The overall goal of the Environmental Policy of Ethiopia (EPE) is 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 guideline emphasises the early recognition of environmental issues in project planning. It also requires consultation via public participation of all project Affected People and other interested parties, development of adequate mitigation measures and capacity building at all levels of project implementation.
The FDRE has adopted several legislations and regulations to promote environmental protection and sustainable social and economic development. The Proclamation on Establishment of Environmental Protection Organs assigns responsibilities to organizations for environmental development, management, regulations and monitoring activities at both Federal and Regional levels; re-establishes the Federal Environmental Protection Authority (EPA) as an autonomous public institution of the FDRE; and empowers every Sector Ministry or Agency to establish or designate an Environmental Unit and each Regional State to establish an independent Regional Environmental Agency. Thus, the Ministry of Transport (MOT) and the Ethiopian Road Agency (ERA) have both established environmental and social management units. The Environmental Impact Assessment Guidelines (2000) makes Environmental Impact Assessment mandatory for specified categories of development activities and is the legal tool for environmental planning, management and monitoring. Those projects indicated in Schedule 1 require a full EIA. The proposed road project has been assigned under the category of projects likely to have significant negative impacts and thus required a full ESIA.

Other national legal instruments of relevance to this project are the Proclamation on Environmental Pollution Control (2002), Proclamation on Expropriation of Land Holdings and Payment of Compensation (2005), and Regulations on Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes (2007). In addition, other pertinent government documents have been used to guide the preparation of the ESIA, including the EIA Guidelines, ERA’s Environmental Procedures Manual, and ERA’s Standard Technical Specifications.

FDRE is also a signatory to a number of multilateral environmental agreements, the most relevant ones to this project being: Convention on Biological Diversity (CBD), UNESCO Convention for the Protection of World Cultural and Natural Heritage, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), African Convention on the Conservation of Nature and Natural Resources, the United Nations Framework Convention on Climate Change (UNFCCC).

In addition, the following AfDB procedures and guidelines as contained in the Integrated Safeguards System (December 2013) have been followed. The project triggers the following Bank’s Operational Safeguards:

- **OS1 Environmental and Social Assessment**: The project has been categorised as Category 1 and therefore requires a full environmental and social impact assessment;
- **OS2 Involuntary Resettlement**: The project will cause physical and economic displacement necessitating the preparation of a full resettlement action plan;
- **OS4 Pollution Prevention and Control, Hazardous Materials and Resource Efficiency**: Construction and operational activities will create some pollution in the form of dust and vehicle emissions and sediment loading of water courses, and will use gravel, hardstone, water and sand resources;
- **OS5 Labour Conditions, Health and Safety**: The project will require a labour force comprising both skilled and non-skilled workers whose working conditions, health and safety must be respected, while at the same time the local communities must be protected from adverse social interactions with the contractor’s labour force.

3. **Project Description and Justification**

The proposed Adama-Melka Jilo (60km) Expressway is a continuation of the existing Addis Ababa-Adama expressway and part of the planned Adama-Dire Dawa Expressway project, which has been designed in recognition of the high level of congestion on the existing Addis Ababa – Djibouti road. A large portion of the traffic on this road are heavy loaded trucks transporting import and export goods.

The project is located in the central eastern part of Ethiopia, within the corridor of the existing Addis Ababa – Adama – Awash – Djibouti trunk road, and traverses 3 districts of Oromia and Amhara...
The starting point is at the outskirt of Adama Town at a distance of 90km southeast of Addis Ababa. The end of the project is at Km. 60 near Melka Jilo - a small town in Minjar Shenkora District of Amhara National Regional State. The road design has two link roads: the first one connecting the expressway with Wolenchiti Town in Boset District with a length of 1.5km; and the second linking the expressway to Nura Era Junction on the existing asphalt road that runs from Adama to Awash. A third 1 km link road connecting Melka Jilo - railway underpass – express way link has been requested by the community of Minjar Shenkora District. There will be three interchanges to connect the expressway & provide access through the link roads to the towns of Adama, Wolenchiti and Nura Era.

The proposed expressway will run parallel to the existing asphalt road mainly on the left side. The physical environment of the expressway falls within the Ethiopian Rift Valley system and thus it traverses flat and undulating land for about 55.7 per cent and 44.3 per cent respectively. Elevations along the route corridor varies between 800 and 1700 meters above sea level.

