CROSS RIVER STATE COMMUNITY AND SOCIAL DEVELOPMENT AGENCY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR BEMI BRIDGE PROJECT IN OKWANGWO DIVISION OF CROSS RIVER NATIONAL PARK

FINAL REPORT

FEBRUARY 2014
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CBD</td>
<td>Conservation on Biological Diversity</td>
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<tr>
<td>CDD</td>
<td>Community Driven Development</td>
</tr>
<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species</td>
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<tr>
<td>CRSCSDA</td>
<td>Cross River State Community and Social Development Agency</td>
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<td>CSDP</td>
<td>Community and Social Development Project</td>
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<tr>
<td>CRNP</td>
<td>Cross River National Park</td>
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<tr>
<td>EO</td>
<td>Environmental Officer</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>ESMF</td>
<td>Environmental and Social Framework</td>
</tr>
<tr>
<td>FGD</td>
<td>Focused Group Discussion</td>
</tr>
<tr>
<td>FMEnv</td>
<td>Federal Ministry of Environment</td>
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<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
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<tr>
<td>RPF</td>
<td>Resettlement Policy Framework</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>World Bank</td>
<td>World Bank</td>
</tr>
<tr>
<td>WCS</td>
<td>Wildlife Conservation Society</td>
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<tr>
<td>WWF</td>
<td>World Wide Fund for nature</td>
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</table>
EXECUTIVE SUMMARY

Background

The Cross River State Community and Social Development Agency (CR-CSDA) is embarking on the construction of a bridge across Bemi River in Okwangwo Community, Boki LGA in Cross River State. The Bemi bridge is the result-oriented outcome of deliberations between the Okwangwo Community and CR-SCSDA, Ministry of Environment, Forestry Commission and the Cross River National Park for which approval was duly received. The construction of the Bemi Bridge over the Bemi River is directly based on the community’s requirement for a priority project in the area aligned with Okwangwo community-driven development plan aimed at fostering the accessibility of the people to social and infrastructural services.

CR-CSDA is an implementing agency for the State under the World Bank Funded Community and Social Development Project (CSDP) in Nigeria. The CSDP development objective is to sustainably increase access of poor people to social and natural resource infrastructure services.

Aim of the ESIA study

The aim of the ESIA study is to assess the environmental and social impacts of the Bemi Bridge on the sensitive ecological National Park site and to establish the impact of the Bridge on rural community socio-economic development of the area. The ESIA will establish modalities for environmental and social sustainability of the project taking into consideration Nigerian extant laws and the World Bank Operational Policies.

Objectives of the ESIA study

- To conduct an Environmental and Social Assessment of the Bemi Bridge Project in order to identify and assess the environmental and social impacts of the bridge on the National Park conservation vis a viz impacts on wildlife, endangered species of flora and fauna and rural enclaves in the area.
- Assess the impact of the bridge project on women and vulnerable group
- To ascertain through engagement and participation the views and concerns of all stakeholders on the impacts of the Bridge project
- Establish and benchmark the existing state of the environment and identify sensitive components of the existing environment within the project area and area of influence.
- To collect baseline socio-economic data of the project community
• Assist project proponent by identifying those aspects of location, construction and operations, which may cause adverse environmental, social, health and economic effects, including strong focus on land issues - ownership, tenure, conflict;

• Recommend measures to avoid and mitigate identified adverse impacts

• Identify existing and expected environmental regulations that will affect the development and advise on standards and targets;

• Prepare cost effective ESMP including budget for mitigating of impacts and a detailed monitoring plan

Legal and Legislative Framework

The preparation of this ESIA was guided by the World Bank operational policies, the Nigeria extant laws on environmental protection including EIA Act 1992, the Forestry Act 1958, Water Resources Act 1993 and Land Use Act 1978. International laws and conventions on biodiversity and conservation which Nigeria is signatory were also consulted.

Description of the Bemi Bridge Location in Okwangwo

The Bemi Bridge location has the following attributes:

• located over River Bemi within the buffer zone of the Okwangwo Division of the Cross River National Park on longitude 9010°54.8’ East and Latitude 06023°23.0’ North at an altitude of 136m above sea level

• The Okwangwo Division has an area of about 920 km2 at an altitude of 150 - 1,700m above sea level.

• The climate is seasonal-tropical, having two distinctive seasons: the dry and the rainy seasons. Rainfall ranges between 2,500m to 4,500mm per annum (Obot, 1996).

• The terrain is undulating and steeply sloping in some areas, reaching a height of between 150 to 1700m above the sea level.

• The park area is drained by many rivers such as Bemi, Oyi, Anyibiar, Kanton, Matche and Anyukwo rivers among others.

• The soil in the area is derived from deep weathering of the basement complex system.

• The soils are classified as sandy-loamy and clayey-loamy depending on the stage of pedogenic development (Soil survey staff, 1992, 1998, Fitzpatrick, 1980).

• The vegetation is evergreen tropical rain forest with divers trees species reaching the height of 40 to 45m and as well as species of mammals, reptiles and birds.

• Three settlements are located within the core of the National Park and they include Okwangwo with a population of 1,990 person; Okwa1 with a population of 868 persons while Okwa 11 has a population of 1551 persons (National population Commission, 1991 projected to 2013).
Public and Stakeholder Consultation

Primary stakeholders identified were the Okwangwo and Okwa communities, the Ministry of Environment, Cross River National Park, Forestry Commission and Wildlife Conservation Society. All these groups were duly consulted and engaged in robust discussions in the identification of their perceptions, concerns and solutions to adverse impacts of the project. Women and youths in the project communities fully participated in the public consultation processes. Letters of clearance/permit were obtained from relevant stakeholder agencies as show of support for the project.

The outcome of the consultations in addition to field and laboratory data analysis gave rise to impact identification and mitigations.

Impacts of the Bemi Bridge construction

The impacts of the project range from positive to negative impacts. It was not inconceivable that creating an access way in a forest reserved area would be associated with potential negative impacts such as poaching, hunting, logging, land encroachment, and loss of flora and fauna. However, these impacts are reversible and subject to management control through the Environmental and Social Management Plan hereby developed for this project.

Positive impacts of the project are overwhelming and includes but not limited to the following:

- Improved community access to movement to farm and neighboring villages across the Bemi River
- Incentive to increased farming and income
- Increased capacity of the Cross River National Park to enforce Park conservation laws
- Temporal employment of locals during Bridge construction
- A panacea to the plight of women and children who are worse vulnerable to the risk of water level rise at Bemi River in rainy seasons
- Access provided by the construction of the bridge will enhance park protection activities viz-a-viz increase patrols and conservation education activities to the enclave communities

Mitigation Measures

Some of the mitigation measures identified to address the adverse impacts of the project include:

- Conservation enlightenment/education to the rural enclave
· Cooperation and partnership with community leaders to identify and punish those who would go against the conservation laws
· Demarcation of the forest farming area from the preserved area
· Construction of more number of ranger posts to improve patrol and monitoring
· Constructing of railing on both lengths of the bridge to avert risk of fall

Redesigning of the piers footing of the bridge from rectangular slab to triangular and/or burying the footing under the water bed to avoid siltation

**Environmental and Social Management Plan (ESMP)**

ESMP was developed to address the adverse impacts of the project by factoring them into project plan and design with a view to detailing mitigation measures, cost of mitigation and monitoring, and responsibilities for implementation and monitoring. Costing for this ESMP is to the sum of **Four Million, Six Hundred and Fifty Thousand Naira (N4,650,000)**; made up of:

<table>
<thead>
<tr>
<th>Implementation of mitigation measures</th>
<th>N2,600,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring &amp; Conservation Enlightenment/Education</td>
<td>N2,050,000</td>
</tr>
<tr>
<td>Training : (There is capacity in CRSCSDA and CRNP)</td>
<td>-</td>
</tr>
</tbody>
</table>

**Capacity Need**

Assessment of capacity for implementing the ESMP shows that CRSCSDA and CRNP being the main implementing agencies have capacity to implement the ESMP. However, a sensitization programme/education is required for the community members on nature conservation

**Disclosure**

This ESIA was prepared in line with the guidelines of the ESMF of CSDP which is in adherence to the disclosure policies of the World Bank and the Federal Ministry of Environment. It was equally prepared in consultation with stakeholder agencies such as Ministry of Environment, Forestry Commission, Cross River National Park Wildlife Conservative Society and the enclave communities of project area of influence.

Therefore, all reasonable efforts must be made in accordance with the law to disclose/display the ESIA report in strategic accessible places to the stakeholders for their accessibility and comments. It should also be disclosed at the Ministry of Environment and at the World Bank infoshop.
CHAPTER ONE: INTRODUCTION

1.1 Background

The Cross River State Community and Social Development Agency (CR-CSDA) is embarking on the construction of a bridge across Bemi River in Okwangwo Community, Boki LGA in Cross River State aimed at easing access of people from the enclave communities of Okwangwo, Okwa 1 and Okwa 2 to markets and opportunities that exist outside their area.

The Bemi bridge is the result-oriented outcome of deliberations between the Okwangwo Community and CR-SCSDA, Ministry of Environment, Forestry Commission and the Cross River National Park for which approval was duly received. The construction of the Bemi Bridge over the Bemi River is directly based on the community’s requirement for a priority project in the area aligned with Okwangwo community-driven development plan aimed at fostering the accessibility of the people to social and infrastructural services.

CR-CSDA is an implementing agency for the State under the World Bank Funded Community and Social Development Project (CSDP) in Nigeria. The CSDP development objective is to sustainably increase access of poor people to social and natural resource infrastructure services. Therefore, the CSDP supports (i) the empowerment of communities to develop, implement and monitor micro social infrastructure projects including natural resource management interventions (ii) strengthen the skills and capacity of LGA and sectoral public agencies to support communities and build a partnership between them. The CSDP in Nigeria has three components. These are Community-Driven Investment Component, LGA/Sectoral Ministries Capacity and Partnership Building Component, and Coordination and Program Support Component. The first two components are managed at the State level by State Agencies (CSDAs) while the third component is managed by a Federal Project Support Unit (FPSU), supervised by the Federal Ministry of Finance.

