



**GROUPE DE LA BANQUE  
AFRICAINNE DE DÉVELOPPEMENT**

**CAMEROON : TRANSPORT SECTOR SUPPORT PROGRAMME – PHASE III  
– CONSTRUCTION OF THE RING ROAD**

**CODE SAP : P-CM-DB0-017**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) SUMMARY**

**May 2018**

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## **1. INTRODUCTION**

The project objective is to asphalt a section of National Road No. 11 (RN11), namely the Bamenda-Ndop-Kumbo-Nkambe-Misaje-Mungong-Kimbi-Nyos-Weh-Wum-Bamenda “Ring Road” (approximately 357 km long) in Cameroon’s North-West Region.

The project is classified under Category 1 in view of its potential impacts, and an Environmental and Social Impact Assessment is required by the Cameroon Government as well as the African Development Bank, which also makes the preparation of an Environmental and Social Management Plan (ESMP) and a Resettlement Action Plan (RAP) mandatory. This ESMP is a summary and a schedule of the implementation of the environmental and social measures recommended, the purpose of which is to provide sustainable responses to the impacts listed in the Project Environmental and Social Impact Assessment (ESIA).

The overall cost of the ESMP is estimated at one billion two hundred and twelve million one hundred and ninety eight thousand, two hundred and ten point five francs CFA (CFAF 1 212 198 210.5). It includes the cost of project-specific and other measures that will form part of worksite installations to be undertaken by the contractor.

### **PROJECT DESCRIPTION**

The project’s aims is to asphalt a section of National Road No. 11 in the North-West Region linking Bamenda-Ndop-Kumbo-Nkambe-Misaje-Mungong-Kimbi-Nyos-Weh-Wum-Bamenda “Ring Road”, approximately 357 km long. Part of this road section, including the Ndop-Kumbo stretch (60.5 km) is already asphalted.

The road sections studied are located in the hilly North-West Region. This Region has a markedly undulating landscape and some hill ranges with multiple steep slopes such as the Sabga, Wainamah and Nyos escarpments. This hilly relief appears ill suited to the construction of a Category 2 road as recommended by the terms of reference.



The key activities related to the implementation of the rehabilitation project are grouped according to the various work phases as follows:

#### Preparation phase:

- **Easement clearance:** currently, the road width varies from 6 to 7 m depending on the section. By law, National Roads require a 40 m easement for the road and its shoulders. Utility relocation (CDE, AEP, AES SONEL, CAMTEL possibly) and safeguarding of fire hydrants are to be expected in the course of easement clearance. Further land acquisitions will depend on needs relating to worksite installations, quarry operations, laterite borrow pits and waste disposal sites.

#### Construction phase:

- **Worksite installations:** this concerns the worksite base camps for equipment such as heavy machinery and vehicles, storage of materials and other such aggregates, fuel tanks, concrete batching plant, crushing plant, mixing plant, etc. In general, such installations are not located in the right-of-way but require appropriate sites in view of their specific sensitivities. Taking into account the scale of works, the worksite will consist of a technical base, an industrial base and a construction camp.
- **Materials transportation:** this involves transporting all the materials needed for the project: backfill, crushed materials, concrete, bitumen gravel, etc. Movements of vehicles transporting materials, workers and construction equipment constitute potential sources of major impacts.

- **Exploitation of borrow pits and quarries:** construction materials may be sourced from borrow pits and solid rock quarries for embankments, the road subbase, base course, or the manufacture of concrete or asphalt. Nine (9) borrow sites have already been identified in the project area.
- **Operation of concrete mixing plants:** concrete mixing plants, asphalt plants and crushing plants must be set up on the construction site since they form part of the Classified Installations for the Protection of the Environment (*ICPE*) that require special attention.
- **Box-culverts and drainage facility construction works:** among others, such works involve: (i) cleaning (clearing) around stream or river banks in areas traversed by the facility; (ii) pile construction in rivers, which may require watercourse diversion and thus natural water flow changes, depending on the techniques used; (iii) building of bridge decking with risks of materials or pollutants dropping into the water; and (iv) building of storm water drains.
- **Pavement construction:** the road construction will comprise the following stages: (i) easement clearance and cleaning; (ii) demolition of existing structures and expropriated buildings located in the project right-of-way; (iii) earthworks consisting of excavation/backfilling and compaction of the soil to ensure a smooth and uniform subbase; and (iv) pavement construction by spreading and compacting materials (laterite gravel, crushed gravel and bitumen concrete).
- **Signage and safety facilities:** road signs will be of the utmost importance in this project. These will comprise vertical and horizontal signage. Guardrails and handrails will be installed as safety facilities.