The project is designed to AASHTO’s Freeway Standards for main road with a total length of 60km, and DC-5 Standard for link roads, having a right of way (ROW) of 90m. There will be two lanes of 3.60m width on each carriageway that means 2x(2x3.6) which is equal to 14.4, 1.5m wide inner hard shoulder, 3m wide outer hard shoulder, 0.75m wide outer soft shoulder in each side of the expressway, and 9m median at the centre.

The design also provides for the construction of 17 vehicular crossings, underpasses and overpasses for the movement of vehicles across the expressway. Furthermore, there are 13 under or overpass pedestrian bridges to allow the local people to cross the expressway freely without interfering with the expressway and to facilitate the social connectivity of the local community. Three railway crossings one for the main expressway and two for the link roads will be constructed across the railway line which is running almost parallel to the expressway.

Map 1: Project location

One of the CSP pillars focuses on infrastructure development, including road with the objective of improving national and regional connectivity and linking Ethiopia with regional markets. GTP II and the Road Sector Development Program (RSDP V) also prioritized regional integration and coordination of corridor operations and upgrading of import –export corridors. Accordingly, the project will contribute to the country’s objectives of improving the quality and coverage of road infrastructure and supports the Integrating Africa and Improving the Quality of Life for the People of Africa among the High 5 priorities of AfDB. The project roads make a strategic contribution to the country’s development as the proposed expressway will serve the Addis Ababa - Djibouti corridor which handles more than 90% of Ethiopia’s import-expert traffic. It also provides the key link to Addis Ababa, the surrounding industrial areas and the Modjo-Dry Port where about 90% of inbound containers are processed.

4. Description of the Project Environment

Location and topography: The road project falls within the Ethiopian Rift valley system that extends from Northeast to Southwest part of the country, as part of the Great East African Rift Valley system. The road starts at the outskirt of Adama town and crosses two districts of Oromiya Regional State and one district of Amhara Regional State. The route follows dominantly flat (55.7%) to undulating terrain (44.3%) for major stretches, except few that are hilly and escarpments at intervals. Elevations along the route corridor varies between 800 and 1700 meters above sea level. The direction of the road alignment, originates from Southeast, running to the East North heading finally to mostly easily direction when it approaches to km 60.

Climate: The climatic condition of the project corridor could generally be described as semi-arid. The data recorded for the project districts indicates that the area has a climate classified as mid highland to low land and the temperature ranges between 20 - 42 °C and 15-25°C respectively. The annual rainfall is 900-1400 mm. Low rainfalls between February and April and heavy rain is from July to September. The month of November, December and January are generally dry with ground frost at night.

Soil and geology: The soil formations are mainly dominated by volcanic rocks and lacustrine sediments. The road corridor traverses thick and very friable residual soils that are highly erodible. The first 26 km of the route in particular is covered by alluvium and lacustrine sediments, which are sand, silt and clay. The Rift valley area in general and the project road route in particular fall within a seismic and earthquake hazard zones. Several volcanic eruptions had occurred in the distant past leaving behind volcanic ash deposits. There are areas still suspected of volcanic activities, particularly in the area that falls under Lot 2 of the Adama- Awash Expressway project.

Drainage Patterns and Water Resources: The drainage basin is totally located within Awash River Basin. There is no perennial river that crosses the road, while a number of seasonal rivers and streams exist in the area. Additionally, there are artificial ponds along the road corridor specifically in Amora Bete kebele (village) near Melka Jilo at km 54+200 RHS offset 200m which needs great attention during construction time. The drainage pattern along the road stretch is generally across the road as one goes from Adama to end of project. The major surface run off is generated from the hillside on the left side of the proposed route and thus the road could divert the direction of its natural flow thereby causing a flood over the farmlands located across the road and moisture stress on those farm lands located on the right side. The groundwater potential aquifer is 100-140mbgl along the proposed road corridor. The main problem with regard to groundwater resource is high fluoride content.