The activities of the CSDP micro driven projects triggered World Bank Operational Policy 4.01 (Environmental Assessment) and Operational Policy 4.12 (Involuntary Resettlement). Based on this, CSDP had prepared and disclosed in Nigeria and at World Bank info shop in fulfillment of the World Bank requirement for project appraisal two safeguards frameworks: Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) respectively. These framework documents were prepared and disclosed when the sub-projects and locations were not known. The ESMF aimed at providing guideline to project sponsors on the generic nature of environmental and social impacts, management plans, and indicative cost of mitigation and responsibilities so as to effectively plan and manage environmental and social concerns potential in the project. The objective of the RPF was to set out the resettlement and compensation principles, organizational arrangements and design criteria to be applied to meet the needs of the people who may be affected by the project, when project activities are identified.
Now that this sub-project (Bridge) has been identified and location known the appropriate instrument for site specific environmental and social study is the Environmental and Social Impact Assessment (ESIA).

1.2 Aim of the ESIA
The aim of the ESIA study is to assess the environmental and social impacts of the Bemi Bridge on the sensitive ecological National Park site and to establish the impact of the Bridge on rural community socio-economic development of the area. The ESIA will establish modalities for environmental and social sustainability of the project taking into consideration Nigerian extant laws and the World Bank Operational Policies.

1.3 Objective of the ESIA
The specific objectives of the proposed studies are:

- To conduct an Environmental and Social Assessment of the Bemi Bridge Project in order to identify and assess the environmental and social impacts of the bridge on the National Park conservation vis a viz impacts on wildlife, endangered species of flora and fauna and rural enclaves in the area.
- Assess the impact of the bridge project on women and vulnerable group
- To ascertain through engagement and participation the views and concerns of all stakeholders on the impacts of the Bridge project
- Establish and benchmark the existing state of the environment and identify sensitive components of the existing environment within the project area and area of influence.
- To collect baseline socio-economic data of the project community
- Assist project proponent by identifying those aspects of location, construction and operations, which may cause adverse environmental, social, health and economic effects, including strong focus on land issues - ownership, tenure, conflict;
- Recommend measures to avoid and mitigate identified adverse impacts
- Identify existing and expected environmental regulations that will affect the development and advise on standards and targets;
- Prepare cost effective ESMP including budget for mitigating of impacts and a detailed monitoring plan

1.4 Scope of Work
The Consultant is required to carry out the following:

- Project description – provide information about location of project, process description, design basis, measurements, pre-construction activities and construction activities as well as the vegetation, climate, soil, topography and geological base of the site.
• Identify existing and expected environmental regulations that will affect the development,
• Identify the existing and/or potential environmental impacts of the sub-project and all activities capable of interacting with the environment (dredging, drilling, excavation, etc) and a projection of their impacts in the short and long term bases
• Carry out a detailed social survey (baseline) of the adjoining communities and develop a detailed socio-economic assessment as part of the ESIA that identifies social impacts and provides mitigation measures
• Assess the impact of the bridge project on women and vulnerable group
• Access the nature of land use, land holding right and the right of women to land use and decision making in the community
• Describe alternatives examined in the course of developing the project and justification for choice of alternative chosen taking into consideration siting and design, sensitivity of project on flora and fauna conservation, social development and Park management operations
• Undertake public consultation that will engender the participation and concerns of all stakeholders in the project area
• Provide mitigation measures to adverse impacts, and develop an Environmental and Social Management Plan (ESMP) for the project including cost for implementing the ESMP
• Identify capacity need/availability to manage the identified mitigation and monitoring plans

1.5 Technical Approach and Methodology
The ESIA approach and methodology were consistent with the World Bank ESIA guideline and EIA regulation process of Nigeria which encapsulate in literature review, initial environmental evaluation, screening, scoping, stakeholder consultation, impact identification, analysis and projection, mitigation measures and development of environmental and social management plan.

Specifically the following approach and methods were followed in the ESIA study:

1.5.1 Pre-Project Planning Meeting with Project Proponent
Following the contract negotiation a meeting was held between the consultant and the CR-CSDA. This meeting discussed the preliminary elements of the study, deliverables and timelines, and the outcome was the harmonization of the ESIA ToR expectations, the identification of primary and secondary stakeholders and the collection of relevant materials.

1.5.2 Data collection and literature review
This entailed the collection of relevant materials from CR-CSDA, Cross River National Park, World Bank, Ministry of Environment and Wild life Conservation Society. The documents
reviewed included the EIA extant laws of Nigeria, the ESIA draft report for Bemi Bridge earlier prepared by the CR-CSDA, ESIA of the Cross River State Northern Town Project under the NUWSRP, the ESMP of the Construction of Alternative Bridge 2 in Emene Enugu State, the ESMF report and RPF for CSDP in Nigeria.

1.5.3 Stakeholder and Public Consultation

The stakeholders identified and consulted include the enclave communities of Okwangwo, Okwa 1 and Okwa 11, the Cross River National Park, the Forestry Commission and the Wildlife Conservation Society and the Ministry of Environment.

1.5.4 Data Collection, Sampling and Field Methods

- Soil Sample Collection

Soil samples were collected from the bank of River Bemi and from the adjoining forest land within 1km radius of the project site. Samples were collected using a manual soil auger. Surface soil samples were collected within a soil depth of 0-15cm; while sub-soil samples were collected within a soil depth of 15-30cm. Samples for physico-chemical analysis were collected into coded plastic bags after being wrapped in aluminium foil. Soil samples were placed into containers made of high UV (Ultra Violet) resistant material. A total of 5 soil samples were collected including topsoil and sub-soil.

- Surface Water Sample Collection

Water samples were collected using sterile 100ml bijou bottles (made of high UV resistant material). Fast changing physico-chemical parameters such as Temperature, pH, DO, Conductivity and TDS were measured in-situ using an in-situ water analyzer. Samples for heavy metals and BTEX studies were preserved with nitric acid (HNO₃). Hanna HI 991300 PH/EC/TDS Meter was used for water sample analysis (In-situ).

- Air Quality and Noise Sample Collection

Air samples were collected using a Testo 350 XL while Noise levels were measured using a Testo 815 Noise meter. Measurements were taken at the Bemi bridge location.

- Fauna Studies

The animal life studies concentrated on the identification of the species of existing domestic and wild animal life in the study areas. A systematic random sampling approach was adopted to select on-site domestic animals and these were physically examined.

Two methods were adopted to assess the fauna resources of the area;

An Extensive literature search was conducted on the fauna and conservation activities of the locations to obtain background information.
Field observations and oral guided interviews were conducted on the forestry Commission and residents within and around the project area (domestic and wild).

- **Vegetation Studies**

Vegetation studies were carried out in order to understand the existing nature of the vegetation and crops, including the species composition, diversity and population of plant species as well as pathology.

Other parameters such as abundance, height and diversity were also appropriately assessed.

**1.5.5 Socio-economic Studies**

The following broad aspects were undertaken:

- Description and review of the existing baseline socio-economic variables and conditions in the project area,
- cultural organization,
- demographic categorization,
- gender composition and rights,
- vulnerability study and
- Consultation with stakeholders.

The methods used in the above socio-economic aspects are as follows:

**A. Participatory Rural Appraisal**

PRA methodologies and techniques were used to generate relevant data on natural resource context and use systems, socio-economic attributes and cultural practices as well as health care and forest land use patterns, tenure and cropping system, wildlife resources, income and occupational structures, harvesting and community perception of the bridge. The methods adopted included:

(i) **Focused Group Discussion (FGD):** This methodology was used alongside with checklist which serves as a guide. The FGD captured different groups in the community such as the Elites; Chiefs and Elders; Women group; the Youths and other sub-groups including Farmers, Hunters and NTFP collectors. The method was used to elicit information on nature of economic activities carried out by the different groups, health issues and diseases, health facilities among others. Also, issues bordering on perception of the people on the benefits of the bridge were also elicited.

(ii) **Participatory Mapping:** This was used mainly to demarcate community land uses, resource area map, hunting grounds and boundary.
(iii) **Transect walk:** The walk across the area was to assess the level of impact in the study area, farming systems, crop types.

(iv) **Key Informant Interview:** This was carried out to elicit useful information on beliefs and taboos of the community, policies, and confirm other information from other groups.

(v) **Direct field inventory and measurements:** This was to generate biophysical baseline information on vegetation, species composition, soil characteristics, resources, farming systems, cropping pattern, health facilities etc.

*B Socio-Economic Survey*

The adoption of this survey was for collection of data on land use activities, socioeconomic conditions, demographic characteristics, settlement and settlement pattern, Identification of existing income distribution, Educational and social structure.

(i) **Questionnaire Survey:** The socio economic and health impacts assessment was carried out using structured questionnaire. The research adopted the survey design where 100 copies of questionnaire were drawn and administered to 100 randomly selected respondents in the three enclave communities. The questionnaire was both open and close-ended in nature as to get objective and free opinions from the respondents.

1.6 **The ESIA Structure**

- The ESIA Structure and Content is highlighted below
- Chapter 1: Introduction
- Chapter 2: Legal and Administrative Framework
- Chapter 3: Project Description and Analysis of Alternatives
- Chapter 4: Description of the Project Area and Baseline Studies
- Chapter 5: Potential Impacts and Mitigation Plan
- Chapter 6: Environmental and Social Management Plan
- Chapter 8: Public Consultation
- References
- Annexes
CHAPTER TWO: POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

2.1 Introduction
This chapter seeks to provide an overview of Nigerian national environmental legislations and policies linking these with other institutional framework policies, and identifying World Bank safeguards policies that are triggered by this project. Uncovering these legislations will help the proponent to demonstrate commitment to the tenets and principles of the applicable policies and legislations, and will also serve as a basis in monitoring and auditing of compliance of the project to regulatory standards.

