

**AFRICAN DEVELOPMENT BANK  
AFRICAN DEVELOPMENT FUND**



**GHANA: FUFULSO-SAWLA ROAD PROJECT**

**ENVIRONMENTAL AND SOCIAL IMPACT  
ASSESSMENT (ESIA)**

**SUMMARY**

**TRANSPORT AND ICT DEPARTMENT (OITC)**

**JUNE 2010**

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>2.0</b>	<b>POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK .....</b>	<b>2</b>
<b>3.0</b>	<b>PROJECT DESCRIPTION AND JUSTIFICATION .....</b>	<b>1</b>
<b>4.0</b>	<b>DESCRIPTION OF THE ENVIRONMENT OF THE PROJECT .....</b>	<b>3</b>
<b>5.0</b>	<b>PROJECT ALTERNATIVES.....</b>	<b>4</b>
<b>6.0</b>	<b>POTENTIAL IMPACTS AND MITIGATION/ENHANCEMENT MEASURES .....</b>	<b>5</b>
<b>7.0</b>	<b>ENVIRONMENTAL AND SOCIAL RISK MANAGEMENT.....</b>	<b>7</b>
<b>8.0</b>	<b>MONITORING PROGRAM.....</b>	<b>8</b>
<b>9.0</b>	<b>PUBLIC CONSULTATION AND DISCLOSURE .....</b>	<b>9</b>
<b>10.0</b>	<b>COMPLEMENTARY INITIATIVES .....</b>	<b>9</b>
<b>11.0</b>	<b>CLIMATE CHANGE.....</b>	<b>11</b>
<b>12.0</b>	<b>CONCLUSION .....</b>	<b>11</b>

**Project Name:** Fufulso-Sawla Road Project  
**Country:** Ghana  
**Project Number:** P-GH-DBO-016

## **1.0 INTRODUCTION**

1.1 The proposed project is the re-construction/construction of the 147.5km Fufulso-Sawla road which traverses three (3) districts namely Central Gonja District, West Gonja District and the Sawla-Tuna-Kalba District all in the Northern Region of Ghana. The road is earmarked for development into a trunk road providing the main gateway to the Upper West Region from Tamale.

1.2 The project involves engineering feasibility, social and economic viability studies for the re-construction of the trunk road. Baseline information on the project area of influence was collected through studies, field surveys and consultations with various stakeholders. Information collected included population of major settlements, climate, air quality and noise levels, topography and drainage, geology and soils, water resources, flora and fauna, land-use and socio-economic activities, gender issues, existing road conditions, sensitive ecosystems, resources and developments.

1.3 The project was classified as a category 1, given the type of works to be undertaken and the potential direct and indirect impacts it could generate especially on sensitive ecosystems. In conformity with the environmental policy requirements of the Bank and Ghana, an environmental and social impact assessment (ESIA), of which this section is a summary, was requested to: (i) identify the potential risks on the physical, biological, socio-cultural and socio-economic environment, and (ii) propose measures to mitigate or offset any adverse impacts of the project on the environment.

The report is presented in twelve (12) main chapters and annexes. Chapter one gives a general introduction and background of the project, chapter two provides the policy, legal and administrative framework that apply to the project, chapter three gives a detailed description and justification, chapter four describes the project environment, chapter five gives project alternatives, chapter six presents the potential impacts and corresponding mitigation measures, chapter seven gives the environmental and social risk management, chapter eight presents the environmental and social follow-up projects, chapter nine provides information on public consultations and disclosure, chapter ten gives the complementary initiatives, chapter eleven presents how climate change issues informed the design of the project and chapter twelve a brief conclusion.

## **2.0 PROJECT DESCRIPTION AND JUSTIFICATION**

2.1 The proposed project stretches from Fufulso southwest of Tamale to Sawla south of Wa. Re-construction/Construction of the corridor comprises:

- Construction of 147.5km paved carriageway with bitumen surface;
- Construction of drainage system including culverts
- Construction camps;
- Water supply in the communities along the road corridor;
- Support to Women's agro-processing activities along the road corridor;
- Rehabilitation of existing schools;
- Rehabilitation of existing health facilities;
- Construction of markets and lorry parks in Larabanga, Busunu, Fufulso, Sawla and Damongo and design and supervision.