Flora: The project area is predominantly located in semi-arid agro-ecological zone and the main indigenous tree species found in the project area is Acacia abyssinica (Girar). The other major vegetation along the corridor are Prosopsi Trees, mostly in combination with bushes and shrubs, and scattered trees in the farmlands. Increased demand for agricultural land due to population growth, encroachment for grazing, fuel wood production and construction demands have significantly affected the original vegetation cover all along the project area. The expansion of Wonji Sugar plantation has also altered the flora and land use pattern. There is no protected or regional priority forest in or near the project road corridor.
Fauna: Several species of wild lives including Hyena, Fox and Wildcat, Lesser Kudu, Common Warthog, Black back, Jackal and different bird species have been cited along the road stretch, particularly at the end of the corridor near Melka Jilo, though much less frequently compared to Lot 2 where the Awash National Park is located. Thus, wildlife poaching may happen during construction and so hunting should be strictly prohibited as a mitigation measure. There is no habitat to be destroyed or fragmented by the expressway. The road corridor is neither continuous with, nor in close proximity with any of nationally protected areas like national parks; wildlife reserves, and controlled hunting areas. The nearest protected wild life area is Awash National Park located in Lot 2 of the proposed project about 23 km from end of Adama- Awash Lot I expressway.

Socio-Economic Environment

Demographic Characteristics: Based on CSA 2007 projection for 2017, the population in the influence area of the project is estimated to be about 527,515, out of which 49 % are male and 51% are female. The major part of the Project area is rural, densely populated at the start and sparsely populate towards the end of the project. The project area hosts a number of diverse ethnic groups. There are no ethnic minorities or tribal people in and around the project area whose traditional life style could be compromised through the development of the proposed project.

Economic activities: The most important economic activity along the project road is agriculture. Major crops grown in the area are cereals: such as, teff, sorghum and maize. The major perennial crops grown for consumption and commercial use are mango, lemon, orange, papaya, sugarcane, hops and chat. Livestock production and fattening is the second major source of income as the climate in the area is suitable. Off farm economic activities include the sale of fuel wood, catering along the existing Addis-Djibouti road and employment in governmental and private organizations. Remittance is also a source of income.

Land use: The proposed road alignment almost falls within potential and/or existing crop fields and vegetation of acacia species land cover especially on the hillside at the end of the project. Farmland (83.3%), grazing land (9.6%), mixed land use (4.7), vegetation cover (1.1%), open land (0.7 %) and residential area (0.6%) characterize Land use pattern within the road corridor. In most places, the cropping pattern follows a mixture of annual and perennial crops cultivation. As per the law, the state owns the land and farmers are guaranteed with lifetime “holding” right that gives all rights except sale and mortgage.

Health facilities: Among the three districts along the road corridor, Adama District has 10 health centres, 37 health posts, and 1 hospital owned by Wonji Sugar Factory. There are 7 health centres, 21 clinics, 33 health posts, 8 pharmacy and 1 hospital in Boset District. Similarly, Minjar shenkora district has 5 health centres, 30 health posts, 9 clinics, 9 pharmacy and 1 hospital. Furthermore, there are referral hospitals at close proximity of the road corridor in Adama Town. In terms of HIV/AIDS, among the people tested up to 2018, 1.33% were found positive in Adama, 0.76 in Boset and 0.5 in Minjar Shenkora.

Educational Coverage: Education bureau report of the three districts indicate that currently the coverage in both primary levels of schools has reached 85% and that of secondary school in on the increase. There are 264 primary and seven Secondary schools in the general project areas and all school types are owned by the government. The total number of students enrolled for 2016 in general project area at primary levels were 96397 (49,820 males and 46,577 females) and at secondary levels 10,423 (5,667 males and 4,756 females).

Water service: There is an acute problem of clean water supply in the proposed road project area. Water supply coverage of the districts traversed by the proposed road project ranges from 48% to 53%. The most common water supply schemes are modern hand dug wells, motorized system springs, deep wells
and ponds. Among the kebeles the expressway passes, Amora Bet is the least with water supply coverage where the dominant water supply source for both livestock and human population is pond.

**Historical and Cultural Resources:** The project area has a number of churches and mosques, but there are no identified sites of archaeological, paleontological, or historical value in the road corridor that will be impacted by the project.

5. **Project Alternatives**

In terms of biophysical and socio-economic impact, the “no project” option is preferable to project implementation, since it would avoid the occurrence of adverse impacts associated with the project construction and operation. However, the potential socio-economic benefits of upgrading the road at the local as well as national levels would be foregone. As the existing Addis-Adama-Djibouti, asphalt road is recognized to be inadequate to support the growing traffic and axle load volume for import-export and local transport demands, the no-project alternative was not considered as a viable option.

The project alternative analysis was undertaken in two steps based on ERA’s route selection manual and using multi-criteria analysis (Engineering, Environmental, Social, Economic and Financial Criterion). The first step looked at route options while the second looked at design options.