2.2 Administrative Framework
In Nigeria, the power of regulation of all environmental matters is vested in the Federal Ministry of Environment (FMENV), hitherto, the now defunct Federal Environmental Protection Agency (FEPA) which was set up by Act 88, of 1988).

The act establishing the Ministry places on it the responsibility of ensuring that all development and industry activity, operations and emissions are within the limits prescribed in the National Guidelines and Standards, and comply with relevant regulations for environmental pollution management in Nigeria as may be released by the Ministry.

In Part III of the Act 88, the State Governments are encouraged to set up “their own State Environmental Protection Agencies (SEPAs) for the purpose of maintaining good environmental quality in the area of related pollutants under their control.” Pursuant to this, the Cross River State Environmental Protection Agency Law was established in 1996.

The SEPAs are charged with the responsibility of providing decent, orderly and reasonable conducive environment for habitable society, as contained in the assignments of Ministerial responsibilities. Inter alia, the SEPAs are empowered to give direction to all issues concerning the environment, monitor and control pollution and the disposal of solid, gaseous and liquid wastes generated by various facilities in the states.

Some of the functions of the SEPAs include:

- Liaising with the Federal Ministry of Environment, FMENV to achieve a healthy or better management of the environment via development of National Policy on Environment
- Responsibility for monitoring waste management standards,
- Responsibility for general environmental matters in the State, and
- Monitoring the implementation of EIA studies and other environmental studies for all development projects in the State.

Largely, the federal legislation serves as the benchmark in the execution of standards in the states. Notably, the Federal Ministry of Environment provides EIA guideline and procedures. It has the overarching responsibility of approving EIA project proposals, report reviewing, public disclosure and certification.

### 2.2.1 Environmental Impact Assessment Act 1992

The EIA Act No of 86 of 1992 makes EIA mandatory for any major development project likely to have adverse impacts on the environment and prescribes the procedure for conducting and reporting EIA’s. The schematic presentation of the EIA procedure in Nigeria is presented in Figure 2.1.

**Figure 2.1: Nigerian EIA Process Flow Chart**

(EIA Procedural Guidelines, 1995)
2.2.2 Forestry Act 1958

This Act of 1958 provides for the preservation of forests and the setting up of forest reserves. It is an offense, punishable with up to 6 months imprisonment, to cut down trees over 2ft in girth or to set fire to the forest except under special circumstances.

2.2.3 Water Resources Act 1993, No.101

This act is to promote the optimum planning, development and use of Nigeria’s water resources and other matters connected therewith. The right to the use and control of all surface and groundwater and of any watercourse affecting more than one State as described in the Schedule to this Act, together with the bed and banks thereof, are by virtue of this Act and without further assurance vested in the Government of the Federation for the purposes of:

- promoting the optimum planning, development and use of Nigeria’s water resources;
- ensuring the co-ordination of such activities as are likely to influence the quality, quantity, distribution, use and management of water;
- ensuring the application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources; and,
- facilitating technical assistance and rehabilitation for water supplies.

2.2.4 Land Use Act of 1978

The land-use Act of 1978 states that “…It is also in the public interest that the rights of all Nigerians to use and enjoy land in Nigeria and the natural fruits thereof in sufficient quality to enable them to provide for the sustenance of themselves and their families should be assured, protected and preserved’. This implies that acts that could result in the pollution of the land, air, and waters of Nigeria negates this decree, and is therefore unacceptable.

Furthermore, the Land Use Act of 1978 (modified in 1990) remains the primary legal means to acquire land in the country. The Act vests all land comprised in the territory of each state of the Federation in the Governor of the state and requires that such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act.

According to the Act, administration of land area is divided into urban land, which will be directly under the control and management of the Governor of each State; and non-urban land, which will be under the control and management of the Local Government. State Governors are given the right to grant statutory rights of occupancy to any person or any purpose; and the Local Government will have the right to grant customary rights of occupancy to any person or organization for agricultural, residential and other purposes.

2.2.5 International Laws and Conventions

- United Nations Convention on Biological Diversity
This convention was signed into law during the Rio Earth Summit in 1992. The convention places general obligations on countries to observe sustainable use and equitably share the plants and animals of the earth.

- **United Nations Convention on Climate Change**

The convention on the climate change was signed in 1992 during the Rio Earth summit but put into force in 1994. The convention calls on developed countries and economies in transition to limit her emissions of the green house gases which cause global warming, although it does not impose mandatory emissions on developing countries.

- **Convention to Regulate International Trade in Endangered Species of Fauna and Flora**

This convention was signed into law in 1973 during the Washington summit and restricts the trade of fauna and flora species termed as endangered organisms.

- **Convention on Conservation of Migratory species of Wild Animals**

The Convention on Migratory Species is a Multilateral Environmental Agreement (MEA), signed in 1983. The central objective of the treaty under the aegis of the United Nations Environment Programme (UNEP) is largely to foster close cooperation on the conservation of migratory species between the countries through which these animals travel on their annual journeys. Among the species that do so and that are listed on the Convention’s Appendices are many marine mammals, fish and seabirds. In addition, the treaty promotes addressing adverse anthropogenic impacts on migratory species in close liaison with numerous international bodies concerned with the conservation and use of marine and arctic migratory species; and control the impact of man-made noise pollution on marine species through the application of appropriate mitigative measures to prevent impacts in areas known or suspected to be important habitat to sensitive species. The construction of the Bemi Bridge project is claimed by antagonists of the bridge to contravene this treaty to which Nigeria is a signatory. Protagonists opting for infrastructural development reject that claim and do not consider that the bridge construction violated any provision of the convention.

- **The Universal Declaration of Human Right 1948**

The General Assembly of the United Nations adopted and proclaimed the Universal Declaration of Human Rights which finds application in Nigeria through the African Charter on Human and Peoples' Rights (Ratification and Enforcement) Act Chapter A9 (Chapter 10 LFN 1990) (No 2 of 1983) of Laws of the Federation of Nigeria 1990 wherein everyone has the right to a standard of living adequate for the health and well-being of
himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. This is viewed by some as basis for protecting the well-being of individuals and vulnerable groups in any environment.

2.2.6 World Bank’s environmental and social guidelines

The World Bank's environmental and social safeguard policies are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for bank and borrower staff in the identification, preparation, and implementation of programs and projects.

The effectiveness and development impact of projects and programs supported by the Bank has substantially increased as a result of attention to these policies.

Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations.

The Bank requires environmental assessment (EA) and Social Assessment of projects proposed for Bank financing to help ensure that they are both socially and environmentally sound and sustainable, and thus to improve decision making.

The Bank has twelve safeguards policies and these are:

- OP 4.00 Use of Country Systems
- OP 4.01 Environmental Assessment;
- OP 4.04 Natural Habitats;
- OP 4.36 Forests;
- OP 4.09 Pest Management;
- OP 4.11 Physical Cultural Resources
- OP 4.37 Safety of Dams;
- OP 4.12 Involuntary Resettlement;
- OP 7.50 Projects on International Waterways;
- OP 7.60 Projects in Disputed Areas, and
- Access to Information Policy

Aside the Use of Country System and Access to Information Policies, other World Bank operational policies triggered by the Bemi Bridge Project are discussed as follows:
a) OP4.01: Environmental Assessment

Environmental Assessment to the likely potential effects of any project is a legislative requirement. Hence, this safeguard is triggered as the Environmental and Social Impact Assessment of the Bemi Bridge will serve the purpose of evaluating the potential outcome that is applicable within the ecologically sensitive environment of the Cross River National Park.

b) OP 4:04 Natural Habitats

This Safeguard Policy is concerned with ensuring the protection, maintenance and rehabilitation of natural habitats. It provides that the Bank will not support projects that involve the significant conversion or degradation of critical natural habitats. OP 4:04 is applicable to the Bemi Bridge, Okwangwo as the project region is under the protective status of the National Park Act which provide for maintaining the natural habitats of the environment.

c) OP 4:36 Forests

This Safeguard Policy with the sustainable use of forests and the protection of the local and global environmental role of forests. OP 4:36 is applicable to the Bemi project as natural forests occur in the target areas of the bridge project.

Nigeria EA Guidelines and World Bank EA Guidelines

The Environmental Impact Assessment Act No. 86 of 1992 requires that development projects be screened for their potential impact. Based on the screening, a full, partial, or no Environmental impact assessment may be required. Guidelines issued in 1995 direct the screening process.

According to these guidelines,

**Category I** projects will require a full Environmental Impact Assessment (EIA).

**Category II** projects may require only a partial EIA, which will focus on mitigation and

Environmental planning measures, unless the project is located near an environmentally sensitive area—in which case a full EIA is required.

**Category III** projects are considered to have “essentially beneficial impacts” on the environment, for which the Federal Ministry of the Environment will prepare an Environmental Impact Statement.
With regard to environmental assessment, the Bank has also categorized projects based on the type of EA required, namely:

**Category A** - projects are those whose impacts are sensitive, diverse, unprecedented, felt beyond the immediate project environment and are potentially irreversible over the long term. Such projects require full EA.

**Category B** - projects involve site specific and immediate project environment interactions, do not significantly affect human populations, do not significantly alter natural systems and resources, do not consume much natural resources (e.g., ground water) and have adverse impacts that are not sensitive, diverse, unprecedented and are mostly reversible. Category B projects will require partial EA, and environmental and social action plans.

**Category C** - Projects are mostly benign and are likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project, although some may require environmental and social action plans.