2.2 The preconstruction phase of the project involved survey and investigations for the sources of the materials needed for the construction such as borrow pits investigation, quarry location investigation, water sources, traffic studies and investigation of alignment.

2.3 The construction phase will involve mainly the construction of 7.3m wide, 147.5km main carriageway, provision of bitumen surface, construction of 2m wide shoulders on both sides of the carriageway, construction/rehabilitation of eighty (80) culverts, placement of road signs along the road, haulage of materials, construction of work camps and earthworks.

### **Project Justification**

2.4 Road infrastructure constitutes a major component of the transport system in Ghana. Road transport takes up about 98 % and 95 % of freight and passenger traffic respectively (MoT, 2007). The main objectives of the Ffulso-Sawla Road Project are to: i) provide the only link between Tamale and Wa, the regional capitals of the Northern and Upper West Regions respectively; ii) increase agricultural production, socio-economic advancement of the people and reduce poverty; and iii) provides the only access to the Mole National Park, the Larabanga Old Mosque and the Mystic Stone which are important national landmarks of great tourism importance.

2.5 The low lying nature of some sections of the current road makes it flood-prone and unmotorable after heavy rains. This affects traffic flow. Gullies created by severe erosion at sections of the road have led to narrowing of the road. This slows down movement of goods and people. The implementation of the project however will open up the area, especially the rural agricultural section and provide a boost to socio-economic activities with its resultant benefits to the local communities and the nation as a whole.

### **3.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

3.1 The relevant policy, legal and administrative framework within which the ESIA was carried out are reviewed in summary below. These are: i) Ghana EIA Procedures; ii) Environmental Protection Agency (EPA), Act 1994 (Act 490); iii) Environmental Assessment (EA) Regulations, 1999 (LI 1652); iv) Local Government Act, 1993 (Act 462); v) National Museum Decree, 1969 (NLCD 387); vi) Lands (Way Leaves) Act, 1963 (Act 186); vii) The Road Reservation Management – Manual for Coordination, 2001; viii) Environment and Social Management Framework (ESMF) for the Road Sector, 2007; ix) Resettlement Action Framework for the Road Sector, 2007; x) African Development Bank Environmental Policy; and xi) The Bank Group Involuntary Resettlement Policy.

3.1.1 The EPA Act mandates the Agency to ensure compliance with the EA Regulations. The EA Regulations make it an offence to commence certain “undertakings” (including road projects), without prior EIA and environmental permit.

3.1.2 Development control functions are principally carried out under the Local Government Act 1993, Act 462, Town and Country Planning Law Cap 84 of 1945 and, the Building Regulations 1996, LI 1630. In case of a chance finding of any archaeological artifact in the course of the road construction, the National Museums Decree, 1969 (NLCD 387) will apply.

3.1.3 The construction of a road project raises issues of acquisition of way-leaves (Right-of-way). The determination of the route and the acquisition of the right-of-way of the project will be done within the Lands (Way Leaves) Act. The Road Reservation Management Manual for Coordination is a comprehensive document developed among the various utility service providers and, the relevant statutory and regulatory agencies, for the efficient

management of road reservations for the installation of public utility services. Specifically, the manual outlines procedures for the handling of disruptions of utilities.

3.1.4 The ESMF provides a corporate environmental and social safeguard policy framework, institutional arrangements and capacity available to identify and mitigate potential safeguard issues and impacts of road projects. The ESMF also represents a statement of policy, guiding principles and procedures of reference, agreeable to all key stakeholders such as the EPA, the World Bank, MoT and the implementing Agencies. It brings consistency with the OP4.01 and OP4.12 and other applicable safeguard provisions of the World Bank.

3.1.5 The Environmental Policy of the African Development Bank sets out the broad strategic and policy framework under which all Bank Group lending and non-lending operations will be made to promote environmentally sustainable development in Africa. Its overall goals include helping preserve and enhance the ecological capital and life-support systems across the continent. The Bank's policy on disclosure requires that all the people residing in the given areas of a project have the right to be informed of the proposed development project in their respective areas. The Bank Group involuntary resettlement policy is intended to address the involuntary displacement of people caused by Bank funded operations in public and private sector.