**Route options analysis:** The route selection emphasised on enhancing project benefits and minimizing the adverse impacts as far as possible.

The four alternative routes considered were the following:
- **Alternative 1:** All stretch of the Expressway traverses on the left (north) side of the Existing Route
- **Alternative 2:** All stretch of the Expressway traverses on the right (south) side of the Existing Route
- **Alternative 3:** The Expressway is partly traversing the right (south) side (up to Km 27) and for the rest of the route it traverses the left (north) side
- **Alternative 4:** The Expressway is partly traversing the right (south) side (up to Km 16) and for the rest of the route it traverses the left (north) side, but at a further distance from the existing road.

**Design options analysis:** Three alternative options were identified and considered for the design of the proposed Adama-Melka Jilo (km-60) Road Project. These are:
- **Alternative 1:** Expressway of 6 lanes
- **Alternative 2:** Expressway of 4 lanes
- **Alternative 3:** Upgrading the existing to 4 lane single carriage way with an increase of around 2.5 meters on both sides of the road

6. **Results of Comparison of Alternatives**

The outcome of the multi criteria analysis indicated the following:

**Route options Analysis:** Alternative 4 is considered as the most appropriate expressway option. Compared to the other options, in terms of minimizing adverse environment and social impact it was rated high (19.96/20) and moderately high (17.33/20) respectively. Though it is the longest (more than 10km long compared to the other 3 options), it is considered the cheapest as it mostly passes through a flat terrain. As well, the maximum cut depths and fill heights are minimal and hence entails less threat of sliding and fill slope erosion.

**Design options analysis:** Alternative 1 (expressway of 6 lanes) would entail higher adverse environmental and social impact as well as greater financial cost due to its higher demand for land acquisition and construction material compared to Alternative 2 (express way of 4 lanes). On the other hand, Alternative 3 will also necessitate the displacement of a very large number of people and demolition of a high number of residential houses and commercial buildings as it passes through major towns and villages along the existing road from the start to end of the route. Thus, the social and
economic cost of mitigation for this alternative is much higher compared to the others. Furthermore, as a non-fenced, non-restricted road, its contribution to the improvement of the existing traffic congestion and high level of accident will be limited and thus will not meet the project objectives of ensuring a fast, safe and cheaper road link to Djibouti.

Therefore, an expressway with 4 Lanes (Alternative 2) along mainly the left (north) side of the existing road (Route Alternative 4) is considered to be the economically efficient, socially desirable and environmentally sustainable option for Adama-Melka Jilo (60km) Expressway Project.

7. Potential Environmental and Social Impacts

7.1 Positive Impacts

Economic benefits: The proposed expressway forms part of the Addis Ababa – Djibouti road corridor through both Galafi and Dewele and as such links the port and the central part of the country, including the Modjo- dry port where around 90% of the inbound containers are processed. Thus, the improved and more efficient transport connection it provides will promote import – export and positively impact on the overall trade performance and competitiveness of the country. While the project will primarily benefit exporters, importers, manufacturers, it would also benefit consumers through reduced cost of imports.

Regional Integration: Businesses and communication a) between Ethiopia and Djibouti and b) among the towns in the Regional States of Amhara, Afar, Oromiya and Somali of Ethiopia located along the Adama – Djibouti route will be facilitated due to the safe, cost effective and reliable transport service the proposed expressway is expected to provide. The road project will also facilitate communication with the link roads along the route that connect to the rest of the country.

Reduced Travel Time and Vehicle Operation Cost: Construction of the Expressway will considerably reduce travel times and the associated vehicle operating costs to and from the eastern part of the country and Djibouti. This would result in a cheaper travel and transport cost.

Impact on Traffic Safety: The design of the expressway (use of physical barriers) minimizes interferences by pedestrians and non-motorized traffic and facilitates the smooth flow of traffic thereby reducing traffic accidents. The project will also contribute to the reduction of accident risks by providing under and over passes at selected sites.

Reduction of traffic generated gaseous emissions: Due to lower traffic congestion, emissions from motor exhaust will be improved. The dust emission will equally be reduced as separate and isolated asphalt paved road is used for the traffic flow only.

Job Opportunity for youth and women: The construction of the project road is expected to create around 1000 jobs/month temporary employment opportunities for the local communities in particular for the unemployed youth and women. It is expected that this will be a significant contribution to the reduction of poverty at the household level. Some individuals may gain skills that can be applied in other road construction projects.