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

This World Bank categorization (A, B, & C) corresponds in principle with the Nigeria EIA requirements of Category I, II and III, which in actual practice is done with regard to the level of impacts associated with a given project. Notably, the World Bank EA operational procedures and the Nigeria EIA guideline/requirements are similar in the objectives of good practice as both agree in the following:

- Early consideration of environmental and social issues (starting at the screening stage);
- Identification and early consultation with stakeholders;
- Prevention of adverse impacts through the consideration of feasible alternatives; and
- Incorporation of mitigation measures into planning and (engineering) design.

Although both regulatory positions are similar, in the event of divergence between the two, the World Bank safeguard policy shall take precedence over Nigeria EA laws, guidelines and or standards.
CHAPTER THREE: PROJECT DESCRIPTION AND ANALYSIS OF ALTERNATIVES

3.1 Project Description
The Bemi Bridge is located over River Bemi at the buffer zone of the Okwangwo division of Cross River State National Park. Other opinions are that the exact location of the Bemi River is at the boundary of the National Park to the Okwangwo Division of the Cross River National Park. However, the site is located on longitude 9°10’54.8” East and Latitude 06°23’23.0” North at an altitude of 136m above sea level.

![Figure 3.1: Bemi River Site of the Bridge Project](image)

3.2 Overview of the Okwangwo Park
The Okwangwo National Park is one of the seven existing Parks under the Nigeria National Park Service. The Okwangwo National Park has the statutory responsibility to preserve, enhance, protect and sustainably manage vegetation, plants and wildlife in its territory in order to build an ecologically and geographically balanced network of protected areas under the jurisdiction and control of the Federal Government. Section 20 (1) of the National Park Service Act provides that “The ownership of every wild animal and wild plant existing in its natural habitat in a National Park and anything whatsoever, of biological, geomorphological or historical origin or otherwise, existing or found in a National Park is hereby vested in the Federal Government and subject to the control and management by the Federal Government for the benefit of Nigeria and mankind generally.”

The project area has the following attributes:
• Seasonal-tropical climate, having two distinctive seasons: the dry and the rainy seasons
• Rainfall ranges between 2,500m to 4,500mm per annum.
• Drained by many rivers such as Bemi, Oyi, Anyibiar, Kanton, Matche and Anyukwo rivers among others.
• The soils are classified as sandy-loamy and clayey-loamy

3.3 Measurement Attributes of the Bemi River Bridge

The measurement attributes of the bridge are:

• Bridge Span 25.7m
• Carriageway 3.4m
• Height 3.2m
• Truck Barrier 2.4m

The activities provided for in the process of its construction include:

Preliminary Activities

• Diversion of flow to create dry island for construction of intermediate pier and temporary access road
• Erecting of temporary shade for store and site office to allow for progress photographs and video coverage reports
• Erecting of Sign Board and road sign post
• Recruitment of Engineers and skilled labour services (Carpenter, Fitters and Masonry)

Substructure Excavation/Earth Works

• Clearing vegetable topsoil not less than 150mm depths from site and castaway ready for bridge setting out
• Excavation of materials except rock for all foundations
• Excavation in rock and for bounders exceeding 0.04m³
• Employment of skill labour in earthwork to fill back of abutment and approaches

Concrete works

• Provision of mix and place mass concrete blinding grade 12.5 to bottom of piers, abutments and wing walls.
• Provide, mix and place to grade 30 concrete in foundations.
• Provision of mix and place grade 30 concrete in abutments, wing wall and piers.

Form Work

• Provision of place and fix wrought form work in abutments/piers foundation.
• Provide and fix 75mm dia pvc pipes as weep holes abutments and wing walls
Reinforcement

- Provide, place and fix high tensile steel reinforcement in foundations
- Provide, place and fix mild steel / high tensile steel reinforcements to abutments / wing walls and piers

Beam and deck Concrete works

- Provide and place grade
- Provide and place grade 35 concrete in beams and deck/transit slabs.

Form Work

- Provide and fix wrought form work to beams and transit slabs and deck

Reinforcement

- Provide and fix high yield tensile and mild steel reinforcement to Beams and deck
- Direction of river channel

![Figure 3.2: A view of the Bemi Bridge showing height restriction bars](image-url)

3.4 Analysis of Project Alternatives

In the context of this ESIA, analysis of project alternatives refers to the performance of the natural and socio-economic resources with or without the project or with or without the implementation of the measures of this ESIA.

The need for analysis of project alternatives is based on being able to judge the sustainability in time, as a complement to the evaluation phase of the project, it is considered relevant to establish
the behavior of the environment into the future. For this purpose, the following project alternatives were examined:

### 3.4.1 No Project Option

The no project option implies that the proposed project is not desirable. This option is justified on the ground that the objective which the Park supports may be eroded by the construction of the bridge which is likely to enhance access in and out of the site. It is also argued that similar bridges constructed on the edge of Cross River National Park at Bashu and Ekonganaku witnessed an upsurge in illegal logging inside the park as soon as they were completed. Information regarding the implementation of the ESMP at those sites is however not provided. It also reasoned that, the measures to mitigate the negative impacts to be caused by the bridge construction may not be implemented due to paucity of funds, and therefore, the most reasonable thing is not to embark on construction of the bridge.

However, choosing the no project option will mean a loss of preliminary investments made by the project proponents on the project. More importantly, it will entail ignoring the earnest request of the enclave villagers who are vulnerable to risk of loss of lives, loss of economic goods and limited access to livelihood improvement due to restricted access to movement caused by the Bemi bridge. This option therefore, is against the human right to livelihood of the enclave communities. It is also a retardation to the national and global policies that supports poverty reduction and welfare.

### 3.4.2 Embark on Bridge Construction Option

This option means going ahead to construct the bridge at Okwango National Park. It is supported by the argument that conservation of nature can and should go side by side with human development. Argument of livelihood improvement, better healthcare and market accessibility and improved economic and social opportunities for the people of the enclave communities are some of the reasons that strongly support this option. Also, since monitoring and enforcement of anti-poaching and hunting activities have been difficult to contain as a result of patrol constraint caused by inaccessibility, it is only instructive that National Park operation of forest and wildlife conservation will be optimized with access provided by the construction of the Bemi Bridge. It is also reasoned that National Parks in many parts of the world have co-existed with tolerance for human rights of the natives as supported by the bridge constructions at Korup National Park South West Cameroon, Whanganui National Park New Zealand and Lake District National Park North West England Amongst others.

This option in view of the holistic view and comparism of the supporting reasons is more feasible and reasonable. It is therefore, necessary to go ahead with the Bemi Bridge construction.
4.1 General Description of Study Area

Nigeria is situated in West Africa and bordered to the North by Niger Republic; North East by Chad; West by Benin; East by Cameroon and South by the Atlantic Ocean. The land mass of Nigeria is 923,768 sq km, and lies between latitudes 4°00’ N and 14°00’ N, and longitudes 2°50’ E and 14°45’ E.

Cross River State is a coastal state in South Eastern Nigeria, created in May 1967 from the former Eastern Region. The State occupies 20,156m² and has a population of 2,888,960 inhabitants (2006 population census). It shares boundaries with Benue State in the north, Enugu and Abia States to the west, Cameroon Republic to the east and Akwa-Ibom and the Atlantic Ocean to the south.

![Figure 4.1: Map of Cross River State in Nigeria showing the Project Site](image)
4.2 Environmental & Social Baseline Data

Population of Cross River State

Cross River State has a total population of 2,888,966 million persons (2006 population census) made up of 1,492,565 million males and 1,421,021 million females spread across the 18 local government areas

Resources

Cross River State is one of the most richly endowed agricultural lands in Nigeria. Forestry accounts for about 22.4 percent of the total land areas. The state also has great potential for marine fisheries and freshwater aquaculture as well as metallic minerals.

Environmental Issues

As in most part of Southern Nigeria, the major environmental problems are soil degradation, urban air and water pollution, and rapid urbanization.

Climate

The climate of the project area is tropical, having two distinctive seasons: the dry and the rainy seasons. The rainy season which last longer begins in May and ends in November. The dominant wind system during the rainy season is the south west air mass. Over the region, rainfall is not evenly distributed, being heaviest in the mountainous northeastern parts which receive up to 4,500mm per annum (Obot, 1996). Towards the southwest, rainfall amount reduces to 2,500mm per annum. The length of the dry season varies also in the same manner, from 3 to 4 months in the northeast to 4 to 5 months in the southwest. Ambient temperatures are high 18° - 32° C at lower altitudes. At higher altitudes around Obudu plateau, temperatures are lower, with 14° - 16° C daily maxima recorded on Obudu highlands and the Obudu Cattle Ranch (Obot, 1996).

Geology

The geology is a basement of older granite complexes. That is, granite gneiss: magmatic gneiss complex-GGh; and Porphyritic granite: coarse Porphyritic biotite and hornblende granite-OGp (Pan African-Oder-Granitoids). The intermittent occurrences of pegmatites are clear indications of the mineral wealth inherent. Other rock units are amphibolites, quartzites, pegmatites, aplites, cataclasites, and mylonites.
Topography

The topography of Okwango Region consists of a series of hills or disconnected ridge systems which are part of the Obudu/ Cameroon formations. Towards the northeast are a number of isolated peaks and domelike volcanic outcrops (Figure 4.3). Generally, the terrain is undulating and steeply sloping, reaching a height of between 150 to 1700m above the sea level. Erosion is very active wherever the surface has been exposed. In the rainy season, wet surfaces of the steep slopes are slippery and pose severe difficulties for accessibility.
Figure 4.3: Topography of the Study Area

Source: Processed from Shuttle Radar Topography Mission by ESIA Study Team, 2013

Hydrology and drainage

The project area is traversed and drained by several rivers of regional importance. Among them are the Oyi, Okon and the Bemi Rivers and their numerous tributaries (Figure 4). Other rivers include: Manimokwa, Matche, Miloni, Anyibiar, Kantoh, and Manyijiga, etc. The direction of flow is generally from the northeast to the southwest, following structural control as dictated by the complex topography of the region. Major streams such as Magbe, Matche, Asache, Anyukwo, Afundu I, Afundu II, Miluene and Manyu drain the north, north east to the east of the park area and form tributaries for Oyi River. Bemi River drains the southwestern extremities of the park and flows south along its Western boundary to join Okon River. Mbep, Nsar and Nkonge are the
major streams that take their sources from Mbe Mountains South West of the park area and empty into Okon River which Crosses into the Cameroon. These rivers are swift flowing and flood especially at the peak of the rainy season in July. There are so many undocumented reports on the violence of these rivers and the disasters which they are still causing to pedestrian traffic as they try to wade across the rivers, especially loss of lives. However, Bemi River has now been crossed by a 25.7m long bridge. Water table is near the surface all the year round, especially along the valleys and topographical synclines.