#### **4.0 DESCRIPTION OF THE ENVIRONMENT OF THE PROJECT**

4.1 The road passes through the West Gonja, Central Gonja and Sawla-Tuna-Kalba Districts of the Northern Region. The climate of the general area of the project is tropical continental with a rainfall pattern characterized by a single wet season which starts from March to October. The rest of the year is very dry with almost no precipitation. Average rainfall ranges between 630 and 1380mm. Temperatures ranges between 27 - 29°C in the wet season and 27 - 37°C in the dry season with relative humidity rarely exceeding 20% during the day and rising up to 60% during the night.

4.2 The dust levels were high in the selected communities (where samples were taken), even though slightly below the Ghana EPA ambient dust level guidelines. Noise levels were generally low and within the Ghana EPA recommended ambient noise level guidelines for residential and commercial areas, except for a few locations. The major sources of noise included corn mills, movement of vehicles, noise from school children, animals (livestock) and birds.

4.3 The vegetation within the area is predominantly Savannah vegetation with Dawadawa and Shea trees being some of the most important economic tree species. About 41km stretch of the road separates the Mole National Park and Kenikeni Forest Reserve. Over 93 species of mammals, about 400 species of birds, 9 amphibians, 33 reptilian and several insectivorous species and 5 endemic butterfly species are recorded as found in the Mole National Park. The park is also home to two endemic plant species confined to northern Ghana. The Kenikeni Forest Reserve, which is under the jurisdiction of the Bole Forest District, is located south of the Mole National Park with mainly Woodland Savannah vegetation. The reserve has both important tree and grass species.

4.4 The major soil groups that occur in the project area are savannah ochrosols, tropical brown earths and terrace soils. There are also mudstones and sandstones in the alluvial Damango formations. Many of the soils also contain abundant coarse material of either gravel or stone which affect their physical properties.

4.5 The communities along the existing road depend on wells and boreholes for water supply. In communities where boreholes are inadequate, water from the dams are used for domestic purposes.

4.6 The ratio of males to females in the Northern Region is generally around 99.0 to 101.0 and it is similar for most of the districts. The median age is given as 16.8 years which is the lowest in the country. Less than 5% of communities have electricity. The average household size is about 8 which is larger than the national average. Agriculture is the major occupation with over 60% of the labour force and accounts for a greater portion of the land usage in the three districts. The age of the active labour force is between 15 – 64 years. Women along the road derive their income from petty trading and agro-processing. The doctor-patient ratio is given as 1:250,000. There is high incidence of guinea worm in the project districts. HIV prevalence in the Northern Region for the years 2008 and 2009 is 1.1 to 2.0%, which higher than the national prevalence rate.

4.7 The Ffulso - Sawla corridor is home to some key sites of historical and cultural importance. The Mole National Park, Jintrepe Mass Grave, Larabanga Mystic Stone and the ancient mosque are destinations that are of interest to the local people as well as foreigners with an estimated 10,000 people visiting these places every year. Traditional cloth weaving and making of artefacts are some of the activities that are common in most of the communities.

## **5.0 PROJECT ALTERNATIVES**

### **‘No action’ option**

5.1 The road currently provides the only direct and shortest link between Tamale and Wa, the regional capitals of the Northern and Upper West Regions of Ghana respectively. If the ‘no action’ option was chosen, from the economic standpoint and motor traffic and social considerations, the following benefits will be foregone: i) Improvement of the access road; ii) Enhanced economy and gender development in communities along the road; iii) Reduction in travel time and cost; iv) Improvement in drainage and aesthetics; v) Employment opportunities for local residents along the road; vi) Boost in tourism and trading activities; and vii) Improvement in agriculture. The ‘no action’ option was not considered as a viable alternative.