7.2 Adverse Impacts and their Mitigation

The road project will result in a number of adverse environmental and social impacts, including the following;

Landslides: Due to the proposed expressway, land sliding problem may occur during construction works at some locations like between Wolenchiti town and Km.60 where cut and fill is expected. This impact is further exacerbated due to the earthquake prone nature of the areas for the proposed road alignment.
**Erosion:** The entire project area is highly susceptible to erosion, and some very large gullies were noted at several locations during the ESIA. The potential causes of soil erosion include land clearing, earthworks/cutting in soil and earthmoving works, runoff water concentrated in roadside ditches and diversion drains. The proposed road design incorporates biological and physical measures to treat gullies adjacent to the road that may present an immediate threat.

**Soils Compaction and Contamination:** In general it is estimated that about 5,436,675.2m$^3$ of construction material is required to fill the road stretch, the extraction of which could result in loss of topsoil and impairment of natural soils, severe erosion and changes to the local natural landscape. Soil could also be affected due to compaction by heavy equipment and construction vehicles 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.

**Drainage/Flooding:** The high potential for modification of the natural flow of surface water and drainage patterns resulting in concentrated flows at certain points and increased speed of flows was observed in many parts of the project areas. The major surface run off is generated from the hillside on the left (north) side of the proposed road and it will be concentrated as the road diverts its natural flow direction causing it to flood over the farmlands on left (north) side of the road. The sites have been identified and the design provides adequate drainage structures to minimise unnatural flows.

**Diversion of Storm Water from Artificial Ponds:** The water flows from left (north) to right (south) side of the proposed road due to the terrain of the area; while most of the artificial ponds are found to the right (south) side of the proposed road. This will divert the storm water from the ponds along the roadside as the storm water will be collected into the roadside ditches. Hence, this will negatively impact the water harvesting resource of the local community. Groundwater abstraction wells have been included within the project design for these affected communities.

**Air and Noise Quality:** Impacts on air quality will be due to emissions of particulate matter notably dust, and exhaust gases and noise from vehicles and machines especially during the construction phase. As the expressway route is removed from densely settled areas, impacts on air and noise are expected to be minimal.

**Negative impacts on Flora:** There will be significant, unavoidable and permanent impact on the limited vegetation within the RoW and locations of ancillary facilities. Mitigation measures include controlling cutting of vegetation by the construction work force and limiting earthworks and earthmoving activities to the imperative area necessary for the road works to avoid any unnecessary loss of trees or vegetation.

**Impacts on Water Supply Systems and Competition for Water:** Considering the limited number of rivers/water sources in the area, the semi-arid climate and the substantial volume of water needed for the road construction, meeting the water requirement of the project could be a challenge. The contractor will be required to meet its water need without affecting the quality or availability of groundwater or surface water resources for local users. In the event of any valid dispute, the contractor shall be responsible, at his own expense, for providing an alternative supply to those affected, which is not inferior in quantity or quality to that previously enjoyed.

**Water Quality:** Potential impacts include increased sediment loading and water pollution risks of the streams and ponds due to excavations for foundation of culverts, arbitrary disposal of excavation materials, 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.

**Permanent and Temporary Land Acquisition:** The most significant social impact will be due to the acquisition of agricultural and settled land for the road. Land will also be required for the contractors’ and workers’ camps and laydown areas and for gravel sites. It is estimated that the project will result in the physical and economic displacement of some 887 households (3300 people) and the acquisition
of about 593 hectares of land (temporary and permanent acquisition). The road will also affect a number of utilities including water points and electricity poles. Resettlement action plan has been prepared in order to address these issues. The total cost for the implementation of the RAP is estimated at ETB 503 million (18 million USD). A summary of the RAP is presented along with this ESIA Summary.

Contractors’ and Workmen’s Camps: These may put pressure on local resources such as water, fuelwood, electricity, health and security infrastructures accessible to the surrounding communities but they may also require goods and services, which will result in income generating activities for members of the local communities.

Community and Occupational Health and Safety: The influx of migrant labour force and additional disposable income may result in undesirable interactions between the local communities (particularly youth) and the workforce, contributing to the spread of HIV/AIDS and STIs. Accumulation of water in borrow pits and quarries and improperly designed drainage structures, (the latter particularly in urban areas) may encourage the breeding of malaria-transmitting mosquitoes and other water-borne diseases. Awareness interventions will be carried out on STIs/HIV/AIDS prior to commencement of active construction works. Sensitization for operators of equipment/vehicles and the public in road safety will be implemented. The Contractor is also expected to observe occupational health and safety standards for its staff.