![Study Area showing Drainage](image)

**Figure 4.4: The Hydrology/ Drainage of the Project Area**

Source: ESIA Study Team, 2013

**Soil**

The result of soil analysis for the project area is summarized in Tables 1-3 respectively showing physic-chemical properties, heavy metal content and micro-organism counts.
### TABLE 4.1: Summary of Soil Physico–Chemical Properties

<table>
<thead>
<tr>
<th>S/N</th>
<th>Soil properties</th>
<th>Surface soil</th>
<th>Subsurface soil</th>
<th>Permissible limit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Range</td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>1</td>
<td>Sand</td>
<td>58.6 - 78.6</td>
<td>71.6</td>
<td>68.6 - 76.6</td>
</tr>
<tr>
<td>2</td>
<td>Silt</td>
<td>7.4 - 35.4</td>
<td>18.4</td>
<td>3.4 - 23.4</td>
</tr>
<tr>
<td>3</td>
<td>Clay</td>
<td>6.0 - 16.0</td>
<td>10</td>
<td>6.0 - 22.0</td>
</tr>
<tr>
<td>4</td>
<td>Available phosphorus</td>
<td>6.50 - 13.75</td>
<td>8.9</td>
<td>5.87 - 13.12</td>
</tr>
<tr>
<td>5</td>
<td>Exchangeable Acidity</td>
<td>0.16 - 2.24</td>
<td>1.5</td>
<td>0.40 - 2.32</td>
</tr>
<tr>
<td>6</td>
<td>Hydrogen ion (H⁺)</td>
<td>0.44 - 0.72</td>
<td>0.54</td>
<td>0.24 - 1.04</td>
</tr>
<tr>
<td>7</td>
<td>Calcium (ca)</td>
<td>1.0 - 7.4</td>
<td>2.4</td>
<td>0.8 - 5.4</td>
</tr>
<tr>
<td>8</td>
<td>Magnesium (mg)</td>
<td>0.45 - 1.0</td>
<td>0.6</td>
<td>0.2 - 1.2</td>
</tr>
<tr>
<td>9</td>
<td>Potassium (k)</td>
<td>0.07 - 0.12</td>
<td>0.09</td>
<td>0.07 - 0.11</td>
</tr>
<tr>
<td>10</td>
<td>Sodium (Na)</td>
<td>0.06 - 0.10</td>
<td>0.07</td>
<td>0.05 - 0.08</td>
</tr>
<tr>
<td>11</td>
<td>Base salination (Bs)</td>
<td>41 – 93</td>
<td>55.5</td>
<td>34 - 84</td>
</tr>
<tr>
<td>12</td>
<td>PH</td>
<td>4.23 - 5.13</td>
<td>4.6</td>
<td>4.39 - 5.02</td>
</tr>
<tr>
<td>13</td>
<td>Exchangeable cation (Ec)</td>
<td>0.10 - 0.18</td>
<td>0.14</td>
<td>0.07 - 0.15</td>
</tr>
<tr>
<td>14</td>
<td>Effective cation</td>
<td>4.13 - 8.78</td>
<td>5.2</td>
<td>3.18 - 8.06</td>
</tr>
<tr>
<td>15</td>
<td>Organic carbon (org.c)</td>
<td>1.33 - 2.67</td>
<td>2.16</td>
<td>0.88 - 2.85</td>
</tr>
<tr>
<td>16</td>
<td>Total nitrogen (TN)</td>
<td>0.07 - 0.23</td>
<td>0.16</td>
<td>0.07 - 0.24</td>
</tr>
<tr>
<td>17</td>
<td>Moisture content (M.C)</td>
<td>16.3 - 29.6</td>
<td>25.82</td>
<td>15.4 - 30.1</td>
</tr>
</tbody>
</table>

**Legend:** Hollland et al, 1989**; Line et al, 1987***

**Source:** ESLA Study Team, 2013

### TABLE 4.2: Summary of Soil Heavy Metals

<table>
<thead>
<tr>
<th>S/N</th>
<th>Soil properties</th>
<th>Surface soil</th>
<th>Subsurface soil</th>
<th>Maximum Permissible limit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Range</td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>1</td>
<td>Copper (Cu)</td>
<td>21.40 - 36.45</td>
<td>26.63</td>
<td>20.85 - 36.35</td>
</tr>
<tr>
<td>2</td>
<td>Zinc (Zn)</td>
<td>5.75 - 15.50</td>
<td>10.42</td>
<td>10.45 - 15.15</td>
</tr>
<tr>
<td>3</td>
<td>Manganese (Mn)</td>
<td>26.95 - 37.65</td>
<td>29.56</td>
<td>22.45 - 37.75</td>
</tr>
<tr>
<td>4</td>
<td>Iron (Fe)</td>
<td>457.28 - 597.98</td>
<td>545 - 23</td>
<td>386.93 - 597.98</td>
</tr>
<tr>
<td>5</td>
<td>Vanadium (V)</td>
<td>0.40 - 0.80</td>
<td>0.58</td>
<td>0.35 - 0.65</td>
</tr>
<tr>
<td>6</td>
<td>Nickel (Ni)</td>
<td>1.70 - 2.25</td>
<td>1.89</td>
<td>1.30 - 2.05</td>
</tr>
<tr>
<td>7</td>
<td>Lead (Pb)</td>
<td>2.70 - 4.35</td>
<td>3.68</td>
<td>2.40 - 3.30</td>
</tr>
</tbody>
</table>

**Legend:** Brady &weit, 1996; Bohn et al, 1985**

**Source:** ESLA Study Team, 2013

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The soil physical properties indicate that soils in the project area are sandy-loam and clayey-loam at the surface and subsurface respectively. Soil particle size distribution (Sand silt and clay) was observed as follows: sand content ranged between 58.6%-78.6% with a mean of 71.6% at the surface soil while the subsurface soil ranged between 68.6%-76.6% with a mean of 72.3%. Silt on the other hand ranged between 7.4%-35.4% and a mean of 18.4% at the surface and ranged between 3.4%-23.4% and mean of 15.7% at the subsurface while clay ranged between 6.0% - 16.0% and mean of 10% at the surface and also ranged between 6%-22% and mean value of 12% at the subsurface layer of the soil.

With respect to soil stability, properties and vegetation growth, the major useful soil chemical properties include; Soil organic carbon which is a major soil component that is a principal content of organic matter. Hence carbon according to Schnitzal (1982) is very important and it is a major source of C02 and atmospheric C02. Organic carbon is made up of the cells of microorganisms, plants and animals residues at various stages of decomposition. Therefore plants and animals need carbon for their growth and production. Hence, the level of organic carbon in the area varied in the area at both surface and subsurface soils. Organic Carbon (Org.C) ranged between 1.33%-2.67% with mean of 2.16% at the surface layer of the soil while the subsurface range was between 0.88% with a surface mean of 1.42%.

Moreover, available phosphorus (Av.P) is very important to plant growth, protein synthesis and promotion tissue development both plant and animal based on these, the soils Av.P were seen to occur within the range of 6.50mg/kg – 13.75mg/kg and mean of 8.9 mg/kg at the surface soil and range of 5.87mg/kg -13.12mg/kg and mean of 8.5 mg/kg at the subsurface layer of the soil. Exchangeable bases also relates to soils ability to sustain plant growth, ration nutrients and buffer acid deposition of requester toxic heavy metals. The exchangeable bases were within the permissible limits. By implication the soil within the project area is fertile and stable, hence able to support vegetation growth. This condition enables the availability of litter droppings, facilitate soil moisture retention and increase in soil biota.

**Soil Micro Organisms Count**

The soil microorganisms that are hydro carbon utilizing play significant role in carbon storage in soil. This bacteria and fungi make use of these substances for their growth and development, thus, facilitate the storage of carbon in the soil. This bacterial and fungal growth alongside the densities in the soil indicates the availability rate of hydrocarbon compounds that may support plant growth. Therefore, the more the number of these organisms in the soil, the lower the hydrocarbon content of that particular soil.

Consequent upon these, the soils of Okwangwo within the Bemi Rivers Bridge and the control point which were labeled as Okwangwo 1-4 (surface soils) and Okwangwo 1-4 (subsurface),
Okwangwo 5-6 (surface soils of the control points) and Okwangwo 5-6 (sub-surface soils of the control point), had high content of variable total aerobic heterotrophic bacteria and fungi (THB and THF) and hydrocarbon utilizing bacteria and fungi in the sampled soils.

**Vegetation and Wildlife**

An important feature of the vegetation of Okwango Division is an Ecotone of unbroken and little disturbed forest within the heights of 150m to 170m, a situation that is very rare in the African Continent (Hills, 1981). Obot et al., (2011) classified the vegetation of the area into five habitat types as follows:

- **Lowland Ridge Forest (300-500m):** Towards the north of Okwango division, finger-like ridges protrude into the lowland forest. *Lophira alata, Canarium schweinfurthii, Terminalia superb, Nauclea diderichii and Poga oleo*. Flora under the family Caesalpinaceae are better represented in the ridge forest and species include: *Berlineria bracteosa, Afzelia bipindensis, Microberlinia bisulcata* and *Erythrophloeum iorensis*.