## **Operation phase**

- **Commissioning of the road, and maintenance services:** operation and use of facilities (pavements, rest areas, parking areas, etc.) and replacement of degraded facilities.

## **3. KEY ENVIRONMENTAL AND SOCIAL COMPONENTS**

### **3.1 Description of the Physical Environment**

#### **3.1.1 Climate**

The North-West Region and specifically the project area is characterized by a two-season high altitude Sudano-Guinean tropical climate, consisting of a short dry season of 4 months from mid-November to mid-March, and a long rainy season of about 8 months from mid-March to mid-November. Mean annual temperatures range from 14° C to 28° C. The mean annual temperatures recorded are 26 ° C for the low-lying areas and 21° C at altitude. Its relative humidity varies between 53 and 97%, and the average rainfall and mean monthly temperature from 1982 to 2002 in the Nyos area stood at 2375 (mm) and 19° C, respectively.

### 3.1.2 Relief

The relief of the North-West Region is extremely hilly with a number of hill ranges. This very rugged relief is marked by numerous escarpments (Sabga, Wainamah and Nyos, Kumfutu, Chia, etc.). The entire region lies at an average altitude of 900 m. Its highest point is Mount Oku in Bui *Division* (“*Département*”), which stands at 3011 m.

This steep relief renders proper earth road maintenance difficult and landslides often block off entire road sections.

### 3.1.3 Soils

The North-West Region’s multiple soil types are dominated by lateritic soils. Soils of volcanic origin are also found. These are brown soils, black soils, volcanic ash, soils derived from basaltic rocks and metamorphic rocks. Ferruginous soils are also present in some areas. Most soils are formed from trachyte, basalts and granites. The alluvial plains are fertile silt-rich and organic soils (andosols), and are areas of agricultural production and off-season crops par excellence.

### 3.1.4 Geology

The study area is dominated by several geological series:

- **The volcanic series**, consisting of massive volcanic flows, pyroclastic materials, varying between a silica-under-saturated basalt to andesite pole and a trachyte to rhyolite pole.
- **The volcanic acid trachyrhyolitic series**, found north of the Bambui to Babessi road, where it forms most of the escarpments.
- **The heterogeneous granites** occupy more than one third of the project area. The region abounds in building materials such as sand, stones, clay, etc., thanks to its diverse geology.

### 3.1.5 Hydrography

The North-West Region has a significant hydrographic network. The main river in Donga-Mantung *Division* rises from the western highlands and flows to Nigeria and the valleys. Most streams are seasonal while major rivers flow year round. The Donga River is the largest in the *Division* and its source lies in the Adamawa Plateau. Like the Mantung River, which is the second largest in the *Division*, this river is potentially rich in fishery resources while its very fertile banks are used for agricultural production.

## 3.2 Description of the Biological Environment

### 3.2.1 Sensitive, endemic, rare, threatened or vulnerable ecosystems

The project’s impact area influence covers many parks and reserves, the foremost being the Kimbi Fungom National Park that this project will traverse. It is a major protected reserve that is home

to species such as buffaloes, pangolins, monkeys, wild pigs, etc. It also harbours many endemic species, including Bannerman's turaco which is a characteristic biological marker of the North-West.

### **3.2.2 Flora**

According to Letouzey (1985), the entire study area belongs to the sub-montane forest and is surrounded by lowland savannah and mid-altitude farmland. Today, this forest has been gradually replaced by Eucalyptus in certain areas and farms. Besides forest reserves and community forests, there are relict forests on the border with Nigeria, as well as in Momo *Division* bordering the South-West Region. These forests are vestiges of the dense rain forest that once covered the region.

### **3.2.3. Wildlife**

The presence of evergreen forest in the savannah region has created a unique ecosystem in the Oku area. The ecoregion contains exceptional levels of avian, mammalian and reptilian endemism, with rich wildlife biodiversity occupying mainly protected areas and hunting reserves as well as the Region's savannahs. Many endemic species found in the area include small mammals, primates (chimpanzees, guenon and gorillas) but also snakes, chameleons, amphibians and many bird species, including Bannerman's turaco.