### **Re-Construction of Existing Road**

5.2 The re-construction alternative involves improving the existing surface and geometric alignments as well as rehabilitating culverts of the road to acceptable safety, speed and environmental standards. The proposed road will follow the existing alignment from Ffulso to Sawla. The vegetation along the road, especially the portion separating the Mole National Park and the Kenikeni Forest Reserve would be impacted. The project would however minimize the potential destruction of vegetation. Trees would be planted along the road as part of the project. This alternative represents a more realistic option. The project will bring significant benefits to communities along the road and the general population, while the negative impacts will be managed.

## **6.0 POTENTIAL IMPACTS AND MITIGATION/ENHANCEMENT MEASURES**

### **Positive Impacts**

6.1 The beneficial impacts of the road project include: i) Reduction in travel time and cost; ii) Employment opportunities; iii) Enhanced economy and gender development; iv) Boost to tourism and trading activities; and v) Improvement in agriculture.

6.2 The project will provide an improved road surface which will result in savings on general fuel consumption and reduction in travel time. It will also improve the transportation system along the stretch and open up communities for improved economic activities. For instance, farming communities will be easily accessed to evacuate farm produce. Access to educational, health, socio-cultural activities and administrative facilities will also be improved.

6.3 There is an anticipated significant boost in tourism with the completion of the project. Construction activities are expected to generate about 1500 direct jobs for both skilled and unskilled labour in the communities. Women will be able to engage in income generating activities e.g. restaurants, trading in farm produce, fruits and vegetables along the corridor. Such activities will become more commercialized with the improved access and increased population. Children, especially the school-going, who bear the blunt of dust pollution and risks on the existing dangerous corridor, will travel faster, feel safer and better protected by road safety and traffic management measures.

6.6 The rough nature of the road as it is now leads to longer travel time, increased wear and tear of vehicular parts, and increased emissions, especially greenhouse gases, impacting climate change. The reconstruction of the road will result in reduced travel time and emission (carbon dioxide and other greenhouse gases).

### **Potential Negative Impacts at Construction Phase**

6.7 Earthworks involving excavation, filling and compaction could generate much vibration and particulate/dust. These will be particularly pronounced where machines are old and poorly serviced. The effects will be excessive pollutant emission (e.g. particulate, SO<sub>2</sub> and NO<sub>x</sub>), with accompanying respiratory disorders, especially asthmatic attacks. It could also pose a significant occupational health concern.

6.8 The use of heavy construction machinery e.g. bulldozers, excavators, concrete mixers, graders, etc. will generate considerable noise, which impact will be significant on workers, and also the public in the built-up segment of the corridor.

6.9 A section of the road (41km stretch) separates the Mole National Park and the Kenikeni Forest Reserve. There will be clearing of vegetation (1.5m) on either side to make room for the construction works. Although the density of vegetation is low along the stretch, the impact will nonetheless be significant because the affected areas are statutory reserves.

6.10 There will be potential impacts on cultural/historical resources and tourist sites along the RoW, including the Jintrepe Mass Grave and Larabanga Mystic Stone. Operators of dozers and other trucks with no knowledge of the area could trample on the mass grave, which could lead to conflict with the local traditional leaders and the communities in general.

6.11 The project may attract people seeking employment. This will render the project neighbourhood vulnerable to the spread of STIs/HIV. The influx of migrant workers could also impact negatively on the traditional values and morals of the local people.

6.12 Boulders, rocks and stones will be required for the construction activities. Quarrying will thus be an essential part of the road project (though quarry and other construction materials will be sourced from existing approved sites, as provided in the ESIA). The main impacts of quarrying and transportation of products to project locations include emissions and

air quality impacts, and noise and vibration impacts. The main sources of dust are movement of trucks and the dumping of materials in stockpiles. Dust affects air quality and it is a major source of public and occupational health concern (e.g. silicosis and asthmatic attacks). Noise and vibration will emanate from transportation operations.

6.13 The reconstruction of the road will lead to social and economic impacts. About 15 sheds and 22 buildings, 3 kiosks, 1 wooden structure and 2 economic trees in communities will be affected. The identified project affected persons (PAPs) are 30 males and 13 females. The impacts will include loss of income during the reconstruction period and loss of business goodwill.