- **Mid-elevation Forest (500m-800m):** The tree flora is dominated by the presence of *Vitex doniana* and *V. Ferruginea*, Montane Forest (800-1,500m). characterised by extremely low and often disjoint canopy, large numbers of trees, The dominant woody species in the montaneforest are *Syzgium guineense, Xylopia standii, macaranga occidentalis, santiria trimera, Harungana madagascariensis, Bridelia micrantha, Antonatha cladantha, Bridelia grandis, sapium cornutum, polycias fulva* and *Venonia confort*. High-altitude grassland. The transition zone between the montane forest and the grassland is comprised of large herbs and woody shrubs such as Brilliantasia lamium and Dicaetanthera Africana. Pteridium aquilinum is also a common component of this transition zone including the spectacular Lobelia columnaris.

The natural vegetation of the project area is the evergreen tropical rain forest which is very rich in floristic composition. However from place to place, the vegetation depicts an interplay of the influences of topographic edaphic, climatic, biotic and human factors. The project area being a buffer zone has patches of clearings for farmland which interrupt the continuity of the rain forest and tend to savannize their immediate surroundings. Typical trees in the project area reach height of 40 to 45m. The hills are typically rich in epiphytes and lianes and have species peculiar to those which are not found in the lowland forest.

The wildlife found in the project areas is diverse. It includes primate and non-human primate species, aquatic and avian species. The precise populations of these wildlife species have not been estimated. But it is believed that some of them are already facing threats of extinction and so, need be protected. The following wildlife species have been identified in the project area: gorilla (*Gorilla gorilla*), chimpanzee (*Pan troglodytes*), drill (*Mandrillus leucophaeus*), putty-nose guenon (*Ceropithecus nictitans*), mona guenon (*Ceropithecus mona*), red-eared guenon (*Ceropithecus erythrotis*) Preuss’s guenon.
(cercopithecus preussi), needle-clawed galago (Eutocius elegantulus) and patas monkey (Erythrocebus patas). The crowned guenon (cercopithecus pogonias) may already be extinct. The hills of Okwango and Okwa are said to have a relatively large population of forest elephants, some of which cause damage to the farmlands and even attack people. The buffalo, monkeys and baboons, the porcupine, cain rat and various species of snakes are also found in the region. It is an aviary and as many as 80 species of birds have been reported to have been seen there. The region is also rich in aquatic life such as crocodiles and several species of fish, including the catfish, mudfish and tilapia. It was reported that hippopotamus was once seen swimming upstream from the Cross River into Oji River.

4.3 Socio-economic Survey of the Project Area

Population of the Enclave Communities

Okwango has a rural population of about 1990 persons Okwa I 868 Okwa II 1551 persons respectively. Immigrant population is negligible (consisting of people from Cameroon, Igbos, Yorubas, Akwa Ibom, Hausas and Ghana). About 60% of the population is under the age of twenty-five (25) and more than 70% of this is under the age of twenty (20). Average household population is between 3 to 16 persons. Polygamy is the dominant family structure. The language of Okwangwo people is Boki and their Ethnic group is Eko while the Okwa people speak Anyang.

Historically, the Okwangwo people first settled at Ajanpiesor, about 2km away from their present location. They migrated to Achata which is a kilometer from the present Okwangwo before the final settlement in their present location. On the other hand, the Okwa people migrated from Takamanda in Cameroon. They first arrived at Mache and Muo before they separated into Okwa 1 and 2. The people of Okwango and Okwa practice Christianity and African Traditional Religion (ATR).

Social organization

There is a hierarchical social organization structure. At the apex is the Council of chiefs, chaired by the high chief, supported by several other chiefs (one chief is appointed from every extended family). Next in the hierarchy is the Village Council, headed by an elected chairman. The village council observes trends of events; social, economic and legislative in the village and beyond and makes recommendations to the Council of Chiefs for approval. Other social groups include the women, the youths, the elites and the hunters associations. It is particularly of note that the women participate in major community decisions and are not discriminated against in leadership role, farm holding rights and other socio-economic involvements. During this ESIA consultation women fully participated and sat together in the means of men during the forum. This constitutes the judiciary, the executive and the administrative organs of the village community. The various groups have their designated responsibilities and work in cooperation for the peaceful existence of their community. The specific responsibilities of the different groups include.
• The Chief council constitutes the elders and they are the custodians of the law and tradition.
• The youth council enforces the law. For instance, the monitor the forest and activities of people in the communities to ensure compliance with the community laws.
• The women groups are in charge of welfare and also settle disputes.
• The elite group comprises of retired personnel from various vocations of life. The function of the body was advising the community on the decision making, mediate between the community and external bodies.
• The General Assembly is in charge of law. The CBOs such as Okwangwo forest conscience organization enlightens the community on forest management, organizes workshops and seminars, partner with National park to address prevailing problems that affect the enclave communities, identity tourism potentials in the area and facilitates and help researchers in the area
• Vigilante group arrest offenders such as poachers and loggers and assist the National Park in monitoring the forest.

Settlement and Housing

Three major enclave communities namely Okwangwo village, Okwa 1 and Okwa 11 exist within the region. The enclave is characterized by nucleonic rural settlement pattern. The residential housing pattern is amorphous with mud walls and select zinc and thatch roofs indicating more temporary than permanent structures. Spatial

Tenure System

Acquisition of farmlands is largely through direct clearing of virgin forest with 60% of farm families acquiring land through that mode. The next is via inheritance accounting for 30% of the mode of land acquisition (Table 4.3).

<table>
<thead>
<tr>
<th>S/N</th>
<th>Tenure system</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Inheritance</td>
<td>30%</td>
</tr>
<tr>
<td>2.</td>
<td>First to clear virgin forest</td>
<td>60%</td>
</tr>
<tr>
<td>3.</td>
<td>Leasehold</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Source: Field Survey by ESA Study Team, 2013*

Economy

The enclave people of Okwangwo and Okwa depend largely on Farming and forest eco system. Different cropping arrangement engaged by the people include mixed crop carried out by 32%
of the farm families, mono food crop (1%). Mono tree crop and mixed tree crop account for 29% respectively, while Agro-forestry practices is carried out by 10% of the farming families. The ESIA survey shows that gathering of Non-Timber Forest Products (NTFPs) is relied upon by 100 percent of the population for their livelihood, while agriculture is relied upon by about 80 per cent of the population. The most common Non-timber forest products collected or harvested by the people include: *Eroro* (*Gnetum africanum*), bush mango seed (*Irvingia gabonensis*), bush meat, fish, bitter kola, hot leaf, snail, medicinal plants etc.

Similarly, about 90 per cent of the inhabitants engage in hunting either as a full-time occupation or on part-time basis.

**Gender Participations**

The women participate in major community decisions and are not discriminated against in leadership role, farm holding rights and other socio-economic involvements. During this ESIA consultation women fully participated and sat together in the means of men during the forum.

However, the economic tradition in the enclave communities depicts some form of a gender-based division of labour. For instance, while the males engage in activities such as tree felling, forest clearing, and cultivation of perennial crops, the women fetch water, cultivate crops and vegetables. However, both men and women fetch fire wood, collect bush mango and “salad” (*Gnetum spp*).

**Educational Facilities, Literacy Level and Poverty Conditions**

The survey established that there is a primary school and a recently built secondary school in Okwangwo which is attributed to Border Commission.

In terms of literacy level the study shows that about 48% of the respondents attended primary education and can understand and speak English language. About 20% of the respondents have attended secondary school while about 2% of the respondents have acquired post secondary school education (see figure 4.5).
Number of enrolment in primary school between 2011 and 2014 in the area shows that over 70% of the primary school aged children are enrolled in school and comprises of 40% and 30% respectively for male and female children respectively. This is however not the case with secondary school enrolment as the survey shows that not more than 25% of eligible primary school leavers have enrolled into secondary school.

The result of poverty condition in the project area is presented in figure 4.6 below:

![% of Respondents](image)

**Figure 4.6: Trend in Income distribution in the project area**

Figure 4.6 shows that 50% of the population is on an income of about N100 or less per day. The World Bank poverty threshold for developing countries as adjusted in 2008 is US$1.25 per day. This amounts to about N200 per person/day. Therefore, the result of our survey points to the fact that only about 20% of the population in the project area lives up to the poverty threshold standard.

It cannot be established based on available data if there is a correlation between the income trend and educational qualification, especially for the fact that majority of the population depend on farming and forest resources as means of occupation.

**Transportation**

Okwangwo and the adjoining communities are very well disadvantaged by poor accessibility. Many of the times the villagers trek for 4 hours or more to Butatung community to market their produce. Another alternative to trekking is the use of commercial motorcycle which cost about N2000. As a result of this constraint most of the harvests fail to reach the market in good condition which
advertently affects the price. For instance, a big bunch of plantain which could be sold for N700 in the market only sells for N100.00 in the village.

**Electricity, Access Road and Water Supply**

The project area is not connected to the national grid. The people of the area use lamp tan as source of energy for lighting. There is difficulty in access to the communities due to the nature of steeply, undulating track access road available to them. There is also no portable water in the area as the entire population depends on stream for drinking and domestic water uses.

**Health care Provision and Conditions**

Survey indicates that there is neither a hospital nor a functional primary healthcare facility in Okwangwo, Okwa 1 and Okwa 2. The people of these enclave communities could only manage to convey their sick wards to healthcare facilities in Butatung (about 22Km) if only there was no flooding/ rise in water level at the Bemi River. When unfortunately constrained by this inaccessibility factor, they resort to faith and traditional herbs for the treatment of their household members.