## **3.3 Socioeconomic Context**

The Region's population is estimated at 1.7 million inhabitants, of which 900,091 women and 828,862 men, with 60% of people making a living mainly from agriculture. In general, this consists of family farming for household consumption and for trade in several other parts of the country and beyond in the Central and West Africa sub-region. Land is managed under a mixed system of customary or traditional law. Livestock is among the region's key activities and is a major income earner for more than 30% of rural dwellers.

The study area's tourist appeal is based on the beauty of its landscape (grassfields with multiple crater lakes), the region's traditional social organization based on *Fondoms* and particularly the presence of parks and reserves (Kimbi-Fungom National Park, the Weh, Kom-Wum, Tubah, Bali-Ngemba and Mbembe Reserves, the Kagivene Gorilla Sanctuary, and the Kilum Ijim Medicinal Plant Sanctuary). These essential activities enable the people to face many challenges mostly related to the region's isolation, among which: (i) the poor state of roads, resulting in inaccessibility of some production belts; and (ii) inadequate local labour.

### **3.3.1 Health**

The North-West Region has a regional hospital and 16 district hospitals, 26 health centres and 191 Integrated Health Centres as well as numerous private hospitals, clinics and health centres. Immunization coverage exceeds 95% for essential vaccines. The region is hosts one of the best cardiology hospitals in Central Africa.

### 3.3.2 Education

The North-West Region operates a dual Anglophone and Francophone education system running separately or in bilingual formation. The system currently crystalizes various tensions and conflicts at the national level and for various reasons, including inadequacy of funds allocated to public education in the region and shortage of teaching staff. Public and private schools covering the nursery, primary, secondary, technical and university education levels abound in the area.

## 4. ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

Three types of measures will be implemented:

- **Mitigation measures:** these are recommended when a negative impact cannot be totally eliminated during project design. Such measures reduce the effect of the negative impact on the various environmental components;
- **Compensatory measures:** these occur when irreducible residual impacts persist. The purpose of implementing such measures is to provide a counterpart, in particular restoration of the original environmental conditions as much as possible;
- **Optimization measures:** these are aimed at giving value added to the expected positive project impacts.

### 4.1 Positive socio-economic impacts and optimization measures

The positive impacts are mainly socio-economic and most of them are residual, although the area's opening up and increased tourism may bolster efforts by the government and NGOs present to conserve the rich biodiversity. These impacts are:

- **Improved landscape aesthetics** around bridges and access roads. **The optimization measures** will consist of: (i) setting up local committees for slope maintenance and drainage facility cleaning; and (ii) raising public awareness on the need to preserve the infrastructure and related facilities.
- **Jobs and business opportunities during the construction phase.** **The optimization measures** will consist of: (i) giving equal priority to local labour and making the staff recruitment policy transparent; (ii) promoting the consumption of local products; and (iii) subcontracting certain works to local SMEs.
- **Opening up of the area, regional integration** and facilitation of the movement of people and goods.
- **Improved transportation of goods and people,** and development of economic activities in the region. **The optimization measures** will consist of: (i) putting all safety facilities (street lamps, guardrails) in place; (ii) ensuring the proper functioning of the weighing stations; and (iii) raising public awareness on the need to protect road facilities.

- **Increased number of tourists. The optimization measures** will consist of: (i) creating a regional tourism office; (ii) raising public awareness on the preservation of tourist sites and rare species present in the area; and (iii) training tourist guides.

#### 4.2 **Negative impacts on the physical environment during the construction phase and mitigation measures**

The worksite layout, easement clearance, quarrying and transportation of materials will have the following impacts:

- **Air quality deterioration due to dust and gas emissions. The mitigation measures will consist of:** (i) choosing sites for installation of crushing plants and asphalt plants outside villages; (ii) encouraging group transportation of project personnel; (iii) regular maintenance of vehicles; and (iv) spraying water on the roads under construction to reduce dust levels.
- **Increased water resource stress. The mitigation measures will consist of:** (i) determining the baseline water table level and obtaining the authorizations required for drilling boreholes; (ii) in the dry season, drawing water only from permanent streams and downstream from public water fetching areas; (iii) preparing a vehicle and equipment washing area equipped with a hydrocarbon separator or decanter; and (iv) building four (4) boreholes for livestock and 8 borehole equipped with hand pumps) for local communities.
- **Risk of surface water pollution. The mitigation measures will consist of:** (i) prohibiting the handling and any spillage of dangerous products (fuel, used engine oils, solvent paints, concrete laitance, etc.) in marshy areas or near watercourses; (ii) providing impervious and leak-proof areas sheltered from rain for refuelling and storage of hydrocarbons, and for maintenance and washing of vehicles and other equipment; (iii) devising a contingency plan in the event of an accidental spillage of a large volume of pollutant into the watercourse and soil; (iv) collecting concrete laitance in settling tanks; using paints, solvents, varnishes and other glues that are less polluting to the environment; (v) sensitizing workers on avoiding spillage; and (vi) building appropriate and adequate on-site latrines and toilets for staff.
- **Soil and groundwater pollution risks. The preventive measures will consist of:** (i) installing a used oil recovery tank and returning such oil to the supplier for recycling; (ii) sensitizing workers on avoiding spills; (iii) building a washing area for vehicles and machinery equipped with a hydrocarbons separator or decanter; (iv) building adequate on-site latrines and toilets for personnel; (v) providing sorting pits and carrying out regular waste collection by specialized companies; and (vi) laying concrete on the hydrocarbons storage site.
- **Soil erosion and structure modification. The preventive measures will consist of:** (i) making the best of stripped work area topsoil by reusing it for landscaping; (ii) scheduling earthworks outside rainy periods; (iii) riprap or masonry hillside



slope protection; and (iv) protecting land excavation sites from water inflows and rainfall to limit malaria spread and groundwater pollution.

#### 4.3 Impact of the construction phase on the biological environment

- **Vegetation cover and wildlife destruction** principally during works to access quarries, create borrow pits, detours and other changes to the road alignment. **The mitigation measures will consist of:** (i) conducting an awareness campaign among staff and communities on the importance of preserving endemic species hosted by the reserves; (ii) prohibiting the felling of protected species and enforcing applicable laws and standards on harvesting non-timber forest products as well as certain protected species such as *Prunus Africana*; (iii) conducting an inventory of the protected species destroyed during works; and (iv) formalizing a partnership with local municipality organizations for the reforestation of municipal or community forests with native species and according to the standards prescribed by MINEPDED and MINFO.
- **Destruction of terrestrial and aquatic wildlife and disturbance of their habitats. The mitigation measures will consist of:** (i) sensitizing workers on the area's biodiversity preservation; (ii) including clauses prohibiting workers from hunting and fishing in the project area in worksite regulations; (iii) providing animal protein to workers; (iv) limiting as much as possible the trees to be felled, the ground surfaces to be exposed, temporary occupation sites, borrow pits and quarries; (vi) site restoration after exploitation through landscaping and reforestation; and (vii) providing passageways with speed bumps and signs indicating the presence of endangered (protected) animals along the roads and in particular on their habitual crossing sites.

#### 4.4 Socioeconomic impact during the construction phase:

- **Displacement and expropriation:** Easement clearance will require the relocation of roadside stalls and land acquisition for the construction camps and bases. Mitigation measures are set out in the Project Resettlement Action Plan (RAP).
- **Cost of living hikes in localities. The mitigation measures will consist of:** (i) sensitizing workers to be attentive to profiteering by traders; and (ii) workers refraining from contributing to such profiteering themselves.
- **Risk of noise pollution. The mitigation measures will consist of:** (i) choosing sites for the installation of crushing and asphalt plants outside the villages; (ii) providing group transportation for project workers; (iii) regularly maintaining vehicles and equipment; (iv) switching off parked vehicle engines; and (v) siting workshops and construction camps at standard distances from homes and schools.
- **Risks of spread of waterborne diseases, STIs/HIVAIDS and unwanted pregnancies. The mitigation measures will consist of:** (i) sensitizing the public and road users on STI, HIV/AIDS prevention. The Project Owner could hire a local

NGO to conduct awareness campaigns; and (ii) sensitizing workers on the internal regulations prohibiting inappropriate behaviour.