### **Potential Negative Impacts in the Operational Phase**

6.14 The operational phase will generate vehicular air emissions (pollutant) from combustion fuel, vehicle exhaust, tyre wear, spills, etc. on the new highway which are significant public health concerns. Improved road quality may also lead to a higher frequency of traffic and increase in speed, posing potential accident risks for vehicles, roadside dwellers and traders, pedestrians (in particular children), and livestock in communities, as well as wildlife crossing the road separating the Mole National Park and the Kenikeni Forest Reserve.

6.15 Increased volume of traffic and elevated economic activities could lead increased volumes of waste generated and corresponding problems of waste management. Waste generation problems could cause nuisance and serve as breeding place for disease causing organisms and choking of drains which may eventually lead to flooding.

6.17 Improvement of road conditions would result in an increased number of persons plying the Ffulso-Sawla route. There would be a higher number of trucks carting goods and farm produce from various communities between the Upper West and Northern Regions and therefore the chance of truck drivers sleeping over in the communities is high. This increases the likelihood of drivers soliciting for sex with women and young girls in the communities, thus increasing the risk of HIV spread and teenage pregnancy cases.

6.18 Increase in economic activities may attract investors to the communities along the road. This may alter the landscape due to the building of new structures such as offices, restaurants, shops, fuel stations, etc.

### **Mitigation Measures**

6.19 Dust suppression will be carried out by water dowsing on the road (especially in communities), and the enforcement of speed limits, regular servicing for all vehicles and equipment implemented. Dust-generating activities will be reduced or suspended during windy conditions. Haulage trucks will be covered with tarpaulin to prevent dust and material escape. During tipping and heaping a system of water sprinkling will be used to suppress dust. Heaped quarry and other materials will be periodically dowsed with water. Haulage will be restricted to day time to prevent noise nuisance to the communities and the high risk of accidents in the night.

6.20 Where applicable, some machinery will be isolated e.g. mixers and generators (shall observe appropriate separation distances from residences). The work schedule of workers will be adjusted to ensure limited exposure time. Ear muffs will be provided to workers. The planting of 20,000 trees along the road in communities will serve as noise barriers to some

extent in helping to attenuate noise impact in the operational phase as well as to replace vegetation that will be cleared.

6.21 Appropriate reflective directional and warning road signs and markings will be provided. In addition, billboards will be erected at either entry point of the 41km stretch separating the Kenikeni Forest Reserve and Mole National Park to warn road users of the possible encounter with wildlife and the need to reduce speed. Also speed control ramps will be constructed at approaches to communities and the Mole National Park and Kenikeni Forest Reserve.

6.22 Arrangements shall be made with the Waste Management Unit of the respective District Assemblies or waste dealers for weekly collection of inorganic wastes generated. Sign posts with a sketch and bearing the inscription “do not litter” shall be posted along the project road to caution the general public against littering.

6.23 Adequate number of road signs will be put in place to warn road users in the approach to bends, curves and communities. Speed limits and Speed rumps will be posted and constructed respectively to check the issue of over speeding within communities. Training will be organized and appropriate PPEs provided and their use enforce for the safety of workers.

6.24 All affected properties have been valued and assessed. Details of extent of dislocation and compensation due are provided in the abbreviated RAP.

## **7.0 ENVIRONMENTAL AND SOCIAL RISK MANAGEMENT**

This section presents the significant environmental and social risks and the measures to manage them.

7.1 The Resident Engineer will enforce speed limit restrictions for all construction vehicles in order to manage traffic risks. Other measures include the use of road diversions, and reflective materials to avoid danger the public and animals. Monitoring would be undertaken by the EPA.

7.2 The Contractor will have the responsibility of ensuring all vehicles and equipments are well-maintained in order to control noise and diesel particulate emissions. All equipments causing excessive noise or emitting smoke shall be replaced or rectified within 2 days. The EPA and the GHA would be responsible for monitoring air quality and noise.

7.3 Management of wildlife and vegetation impacts would be the responsibility of the Environment Officer of GHA and Management of the Mole National Park and the Kenikeni Reserve. Monitoring would also be done for incidents of wildlife knock downs and effectiveness of mitigation measures employed to deal with this.