**Prevalence of diseases/symptoms in the community**

In figure 4.7, the most recurrent health conditions in the area in the order of their mode are chronic cough, vomiting, pregnancy miscarriage, diarrhea, sight/visual impairment, body pains, epilepsy, stroke and hypertension.

![Figure 4.7: Prevalence of Diseases/Common Sicknesses](image-url)
Health service delivery in Okwangwo

About thirty-seven percent (37%) of the respondents to the administered questionnaires said there was an existing health centre while fifty-two (63%) refuted this. However, physical inspection around the Okwangwo project area and Okwa confirms that only 1 non-functional primary health centre is in the community.

*Figure 4.8: Front View of the non-functioning Okwangwo health centre*
CHAPTER FIVE: POTENTIAL IMPACTS AND MITIGATION MEASURES

5.1 Introduction
This Section contains a summary of the impacts envisaged resulting from the project as a result of the interaction between the project components, the environmental elements and human behavior as a response to the availability of the bridge. The method of impact identified and evaluated is also given in this Section.

5.2 Impact Identification and Evaluation
The identification and management of impacts associated with project activities were based on a risk management and involves:

- Identification of project activities and post construction operations that may interact with the project environment.
- Implementing controls to reduce risk of impacts.
- Monitoring the effectiveness of controls.

The key project activities of the proposed development were identified. The pathways (or events) that may cause impacts to the environment were determined, and their associated potential impacts listed. The risk of the impacts occurring was analysed by determining the consequence severity of the impacts and the likelihood of consequences being realized. The severity of the consequences was determined using a Consequence Severity Table and the likelihood of an impact resulting from a pathway was determined with a Likelihood Ranking Table and then the level of risk was determined using a Risk Matrix (Table 5.1).

To prevent or minimize the impacts, controls were placed on the pathways in this order of priority:

- Elimination of the activity.
- Substitution with a lower risk activity.
- Engineering solutions to reduce the impact of the event.
- Implementation of administrative procedures to control the activity.
- Clean up or remediation measures to mitigate impacts after an event.
### Table 5.1: Consequence Severity, Likelihood Ranking & Risk Matrix Tables

#### Consequence Severity Table

<table>
<thead>
<tr>
<th>Level</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insignificant</td>
</tr>
<tr>
<td>2</td>
<td>Minor</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Major</td>
</tr>
<tr>
<td>5</td>
<td>Catastrophic</td>
</tr>
</tbody>
</table>

- **Insignificant**: No detectable impact to the existing environment.
- **Minor**: Short term of localized impact.
- **Moderate**: Prolonged but recoverable impact on the environment and commercial industries.
- **Major**: Prolonged impact to the environment which may not be recoverable and threatens an ecological community, the conservation of species or the sustained viability of commercial industries.
- **Catastrophic**: Non-recoverable change to existing environment leading to loss of endangered species or creation of human health risk.

#### Likelihood Ranking Table

<table>
<thead>
<tr>
<th>Level</th>
<th>Likelihood</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Almost certain</td>
<td>The incident is expected to occur most of the time (i.e. every time).</td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>The incident will probably occur in most circumstances (i.e. regularly, weekly)</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>The incident should occur at some time (i.e. quarterly)</td>
</tr>
<tr>
<td></td>
<td>Unlikely</td>
<td>The incident could occur at some time during the life of the project.</td>
</tr>
<tr>
<td></td>
<td>Rare</td>
<td>The incident may occur only in exceptional circumstances and may never happen.</td>
</tr>
</tbody>
</table>

#### Risk Matrix Table

<table>
<thead>
<tr>
<th>Consequences</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Likelihood</strong></td>
<td>Insignificant</td>
<td>Minor</td>
<td>Moderate</td>
<td>Major</td>
<td>Catastrophic</td>
</tr>
<tr>
<td>A</td>
<td>Almost certain</td>
<td>S</td>
<td>S</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>B</td>
<td>Likely</td>
<td>M</td>
<td>S</td>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>C</td>
<td>Moderate</td>
<td>L</td>
<td>M</td>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>D</td>
<td>Unlikely</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>S</td>
</tr>
<tr>
<td>E</td>
<td>Rare</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

*Where:*

- **H (High impact)** - Senior management involvement and planning needed
5.3 Associated and Potential Impacts of the Project

5.3.1 The Project Positive Impacts

The project is envisaged to have a range of positive impacts to the enclave communities and the Park operation. Specifically, the broad positive impacts of the project include:

Pre-Construction Phase Positive Impacts
- Interaction of stakeholders including enclave villagers, Park authorities and World Bank among others could create a window of opportunity for identification of future developmental projects and partnership.
- Data collection resulting from project development could be useful to stakeholder data need and references for future applications.
- Consultations and engagement of stakeholders (enclave villagers and Park/Wildlife authorities) will be useful in identification of areas of cooperation’s and responsibilities for improved Park conservation.

Construction Phase Positive Impacts
- Employment of locals during Bridge construction
- Interface between locals and workers would result to increased sales of agricultural crops by farmers during the period of construction.

Post Construction/Operation Phase Positive Impacts
- Improved community access to movement to farm and neighboring villages across the Bemi River.
- The construction of the bridge will reduce the pains of women carrying heavy loads of plantain, bush mango and banana, on head over great distances of about 22 km.
- Access provided by the construction of the bridge will enhance park protection activities viz-a-viz increase patrols and conservation education activities to the enclave communities.
- Efficiency in forest/biodiversity conservation resulting from improved access to patrol, arrest and enforcement of laws.
- Incentive to increased farming and income due to access to market.
- Access provided by the construction of the bridge will reduce the risk of loss of life and goods usually associated with difficulty of movement across the Bemi River during the rainy season.
- Prevention of loss of items and properties of villagers in attempts to cross stream at high flood.
- Improved access to schools and educational opportunities for children is envisaged as a result of the bridge which provides access for government/teachers movement to the concerned villages.
5.3.2 The Project Negative Impacts

Albeit the project development shows a lot of significant positive impact as shown above, it is not without some negative impacts. These impacts were identified through methodologies earlier stated including stakeholder consultations. These include impacts on wildlife and forest conservation, surface water quality and flow, soil and air quality. Table 5.2 identifies clearly these adverse impacts at each project phase including environmental aspects and receptors:
### Table 5.2: Adverse Impacts of the Bemi Bridge

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Environmental Aspect/impact media</th>
<th>Receptor</th>
<th>Impacts</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pre-Construction Phase</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobilization of men, equipment and materials to site</td>
<td>• Movement of heavy equipment</td>
<td>Air, Soil, Vegetation (Flora), Wildlife (Fauna), surface water</td>
<td>Vegetal damage</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>• Emission of dust and poisonous gases</td>
<td></td>
<td>Disturbance to wildlife</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>• Noise Emission</td>
<td></td>
<td>Possible contamination of the surface water</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Clearing</td>
<td>• Clearing of land for the proposed project</td>
<td>Vegetation, Wildlife, Soil, Air, Surface water</td>
<td>Loss of flora and fauna habitat including endangered species</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>• Use of heavy equipment</td>
<td></td>
<td>Soil Erosion</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>• Fuel and oil spillage</td>
<td></td>
<td>Noise Pollution</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Water pollution</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Construction Phase</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation, Casting and construction</td>
<td></td>
<td>Surface water</td>
<td>The concrete slab for the bridge piers may affect the flow velocity of the river and may lead to silting</td>
<td>Significant</td>
</tr>
<tr>
<td>Increase human movement and activities</td>
<td>Human</td>
<td>Flora</td>
<td>Illegal logging</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase in poaching activities</td>
<td>Significant</td>
</tr>
<tr>
<td>Soil compaction</td>
<td>• Use of heavy equipment</td>
<td>Soil, flora, fauna, surface water</td>
<td>Loss of soil microbes, Destruction of aquatic flora and fauna</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>• Seepage of lubricants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design and construction of Piers and abutments</td>
<td>Velocity flow of water</td>
<td>Water</td>
<td>Disruption of the natural water flow from poor channeling resulting from piers footing may lead to silting</td>
<td>Significant</td>
</tr>
<tr>
<td>Construction, mixing and pouring of sands and cements</td>
<td>Waste</td>
<td>Air, Water</td>
<td>Air Pollution and Water Pollution</td>
<td>Significant</td>
</tr>
<tr>
<td>Social</td>
<td>Human: Occupational health and Safety</td>
<td>Human</td>
<td>Workers could be at risk from exposure to hazardous materials</td>
<td>Significant</td>
</tr>
<tr>
<td>Social</td>
<td>Public Safety</td>
<td>Human</td>
<td>Risk of fall/public safety from the bridge is likely in the absence of railing</td>
<td>Significant</td>
</tr>
<tr>
<td>Project Activity</td>
<td>Environmental Aspect/impact media</td>
<td>Receptor</td>
<td>Impacts</td>
<td>Rating</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Operation Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Increase in human movement and activities</td>
<td>Flora and Fauna</td>
<td>The existence of the Bridge will increase human traffic/movement in and out of the Park which will threaten the integrity of the Park, vis-a-vis illegal cutting of trees and hunting</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>• Noise</td>
<td></td>
<td>Noise from movement of machines and people will threaten flora and fauna habitats in the Park. But this will be temporal &amp; for a short time</td>
<td>Insignificant</td>
<td></td>
</tr>
<tr>
<td>Human Activity</td>
<td>Flora</td>
<td>Access created by the bridge construction may encourage illegal logging</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>Human Activity</td>
<td>Flora &amp; Fauna</td>
<td>The bridge will likely make farming more profitable and will probably increase the clearing of virgin forest within the park</td>
<td>Significant</td>
<td></td>
</tr>
</tbody>
</table>
5.4 Mitigation Measures

The previous section identified the adverse impacts to the environment and ecological habitat that is anticipated as a result of the construction of the Bemi bridge. Many of these impacts are significant but are notably reversible and or subject to good control measures. Therefore, in this section, table 5.3 provides specific mitigation measures are proffered to address the identified adverse impacts.