- **Risk of destruction of pipes and various supply networks. The mitigation measures will consist of:** (i) informing communities at least 72 hours beforehand, in the event that work likely to disturb the urban or rural networks would take place; (ii) putting in place with the other concession holders a plan for moving various networks; (iii) implementing palliative measures, particularly in the villages, by identifying with local communities the various catchment sites and constructing six (6) boreholes to supply drinking water to the communities, and 8 livestock boreholes; (iv) setting up an autonomous association of water point users to independently manage water facilities, and training a handyman capable of repairing the water facility in the event of a breakdown.
- **Risk of destruction of graves and sacred sites.** In case of discovery of such sites, **the measures to be applied will consist in:** (i) studying with the traditional rulers how to bypass sacred sites; (ii) providing the cost of rituals and other such ceremonies related to sacred site displacement where bypassing is not possible; (iii) marking the graves and notifying the families concerned; and (iv) contacting specialized services for sacred site removals.
- **Traffic disruption and destruction of access-only roads. The mitigation measures will consist of:** (i) putting in place a traffic maintenance plan through detour management; (ii) placing speed limit signs at work zone passageways; (iii) providing all intersections with secondary roads or tracks; (iv) notifying the public and transporters sufficiently early in case of traffic interruption, and providing and securing pedestrian access by temporary footbridges; and (v) providing home access for local residents.
- **Risks of work accidents due to the works and equipment used. Mitigation measures will consist of:** (i) sensitizing workers on wearing of personal protection equipment (PPE) and compliance with the internal regulations; (ii) complying with labour regulations; (iii) displaying the company's internal regulations at the construction camp and base; and (iv) reaching an agreement with a referral hospital for workers' medical care.
- **Risks of accidents and conflicts with local people. The mitigation measures will consist of:** (i) placing road signs and providing all safety facilities on roads, (guard rails, temporary signage); (ii) siting the project workshops, construction camp and base at standardized distances from homes and schools; (iii) providing and securing pedestrian access during the construction phase; (iv) mobilizing a full-time on-site HSE manager; (v) spraying water on roads under construction to reduce dust levels and set up a conflict resolution platform.

#### 4.5 Impacts of the operations phase on the physical environment

**Risk of land and watercourse pollution** due to infrastructure deterioration. **The preventive measures will consist of:** (i) organizing local maintenance committees for simple channel drainage maintenance measures; and (ii) planning a budget for maintenance work to change defective safety facilities (guardrails, railings, signs, drainage channels, etc.) and thus reduce the road damage risks.

#### 4.6 Impacts of the operations phase on the biological environment

##### **Livestock or wildlife collision with vehicles**

**The protective measures will involve** providing speed bumps and signs on passageways indicating the presence of endangered (protected) animals along the roads and in particular on their habitual crossing sites.

#### 4.7 Socio-economic impacts during the operations phase

**Risks of accidents, transmission of STI/HIVAIDS and conflicts with local people:** (i) sensitize the public and road users on the dangers of STIs, HIV/AIDS and prevention measures; (ii) place road signs and provide all safety facilities on roads (guardrails, pedestrian crosswalk, etc.); and (iii) on passageways, provide speed bumps around socio-economic centres.

#### 4.8 Residual impacts

In light of the foregoing analysis of impacts identified, the residual importance of negative impacts is either insignificant or minor. Conversely, the residual importance of most of the positive impacts is major. Accordingly, the Ring Road Construction Project is environmentally feasible. To ensure such feasibility, the measures envisaged in the ESMP must be properly implemented and on time.

### ➤ **POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK**

#### 4.5 Legal Framework.

The legal framework of this project comprises the pertinent instruments listed below:

- Law No.96/12 of 5 August 1996 relating to environmental management;
- Law No. 98/015 of 14 July 1998 on establishments classified as dangerous, unhealthy or obnoxious;
- Law No. 89/027 of 29 December 1989 relating to toxic and hazardous waste;
- Law No. 94/ 01 of 20 January 1994 laying down forestry, wildlife and fishery regulations;
- Law No. 98/005 of 14 April 1998 laying down regulations governing water resources
- Law No.001 of 16 April 2001 on the mining code;