7.4 The Northern Regional office of the Ghana Tourist Board will be responsible for monitoring the mitigation measures for impacts on cultural and historical sites. Traditional authorities will also be involved to ensure that all relevant customs/ rites are performed to enable the smooth implementation of the project in culturally sensitive areas.

7.5 The Regional Directorate of Water Resources Works and Housing Ministry will conduct the monitoring of water drainage. Proper storage facilities would be provided to ensure that leaks and spillages of oils are prevented. Water conservation measures would be used during the construction phase.

7.6 Substantial amounts of waste are expected to be generated; hence the Contractors will monitor where the waste is disposed off and report to the Project Engineer and EPA through regular reports. Whilst the EPA monitors the proper disposal of waste generated, the three District Assemblies will ensure that proper waste management practices are adhered to in areas under their jurisdiction.

7.7 The three District Assemblies would be required to prepare, or where necessary, update their planning schemes to enable them respond to new developmental projects. In collaboration with the EPA and the GHA, the three District Assemblies would ensure that all future applications for developmental projects meets EA requirements and do not contribute to cumulative landscape impacts.

7.8 Both the Welfare Officer and the Contractors would present quarterly reports to the GHA; stating how categories of people, such as women and indigenes, are being used on the project and the challenges they face.

7.9 The GHA would set up a financial advisory committee which would operate a business advisory centre for PAPs and send reports to the GHA. The GHA would also work in conjunction with active NGOs to conduct free HIV/ AIDS testing every 6 months to determine the prevalence in the communities.

## **8.0 MONITORING PROGRAM**

8.1 Monitoring is designated to check the effective implementation during the construction and operation phases of: i) proposed mitigation measures; ii) requirements specified in the various laws and regulations; iii) commitments of GHA and contractors to effectively implement and follow up these measures; and iv) requirements of the other laws and regulations related to public health, improvement of living conditions of the PAPs, environmental protection, water quality management, sensitive areas protection.

8.2 The monitoring parameters will include: i) road safety measures (adherence to road signs, markings, accidents and traffic diversions; ii) air quality - with focus on PM<sub>10</sub>, TSP, SO<sub>2</sub>, and NO<sub>2</sub>, in the construction and operation phases; iii) noise levels and the provision and use of PPEs; iv) vegetation and wildlife protection; v) disturbance of religious and cultural sites and associated conflicts; vi) occupational health and safety measures (induction, toolbox meetings and the use of PPEs); vii) effectiveness of the drainage system (culverts and drains function) and erosion prevention and control measures; viii) waste disposal strategies and sanitary facilities for workers; ix) reduction in travelling time through surveys; x) employment opportunities for the local community members; xi) visual intrusion, xii) disruption of local economy; and xiii) frequency of HIV/AIDS and STIs awareness programs.

8.3 A Resettlement Monitoring Committee (RMC) will be formed, made up of GHA, a representative of the LVB, the EPA and representatives of PAPs. The RMC will meet monthly to monitor the effects of resettlement of the PAPs. The RMC will be responsible also for the monitoring of the resettlement program including: i) number of PAPs successfully compensated.

8.4 GHA will be responsible for performance and other monitoring activities including: i) negotiation procedures and compensation calculations; ii) reporting on resettlement issues and restoration of livelihoods by the RMC; and v) grievance redress procedure and its functioning and effectiveness of other litigation avoidance measures.

8.5 The GHA and the EPA will be responsible for the implementation of the monitoring measures. GHA will oversee road safety, erosion, drainage measures and HIV/AIDS awareness programs, etc. The EPA will be in charge of air quality/dust generation, noise, wastes, among others. GHA will engage the services of a consultant to assist in GHA's monitoring role to ensure that livelihoods are maintained and or restored. In monitoring displaced persons, the consultant will locate all PAPs, organise follow-up visits and meetings, and monitor PAPs at half yearly intervals till the project is closed.

8.6 The overall monitoring cost for the three monitoring stages is summarized as follows, which includes follow up of mitigation measures, sensitization campaigns, capacity building of the GHA, etc.