8. Mitigation/Enhancement measures and Complimentary Initiatives

8.1 Mitigation measures:

In order to enhance the positive impacts of the project, mitigate its adverse impacts and mainstream climate resilience, various measures will be undertaken. Some of these include the following:

Table 1: Outline of key environmental and social management mitigation measures

<table>
<thead>
<tr>
<th>Environmental / Social Issue / Impact</th>
<th>Significance</th>
<th>Key Mitigation Measures</th>
<th>Responsibility</th>
<th>ESMP Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of properties</td>
<td>Moderate</td>
<td>Payment of cash compensation for the affected properties</td>
<td>ERA’s ROWMT</td>
<td>Reflected in RAP</td>
</tr>
<tr>
<td>Air and noise pollution</td>
<td>High</td>
<td>Regular maintenance of emission intensive plants &amp; application of dust suppressant mechanisms; Complying with relevant health and safety standards pertaining to noise and emissions</td>
<td>Design &amp; build contractor</td>
<td>Part of the Contractor’s obligations and to be reflected in BoQ</td>
</tr>
<tr>
<td>Landscape disfiguring &amp; slope instability</td>
<td>High</td>
<td>Building appropriate slope stabilizing structures at sections vulnerable to slope instability problem; Planting appropriate grass species on cut slopes and Trees on fill slopes; Controlling surface water infiltration to reduce seepage forces by providing adequate side ditches, interceptor drains, &amp; diversion drains; Restoration of borrow sites and areas of contractors’ site facilities; re-establishing vegetation cover.</td>
<td>Design &amp; build contractor</td>
<td>Part of the Contractor’s obligations and to be reflected in BoQ</td>
</tr>
<tr>
<td>Impacts on drainage systems, water resources, water flows,</td>
<td>High</td>
<td>Well planned and adequate drainage structure; Execution of earthworks/excavation works during dry seasons to reduce interference in river flows&amp; reduce erosion, sedimentation and water pollution risks; Avoidance of dumping excess excavation materials on riverbanks or in river courses; Proper disposal of solid and liquid wastes</td>
<td>Design and Build Contractor</td>
<td>Part of the Contractor’s obligations and to be reflected in BoQ</td>
</tr>
<tr>
<td>Diversion of storm water</td>
<td>High</td>
<td>Gully protection/watershed management/water harvesting</td>
<td>Design &amp; build contractor; Local environmental protection offices</td>
<td>3,405,400</td>
</tr>
<tr>
<td>Impacts on road side trees</td>
<td>High</td>
<td>Compensation tree plantation on the road sides and recommended sites</td>
<td>Design &amp; build contractor; Local environmental protection offices</td>
<td>5,000,000</td>
</tr>
</tbody>
</table>
8.2 Complementary Initiatives:

**Water wells:** Considering the level of water scarcity in the area, it is proposed that 6 water wells (2 in each of the three affected districts) be constructed and fitted with hand pumps, distribution facilities (taps), reservoir and cattle troughs. The locations of the water wells will be determined based on the settlement pattern of the population and in consultation with the local administration. In addition, the water well to be dug for the Contractor’s use will be handed over to the local water bureau upon completion of the project.

**Soil and water conservation/Gully prevention and management:** This has caused extensive erosion which is undermining sections of the project road, damage to bridges and culverts, and flooding. The road design provides for drainage along the road as well rehabilitation of bridges. In order to ensure climate resilient road infrastructure, off-road management of runoff in the upper catchments along the road will also be undertaken (e.g., by constructing cut-off drains and watershed management initiatives). The benefits of such interventions will be two-fold: i) they will protect the road from erosion and damage to structures caused by flooding; and ii) they will minimize the amount of soil washing away from farms in the upper catchments and will enhance soil moisture retention capacity.

**Tree plantation:** An afforestation program, including the production, planting and caring for a quarter of a million indigenous trees along the road reserve, will be undertaken. The afforestation program is expected to have a positive environmental impact as it stabilize temperatures on the road pavement structure that consist of high proportion of asphalt material. This will ensure that the top asphalt layer will not be subjected to great temperature variation that causes rutting and bleeding in high temperatures and brittleness and cracking in low temperature. The afforestation component will also help mitigate the level of noise, wind and dust pollution.