- Decree No. 2013/00172/PM of 14/02/2013 laying down the procedures for conducting environmental and social impact assessments, and the Orders relating thereto;
- Decree No. 2001/164/PM of 8 May 2001 specifying the terms and conditions for abstracting surface water or groundwater for industrial or commercial use;
- Ordinance No.74-1of 6 July 1974 laying down land tenure regulations in Cameroon. ;
- Law No. 80/22 of 14 July 1980 punishing infringements against land tenure and State land;
- Law No. 85/009 du 4 July 1985 on expropriation for public purpose and compensation terms and conditions;

To better articulate its safeguarding policies while improving their clarity and coherence, the Bank has put in place the Integrated Safeguards System (ISS), which comprises four (4) interdependent components:

- Integrated Safeguards Policy Statement;
- Operational backups;
- Environmental and Social Assessment Procedures (ESAP);
- Integrated Environmental and Social Impact Assessment Guidelines (IESIA).

In the framework of project activities, five operational safeguards will be triggered, namely:

- OS1 - Environmental and social assessment triggered because it is a programme and de facto subject to environmental and social assessment;
- OS2 - Involuntary resettlement triggered by the project affecting persons who are property owners;
- OS3 - Biodiversity, renewable resources and ecosystem services triggered by the biodiversity present in the project footprint and project area vicinity;
- OS4 - Pollution prevention and control, hazardous materials and resource efficiency, triggered by water and soil pollution risk during project works and operational phase; and
- OS5 - Labour, health and safety conditions triggered by the fact that the nature of work involves workers' health and safety risks.

## 5.2 Institutional Framework

Several institutions are concerned by this Environmental and Social Impact Assessment:

- **The Ministry of Works (MINTP)**, which is responsible for supervision and technical control of construction of infrastructure and public buildings, maintenance and protection of national road assets. MINTP is the Project Owner. At the level of the Directorate of Road Infrastructure (DIR), the Infrastructure Environment Protection Unit (CPEI) will be responsible for implementing the overall project ESMP, the execution of which is delegated to the DIR/BAD-BM-DAET Unit, which will be supported by a Principal Environmental Specialist and a Principal Social Development Specialist.
- **An Inspection Unit (IU)** is responsible for the daily monitoring of the implementation of environmental and social measures by the contractor and NGOs. In this regard, the Unit's implementation team will include a Senior Environmental Expert and two Inspectors (one social and the other environmental). The IU will also be able to intervene in the implementation of support measures by supervising associations, SMEs and other contractors hired by the Project Owner.
- The main contractor shall comply with the contract and project environmental and social clauses transmitted to it in the form of Special Technical Specifications. The internal control of the main contractor will be carried out through an environmental and social team. The team will have at least one Environmental Expert and one Social, Health and Safety Expert.
- **NGOs, Civil Society Organizations and SMEs** that will be responsible for implementing support measures under the project owner's supervision.

## 6. SURVEILLANCE, MONITORING AND EVALUATION PLAN

### 6.1 Summary of environmental and social impacts, proposed mitigation and optimization measures and monitoring indicators

Phase		Environmental and Social Measures	Monitoring Indicators	Monitoring and Surveillance Actors
Works preparation phase	Socio-economic environment	Raise public awareness on easement clearance	<ul style="list-style-type: none"> <li>- Sign-out sheets signed by PAPs</li> <li>- Number of traders temporarily moved away from the work zone</li> </ul>	<ul style="list-style-type: none"> <li>- Compensation Advisory Committee</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Promote local products consumption	<ul style="list-style-type: none"> <li>- Number of traders' complaints registered</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> </ul>
		Sub-contract some works to local SMEs	<ul style="list-style-type: none"> <li>- Number of SMEs approved for subcontracting</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Prepare a transparent worker recruitment policy and carry out recruitment	<ul style="list-style-type: none"> <li>- Percentage of local people working on the site</li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Labour and Social Security (MTSS)</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Create all the detours, ramps and access roads, information and signposts required	<ul style="list-style-type: none"> <li>- Presence of access roads created</li> <li>- Number of traffic disruptions during works</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative of Environment</li> </ul>
		Mobilize a permanent on-site HSE manager Prepare an S-EPP and HHSP, including waste management, safety, health and hygiene measures	<ul style="list-style-type: none"> <li>- On-site HSE officer recruited</li> <li>- S-EPP and HHSP prepared</li> <li>- Records of sensitization meetings with staff</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>