	<b>Description</b>	<b>Amount (GH¢)</b>
1	Pre-construction Phase	55,000
2	Construction Phase	820,000
3	Operational Phase	25,000
	<b>Total</b>	<b>900,000</b>

## **9.0 PUBLIC CONSULTATION AND DISCLOSURE**

9.1 Consultations were held with relevant stakeholders to ensure that these groups are given the platform to voice their opinions and concerns. The process required prior disclosure of relevant and adequate project information to stakeholders.

9.2 Public and community consultations were done where discussions/ informal interviews were held with relevant stakeholders on issues such as: project design, project works, environmental and social concerns, ancillary and enhancement works, effects on local economy and resettlement/ compensation issues.

9.3 The communities and groups consulted included the Chiefs and Elders of Sawla, Larabanga, Nabori, Damango, Tailorpe, Bodukura, Busunu and Ffulso; the communities in Ffulso, Damango, Larabanga and Sawla as well as executives and members of youth associations, transport unions, traders association and a physically challenged group.

9.4 Results of the ESIA will be disclosed to the local populations in the project area to enhance transparency and accountability and also to encourage public support and active participation. Twelve copies of the ESIA report would be submitted to the EPA and additional copies would be made available at the Agency's head office and the Northern Regional office for public review and comment.

## **10.0 COMPLEMENTARY INITIATIVES**

10.1 As part of the project implementation, ancillary and enhancement measures that have been proposed for communities along the road corridor are: water supply; support to women's agro-processing activities; rehabilitation of existing schools; rehabilitation of existing healthcare facilities and construction of lorry parks.

10.2 About 15 sheds and 22 buildings, 3 kiosks, 1 wooden structure and 2 economic trees in communities will be affected. The identified project affected persons (PAPs) are 30 males and 13 females. The status of the PAPs, their activities and compensation due them has been presented.

10.3 During consultation with the PAPs, the impacts of the project and proposed mitigation measures were explained to them and they individually gave the assurance that they will cooperate to ensure smooth implementation of the project. Further consultation will be held prior to the payment of compensations to the individual PAPs. They will be notified about compensations due them and where to collect the compensation. They will also be notified of the start date of civil works.

Community		Name	Type of Property	Activity	Estimated Cost (GH¢)
Fufulso	1	Fatawu Koku 'B '	Swish building with aluminium roofing sheets	Petty Trading	2,800.00
	2	Abukari Amarti	"	Petty Trading	2,800.00
	3	Salifu Asumah	"	Seamstress	2,800.00
	4	Sinnakowuli Sulley	"	Petty Trading	2,800.00
	5	Hawa Kototoro	Swish building with aluminium roofing sheets	Petty Trading	2,800.00
	6	Fulera Asumah	Shed	Fruits Seller	200.00
	7	Hawawu Adamu	Shed	Food Seller	200.00
	8	Zenna Aratta	Shed	Fruit Seller	200.00
	9	Jemilla	Wooden Kiosk	Hairdressing	S/A 150.00
	10	Sulemana			15.00
Busunu	11	Ibrahim Ada	Swish building with aluminium roofing sheets	Mosque	3,825.00
	12	Ibrahim Adam	"	Drinking Dar	3,825.00
	13	Anthony Asumah	"	Drinking Dar	3,825.00
	14	Buah Fatawu	"	Carpentry Workshop	3,825.00
	15	Iddrissa Awanso	"	Dwelling House	3,825.00
	16	Nyadia Moro	"	Petty Trading	3,825.00
	17	Boakye Ameyaw	"	Chemical/Provision Shop	3,825.00
	18	Jawula Worfa	"		3,825.00
	19	Tapuwa Sulemana	Shed	Petty Trading	200.00
	20	Awura Kotoche	"		200.00
	21	Seidu Dauda	Shed		200.00
	22	Seidu Kawanyan	"		200.00
	23	Nyadia Moro	"		200.00
	24	Issahaku Yusif	Kiosk		150.00
	25	Bani James	Tree		15.00
Tailorpe	26	Issifu Lansa	Swish building with aluminium roofing sheets	Drinking Bar	
Larabanga	27	Katribu Sumani	Swish building with aluminium roofing sheets	Dwelling & Seamstress	3,150.00
	28	Alhassan Dramani	"	Dwelling House	3,150.00
	29	Seidu Abudu	"	Dwelling House	3,150.00
	30	Lansani Salia	"	Provision Shop	3,150.00
	31	Issahaku Abubakari	"	Dwelling House	3,150.00
	32	Asane Dauda	"	Dwelling House	3,150.00
	33	Daare Mahama	"	Dwelling House	3,150.00
	34	Alhaji Idrissa Bukari	"	Dwelling House	
	35	Seidu Memuna	Shed	Bread Seller	300.00
	36	Abu Salia	Shed	Kenkey Seller	300.00
	37	Bukari Mahamadu	Shed		200.00
	38	Iddrisu Asambilla	Shed		200.00
	39	Alhaji Makama Bawa	Shed		200.00
	40	Abutu Kasim			3,500
	41	Barekesu Asumah	Kiosk		S/A 150.00
<b>Total GH¢</b>					<b>80,280</b>