**HIV/AIDS/gender and road safety sensitization:** Both the project construction work force as well as community members and truckers working on the Ethio-Djibouti corridor will benefit from this sensitization.

A total budget of ETB 11 million (approx. USD 395,000) will be required for the implementation of the mitigation measures and complementary initiatives which are not covered in the works contract.
9. Environmental and Social Management and Monitoring Plans

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. The ESMP has specified the actions to be taken during each stage of the road project as indicated above under 7.2 and 8.1.

The main issues to be addressed in the management and monitoring of the implementation of the environmental and social management plan include the following:

<table>
<thead>
<tr>
<th>No</th>
<th>Action</th>
<th>Responsible</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Site selection/location of quarry and borrow material sources and their operation and hauling condition</td>
<td>ERA</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>2</td>
<td>Establishment and operation of contractors’ site facilities</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>3</td>
<td>Resettlement and compensation processes and grievances</td>
<td>ERA</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>4</td>
<td>Handling of soils/excavation materials exposed to erosion and rate of soil erosion and siltation</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>5</td>
<td>Provide adequate and appropriate drainage structure and minimize alteration of surface or subsurface water flows</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>6</td>
<td>Minimize impacts on water supply systems such as pipelines, protected springs and hand pumps, and competition for water;</td>
<td>Contractor</td>
<td>ERA, Environmental Protection Bureau</td>
</tr>
<tr>
<td>7</td>
<td>Spoil or excess excavation materials disposal and location of disposal sites,</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>8</td>
<td>Minimize impacts on land use, landscape quality</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>9</td>
<td>Management or disposal of wastes generated from campsites, workshops/garages, used oils; etc.; Road and traffic safety issues</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>10</td>
<td>Minimize disruption of crossing structures, access roads and other services</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>11</td>
<td>Grassing of cut slopes and bare ground; plantation of trees</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
<tr>
<td>12</td>
<td>Measures to be taken before commissioning, e.g. clean up upon completion, rehabilitation of borrow pits and quarries; demobilisation of the contractors’ camps and conversion to agreed social service facility.</td>
<td>Contractor</td>
<td>ERA, Woreda Environmental Protection Bureau</td>
</tr>
</tbody>
</table>

ERA, through its Environmental and Social Management Team (ESMT), will have the overall responsibility for ensuring that a) site specific ESMP is developed and implemented by the Contractor b) environmental protection features are adequately reflected in the detailed design c) qualified environmental and social safeguard experts are recruited by the construction supervision consultant and Contractor’s teams; and d) environmental and social safeguard compliance is adequately monitored and documented.

The main responsibilities of the Construction Supervision Consultant (CSC) will be to review and approve the Contractors’ Construction Environmental Management Plan (CESMP) and work plans etc. and follow up on adequate compliance. In addition, the CSC is responsible for the day-to-day supervision of all site activities and management of unanticipated impacts. The Construction Contractors will be responsible for developing CESMP based on the project ESMP and environmental
clauses in the contract agreements before the commencement of the road works. The CESMP will be updated based on emerging environmental and social impacts, particularly with the identification of new resource/camp sites.

The operation phase of the road project will involve minimal environmental and social impacts which will be managed through the development of Standard Operations Procedures (SOPs) for the asset maintenance and road safety guidelines for the end-users.

The Ministry of Environment, Forestry and Climate Change (MoEFCC) is the responsible entity for ensuring that the ESIA process is carried out in accordance with the relevant laws and guidelines at the national level. The Oromia and Amhara Bureaus of Land and Environmental Protection, mainly through their branches at Adama, Boset and Minjar shenkora districts, will be responsible for ensuring that local level environmental mitigation measures are implemented as per the SESMP in their respective areas.

**Reporting**

The reporting obligations of both the Contractor and the Consultant will be adequately addressed in the respective contract documents. During the construction phase, the results of monitoring will be reported by the Consultant on a quarterly basis to ERA and AfDB using the safeguard progress report format to be provided. The Quarterly Report may comprise the following information, 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;
- Proposed solutions for any outstanding/unforeseen issues/impacts detected during the monitoring.

At the end of the project, an environmental and social safeguard completion report will be prepared.