		Prepare internal regulations and raise workers' awareness on compliance with regulations including the wearing of PPE	<ul style="list-style-type: none"> <li>- Internal regulations available</li> <li>- PPE available for all workers</li> <li>- Minutes of awareness meetings with staff</li> <li>- Regulations posted up at site entrance</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Reach an arrangement with a referral hospital for workers' medical care	<ul style="list-style-type: none"> <li>- Statistics of sick workers</li> <li>- Statistics of accidents handled by the hospital</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Labour and Social Insurance</li> </ul>
		Construction of 4 livestock boreholes and 8 boreholes equipped with hand pumps	<ul style="list-style-type: none"> <li>- Number of complaints registered</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Organize preventive campaigns against waterborne diseases and STD /HIV-AIDS	<ul style="list-style-type: none"> <li>- Minutes of awareness campaigns on STIs /AIDS</li> <li>- Number of people sensitized</li> <li>- Referral statistics compared to hospital dashboard.</li> </ul>	<ul style="list-style-type: none"> <li>- Local NGOs</li> <li>- Project area health districts</li> </ul>
	Physical environment	Choose installation sites for crushing and asphalt plants and construction sites outside villages	Distance of site from villages	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Conduct a study on the groundwater level prior to borehole construction	Study conducted	<ul style="list-style-type: none"> <li>- Project Owner/IU</li> <li>Local Representative in charge of Environment</li> <li>- Local Representation in charge of Water</li> <li>- Local Representative in charge of Mining</li> </ul>

		Obtain the required authorizations for the drilling of boreholes	Authorization certificate	<ul style="list-style-type: none"> <li>- Project Owner/IU</li> <li>Local Representative in charge of Environment</li> <li>- Local Representation in charge of Water</li> <li>- Local Representative in charge of Mining</li> </ul>
		Dry season water abstraction from permanent streams only	<ul style="list-style-type: none"> <li>- Volume of water pumped</li> <li>- Number of complaints registered</li> </ul>	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> <li>- Local Representation in charge of Water</li> </ul>
		Provide latrines and water points in adequate numbers and ensure their maintenance	Hygiene status of sites Statistics of sick workers	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Prohibit handling and spilling of hazardous products near watercourses or wetlands	- Number of spills recorded	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Provide impervious and leak-proof areas for refuelling and storage of hydrocarbons, maintenance and washing of vehicles and other equipment	- Presence of concrete-covered areas in the fuel and lubricant distribution section	<ul style="list-style-type: none"> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Develop an Accidental Spillage Contingency Plan	Contingency plan available	<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> <li>- Local Representative in charge of Environment</li> </ul>
		Set up a construction camp and worksite waste collection and disposal system		<ul style="list-style-type: none"> <li>- Contractor</li> <li>- Project Owner/IU</li> </ul>



				- Local Representative in charge of Environment
		- Regularly maintain vehicles and switch off the engines of parked vehicles		- Project Owner/IU - Local Representative in charge of Environment
		Spray water on roads with ongoing works to reduce dust levels and limit worksite vehicle speeds		- Project Owner/IU - Local Representative in charge of Environment
		Protect embankments and hillsides by riprap or masonry		- Contractor - Project Owner/IU
	Biological environment	Strictly restrict felling operations on construction easement	- Number of trees felled on easement - Number of trees reforested on borrow sites and on other sites as compensation - Number of landscaped gardens made in the cities and localities traversed	- Project Owner/IU - Local Representative in charge of Environment - Local Representative in charge of Forests
		Provide green spaces and landscaping, and reforest degraded areas	- Success rate of species sown - and / or reforested - Number of borrow sites restored	- Project Owner/IU - Local Representative in charge of Environment - Local Representative in charge of Forests
		Conduct an awareness campaign on biodiversity preservation	- Number of complaints against damage to the reserve heritage - Number of kilograms of bush meat seized - Number of live protected species identified in the area before, during, and after the works	- Project Owner/IU - Local Representative in charge of Environment - Local Representative in charge of Forests
Operation phase	Physical environment	Set up local embankment maintenance and drainage facility cleaning committees		- MINEE - Municipalities of localities concerned