## **11.0 CLIMATE CHANGE**

11.1 The proposed road design incorporates various considerations aimed at adapting to climate change especially to extreme events such as droughts and floods in the project area: (i) selection of appropriate type of pavement; (ii) proper design of drainage facilities; (iii) proper level of road embankment; (iv) provision of dugouts and boreholes where appropriate.

11.2 Although there is no baseline data on CO<sub>2</sub> emission in the project area, it is expected that in the long run, CO<sub>2</sub> emission into the atmosphere increases due to an increase in traffic on the road. Measures aiming at mitigating climate change include: (i) planting of 20,000 trees made of various indigenous species; (ii) proper reinstatement of borrow pits; (iii) minimizing of bush clearing during the construction works; (iv) sensitization of communities and youth on climate change related topics such as bush fires, conservation agriculture, etc.

## **12.0 CONCLUSION**

The re-construction of the road would come with significant socio-economic benefits as well as adverse impacts and hence adequate measures have been recommended to make the project environmentally sustainable. The project is socially acceptable and deemed environmentally sound with the incorporation of the relevant mitigation and enhancement measures into the project design and implementation.

## REFERENCES AND CONTACTS

### List of documents consulted

- African Development Bank's (2003). Environmental and Social Impact Assessment Guidelines
- Canter, L. W. (1997): Environmental Impact Assessment, McGraw-Hill, New York.
- EPA (2005): Ghana State of the Environment Report 2004, EMPA, Accra, Ghana
- Ghana Statistical Service (2002): 2000 Population & Housing Census, Special Report on Urban Localities, GSS, Accra, Ghana
- Ghana Statistical Service (2002): 2000 Population & Housing Census, Summary Report on Final Results, GSS, Accra, Ghana
- Government of the Republic of Ghana; Ministry of Transportation; Department of Urban Roads: Specifications for Road Maintenance Works, Accra 1996
- Ministry of Transportation, Ghana (2007): Environmental and Social Management Framework for the Transport Sector Development Program
- Ministry of Transportation, Ghana (2007): Resettlement Policy Framework for the Transport Sector Development Program
- Republic of Ghana (2002): Environmental Assessment (Amendment) Regulations, LI 1703
- Republic of Ghana, (1999) Environmental Assessment Regulations, LI 1652
- Republic of Ghana, (1994) Environmental Protection Agency, Act 490
- World Bank, Operational Directive 4.20, revised in November 1997 as OP 4.01 Environmental Assessment.
- World Bank (2000): Operational Directive (OP4.12), Involuntary Resettlement - The World Bank Operational Manual

For further information, contact:

1. Ms. L. EHOUMAN, Transport Economist, OITC.1, Tel : + 216 71103442, [l.ehouman@afdb.org](mailto:l.ehouman@afdb.org)
2. Mr. M. KINANE, YPP, OITC.1, Tel.: 216-7110-2933, [m.kinane@afdb.org](mailto:m.kinane@afdb.org)
3. Mr. M. MBODJ, OIC, OITC.1, Tel.: 216-71102348, [m.mbodj@afdb.org](mailto:m.mbodj@afdb.org)