10. Public Consultations and Disclosure

Several rounds of public and stakeholders consultations were conducted with the administrations, communities and PAPs of the three affected districts throughout the design of the project and the development of the ESIA and RAP since 2016. The last round of community discussions were held in April 2018 with members of Tedecha, Hadhecha and Amora Bet kebeles. The AfDB Appraisal Mission also conducted extensive community consultations. The objective of the consultations were to provide information regarding the project, exchange views on the expected nature and level of social and environmental impact, and the necessary mitigation measures. During these consultations district officials committed to facilitate the implementation of the RAP and provide all necessary and required support including support to the different vulnerable groups during the project implementation period. Participants were also briefed on the structure and processes for the implementation of the RAP and the required grievance management mechanism/process. It was indicated that the administrations and communities in the project area are familiar with compensation and resettlement issues due to exposure to the various development projects in the area including the just completed railway construction through Bilateral Co-operation.

Some of the major ESIA related issues covered in the consultations include:

- Need to consider the proposed 1 km Melka Jilo - rail way pass – express way link;
- Flood/surface water management: the need to flood proof the planned express way and lessen its impact on the livelihood of the farming population;
• Gully prevention/stabilization: the pace and magnitude of gully formation in the area has become a major challenge and the need to undertake measures to protect the expressway as well as its potential contribution to the problem.

The design of the expressway has taken into account most of the concerns expressed by the communities and woreda stakeholders. The other issues are reflected in the ESMP and RAP and will be addressed in the implementation phase.

As required by law, the ESIA and RAP documents are submitted to the Ministry of Transport for clearance and will be disclosed by ERA in affected woreda centres, and at ERA regional and H/Q offices. On its part, the Bank will disclose the summary ESIA and RAP, and the full RAP on its website for at least 120 days before Board presentation.

11. ESMP

Many of proposed mitigation measures above will be included in the detailed engineering design and/or in the tender documentation as either contract and/or special technical specification clauses as appropriate, and will be integrated in the BoQs. In addition a budget of ETB 12 million (approx. USD 440,000) has been allocated for the mitigation, management and monitoring ESMP actions that are not included in the BoQs and the Contractor’s obligations. The budget will be considered as a component of the financial requirements of the project.

Table 1: Summary Cost Estimate for the implementation of ESMP

<table>
<thead>
<tr>
<th>No.</th>
<th>Cost Items</th>
<th>Cost Estimate (ETB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Environmental Mitigation and Management Costs</td>
<td>10,905,040</td>
</tr>
<tr>
<td>2</td>
<td>Environmental and social monitoring costs</td>
<td>143,000</td>
</tr>
<tr>
<td>3</td>
<td>Capacity building cost</td>
<td>110,200</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>11,158,600</td>
</tr>
<tr>
<td></td>
<td>Contingency (10%)</td>
<td>1,115,860</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>12,274,460</td>
</tr>
</tbody>
</table>

1 USD = 27.9 ETB

12. Institutional capacities and strengthening plan

ERA, the project executing agency, has the required capacity and institutional set up to oversee the implementation of the ESMP. The various road sector capacity strengthening initiatives being funded by AfDB under on-going road projects will continue to be instrumental in further strengthening its environmental and social safeguard capacity. ERA has the capacity and commitment to ensure the implementation of the recommended measures through a) Incorporating the mitigating measures in the detailed engineering design and contract documents and b) allocating the budget required to implement the RAP and ESMP. The necessary national institutional arrangement also exists to ensure an adequate follow up and compliance monitoring.

13. Conclusions

The ESIA/ESMP has identified both positive and adverse social and environmental impacts of the project. Most of the potential environmental adverse impacts will occur during the construction period and are mainly of low to moderate magnitude. Social adverse impacts including physical and economic displacement, access to run off water, fragmentation of farmland and restricted access are likely to be moderate to high in significance. Nonetheless, all can be mitigated to acceptable levels through application of the proposed enhancement and mitigation measures.
It can therefore be concluded that there are no significant residual environmental or social impacts that will prevent the proposed Ethiopia – Djibouti Transport Corridor Phase I Project from proceeding to the implementation stage.

14. References and Contacts

References

1. Net Consult Consulting Engineers and Architects Plc; Revised Final Environmental and Social Impact Assessment Report Adama-Awash Expressway, Lot I, Adama- Melka Jilo (Km-60); August 2018.

2. Net Consult Consulting Engineers and Architects Plc; Revised Final Resettlement Action Plan Report Adama-Awash Expressway, Lot I, Adama- Melka Jilo (Km-60); August 2018

Contacts

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