				- Local NGOs
		Raise public awareness on the need to preserve this infrastructure and the related facilities		- IU - MINTP
	Biological environment	Signal wildlife proximity through sign boards and speed bumps	- Number of accidents involving wildlife - Number of complaints against damage to the reserve heritage	- Local Representative in charge of Environment - Local Representative in charge of Forests
	Socio-economic environment	Conduct a campaign to sensitize people and road users on STIs and HIV/AIDS prevention	- Record of sensitization campaigns on STIs/AIDS - Number of people affected by sensitization - Referral statistics compared to hospital dashboard	- MINTP - Project area health districts
		Provide road signs, facilities (street lights, guardrails)	- Number of accidents registered during works - Number of complaints from local people registered	- IU - MINTP
		Sensitize area stockbreeders on risks of collision with vehicles		- MINEPIA - Stockbreeder Associations and CIGs - MINTP







## 7. SUMMARY OF ESMP IMPLEMENTATION COSTS

Measures	Total Cost
<b>Project-specific measures</b>	
Raise public awareness on easement clearance	5 000 000
Construct boreholes	102 000 000
Raise awareness on water hygiene and sustainable use of water structures	16 000 000
Raise workers' awareness to avoid spills	3 000 000
Sensitize on the wearing of PPE to avoid polluted soils and related health problems	3 000 000
Landscape with a view to reforesting degraded areas to offset subsequent tree felling	18 125 000
Plant trees to reforest degraded areas (former borrow sites, quarries and all other available spaces), to compensate for those destroyed by the project	311 473 210,5
Raise breeders' awareness on the highway code	3 000 000
Create tracks to protect transit corridors	200 000 000
Raise awareness on displacement of graves and sacred sites	5 000 000
Awareness campaign for staff and local people on biodiversity preservation in parks and reserves	36 000 000
Anti-poaching in parks and reserves	100 0000 0000
Create local maintenance committees for embankments and cleaning of drainage facilities	80 000 000
Public awareness campaigns on: - accidents risks - importance of preserving the infrastructure and related facilities - risks of conflict and avoidance measures	8 000 000
Public and users awareness campaigns on STI, HIV/AIDS prevention measures	25 600 0000
Involvement of decentralized services in works monitoring	60 000 000
<b>Total cost of Measure 1</b>	<b>976 198 210,5</b>
<b>Measures to be included in the cost of worksite installations</b>	
Produce labelled half-drums with lid for the collection of solid waste at the construction site	4 000 000
Raise workers' awareness: - to avoid spills into water and on the ground - wearing of PPE, the various HSE risks and preventive measures; - biodiversity preservation	3 000 000

Conduct preventive campaigns against waterborne diseases and STDs/HIV-AIDS among the workers and subcontractors hired by the Contractor and the Project Owner	3 000 000
Prepare a washing area for vehicles and machines equipped with a hydrocarbons separator or settling tank	8 000 000
Dry season watering in ongoing work zones to reduce dust levels	50 000 000
Appropriate PPE for workers	40 000 000
Conclude an agreement with a referral hospital for the site workers' medical care	15 000 000
Prepare a first aid box	9 000 000
Train 4 first-aiders in each work team	12 000 000
Set up monitoring committees on the protection of the road heritage, and continue sensitization on STIs/ HIV-AIDS during the road operation phase	10.000.000
Support awareness-raising material for the environmental protection committees and STIs/HIV-AIDS control	20.000.000
<b>Total cost of Measure 2</b>	<b>174 000 000</b>
<b>Implementation Monitoring and Supervision</b>	<b>72 000 000</b>
<b>Grand Total</b>	<b>1 212 198 210.5</b>

## 8. CONCLUSION

The project is classified under Category 1 in view of its potential impacts and an Environmental and Social Impact Assessment is required by the Cameroon Government and the African Development Bank, which also makes the preparation of an Environmental and Social Management Plan (ESMP) and a RAP Resettlement Action Plan mandatory. The negative impact mitigation measures discussed in the ESMP are intended to provide sustainable responses to the impacts identified in the project's Environmental and Social Impact Assessment (ESIA).

The overall cost of the ESMP is estimated at CFAF 1 212 198 210.5 and includes the cost of the project-specific measures and the cost of the measures to be included in the worksite facilities, the execution of which is the responsibility of the contractor in charge construction works.

## 9. REFERENCES AND CONTACTS

### References

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