<table>
<thead>
<tr>
<th>Table 5.3: Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Activity</strong></td>
</tr>
<tr>
<td><strong>Pre-Construction Phase</strong></td>
</tr>
</tbody>
</table>
| Mobilization of men, equipment and materials to site | • Movement of heavy equipment  
• Emission of dust and poisonous gases  
• Noise Emission | Vegetal damage | • Restrict vegetation clearing to the area required  
• Re-vegetate affected sites |
| Disturbance to wildlife | • Use noise proof equipment  
• Ensure that work is not carried out at night | Contamination of the surface water/sedimentation | • Use barriers or other measures to prevent sediments and contaminants at interface with water |
| Site Clearing | • Clearing of land for the proposed project  
• Use of heavy equipment  
• Fuel and oil spillage | Loss of flora and fauna habitat including endangered species | • Minimize site clearance to the area required for civil work  
• Use light and noise proof equipment |
| Soil Erosion | • Ensure that excavations and ditches are refilled  
• Re-vegetate/plant trees in the area cleared | Noise Pollution | • Use light and noise proof equipment |
| Water pollution | • Avoid dumping wastes into the surface water |
| **Construction Phase** |
| Use of heavy equipment and hazardous materials | Soil, water | Erosion due to machinery tracks, damage to stream banks | • Avoid creating and leaving ditches as much as possible  
• Where ditches/excavations are |
| Piers and abutments design and construction | Flow velocity of water | Concrete slab rectangular piers footing may affect the flow velocity of the river and may lead to silting | • Make the pier footing triangular and/or bury the footing below the water bed |
| Drilling, casting and construction | Water | May compact soil, affect slope stability and cause silting and water pollution | • Ensure that engineering design and best construction practices are adhered to  
• Ensure that construction debris are disposed and kept away from contact with surface water |
| Social | Human: Occupational health and Safety | Workers could be at risk from exposure to hazardous materials | • Use of PPEs should be enforced |
| Social | Public Safety | Risk of fall/public safety from the bridge is likely in the absence of railing | • Provide railing on both sides of the bridge |
| Social | Noise | Noise from movement of machinery and people will threaten flora and fauna habitats in the Park | • Ensure that work is completed early  
• Avoid working at night to limit noise and habitats disturbance |
<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Environmental Aspect/impact media</th>
<th>Impacts</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operation Phase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Social           | Increase in volume of human movement | The existence of the Bridge will increase human traffic/movement in and out of the Park which will threaten the integrity of the Park vis-a-viz illegal cutting of trees and hunting | • Monitor and enforce forest management rules  
• Construct additional ranger posts  
• Involve community people and leadership in operation  
• Carry out conservation education |
|                  | Increase in volume of human movement | Activities of poaching may increase due to improved access to market and increase in the volume of commuters                                          | • Do as in the above                                                                             |
|                  | Increase in volume of human movement | Access created by the bridge construction may encourage illegal logging                                          | • Do as in the above                                                                             |
|                  | Increase in volume of human movement | The bridge will likely make farming more profitable and will probably increase the clearing of virgin forest within the park | • Sensitize community on the area of the forest demarcated for farming  
• Implement enforcement in cooperation with community against encroachment |
CHAPTER SIX: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

6.1 Overview
The essence of this ESMP is to bring all identified impacts and mitigation measures into a working plan and to provide resources (costing) and arrangement/responsibilities for successful implementation. It must be noted that key consideration of this ESMP is the need for project staff to be conversant with project impacts, mitigation measures and responsibilities of stakeholders in carrying out mitigations and monitoring measures.

Based on this assumption, the ESMP is required to be mainstreamed into the contract document and should be a factor for consideration in procurement during evaluation of contractors, for better tracking and enforcement of implementation adherence since most responsibilities for implementation of safeguards during pre-construction and construction phases depend upon the contractor.

6.2 Scope of the ESMP

- Implementation responsibility and Monitoring

The purpose of responsibility sharing is to aid accountability, and to ensuring that responsibilities are given to the agencies or individuals with capacity and jurisdiction to handle them. Likewise, monitoring is necessary in order to determine achievement of objective of ESMP, milestones, challenges and areas of deviations from the initial plans that need to be modified.

- Monitoring indicators and Methods for Monitoring

Monitoring indicators are important for systematic tracking of progress of safeguard implementation in a project. It helps the EO/PMU to assess the performance of its safeguard operation which is important in evaluating the sustainability or otherwise of the sub-project. Also, identifying clearly the method for monitoring is important for successful monitoring.

- ESMP Budget/Costing

The success of every ESMP depends largely on funding provision which is a subject for early planning. Costing for this ESMP is to the sum of Four Million, Six Hundred and Fifty Thousand Naira (N4,650,000); made up of:

| Implementation of mitigation measures | N2,600,000 |
| Monitoring & Conservation Enlightenment/Education | N2,050,000 |
| Training : (There is capacity in CRSCSDA and CRNP) | - |
Table 6.1  Detail ESMP for Bemi Bridge

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Impacts</th>
<th>Mitigation</th>
<th>Responsibility</th>
<th>Cost (Naira)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Mobilization of men, equipment and materials to site | Vegetal damage | • Restrict vegetation clearing to the area required  
• Re-vegetate affected sites | Contractor | - |
| | Disturbance to wildlife | • Use noise proof equipment  
• Ensure that work is not carried out at night | Contractor | - |
| | Contamination of the surface water/sedimentation | • Use barriers or other measures to prevent sediments and contaminants at interface with water | Contractor | - |
| Site Clearing | Loss of flora and fauna habitat including endangered species | • Minimize site clearance to the area required for civil work  
• Use light and noise proof equipment | Contractor | - |
| | Soil Erosion | • Ensure that excavations and ditches are refilled  
• Re-vegetate/plant trees in the area cleared | Contractor | 50,000 |
| | Noise Pollution | • Use light and noise proof equipment | Contractor | - |
| | Water pollution | • Avoid dumping wastes into the surface water | Contractor | - |
| **Construction** | | | | |
| Use of heavy equipment and hazardous materials | Erosion due to machinery tracks, damage to stream banks | • Avoid creating and/or leaving ditches as much as possible  
• Where ditches/excavations are unavoidable, ensure the site is reclaimed and natural trees/vegetation replanted | Contractor | - |
| | Contamination of surface water when hydraulic oil, motor oil or other harmful mechanical fluids are spilled or dumped | • Perform routine check on vehicles and machines daily, and ensure proper maintenance  
• Treat and scoop soil any time fluid drip is noticed | Contractor | 50,000 |
| | Loss of soil microbes and destruction of aquatic flora and fauna | • Same as above | Contractor | - |
| | Piers and abutments design and construction | Concrete slab rectangular piers footing may affect the flow velocity of the river and may lead to silting | Contractor, CRSCSDA | 600,000 |
| Drilling, casting and construction | May compact soil, affect slope stability and cause silting and water pollution | • Ensure that engineering design and best construction practices are adhered to  
• Ensure that construction debris are disposed and kept away from contact with surface water | Contractor, CRSCSDA | - |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Workers could be at risk from exposure to hazardous materials</td>
<td>• Use of PPEs should be enforced</td>
<td>Contractor, CRSCSDA</td>
<td>100,000</td>
</tr>
<tr>
<td>Social</td>
<td>Risk of fall/public safety from the bridge is likely in the absence of railing</td>
<td>• Provide railing on both sides of the bridge</td>
<td>Contractor, CRSCSDA</td>
<td>300,000</td>
</tr>
</tbody>
</table>
| Social | Noise from movement of machinery and people will threaten flora and fauna habitats in the Park | • Ensure that work is completed early  
• Avoid working at night to limit noise and habitats disturbance | Contractor | - |
| **Operation** | | | | |
| Social | The existence of the Bridge will increase human traffic/movement in and out of the Park which will threaten the integrity of the Park vis-a-vis illegal cutting of trees and hunting | • Monitor and enforce forest management rules  
• Construct additional ranger posts  
• Involve community people and leadership in operation  
• Carry out conservation education | CRNP | 1,500,000 |
| Social | Activities of poaching may increase due to improved access to market and increase in the volume of commuters | • Do as in the above | CRNP | - |
| Social | Access created by the bridge construction may encourage illegal logging | • Do as in the above | CRNP | - |
| Social | The bridge will likely make farming more profitable and will probably increase the clearing of virgin forest within the park | • Sensitize community on the area of the forest demarcated for farming  
• Implement enforcement in cooperation with community against encroachment | CRNP | - |
<p>| <strong>Total Cost of Mitigation</strong> | | | N2,600,000 |</p>
<table>
<thead>
<tr>
<th>S/N</th>
<th>Impacts</th>
<th>Mitigation</th>
<th>Monitoring Indicator</th>
<th>Method for Monitoring</th>
<th>Frequency of Monitoring</th>
<th>Responsibility</th>
<th>Monitoring Cost (Naira)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Pre-Construction Phase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1   | Vegetal damage                                                        | • Restrict vegetation clearing to the area required  
• Re-vegetate affected sites                                                                                                                      | Area of land deforested       | Patrol observation   | Weekly                  | CRNP          | 300,000                |
| 2   | Disturbance to wildlife                                              | • Use noise proof equipment  
• Ensure that work is not carried out at night                                                                                                          | Species of wildlife in extinction  
Noise level at site            | Survey                          | Quarterly                | CRNP          | -                      |
| 3   | Contamination of the surface water/sedimentation                      | • Use barriers or other measures to prevent sediments and contaminants at interface with water                                                                                               | Water quality (turbidity, Ph,  
BOD, DO)                     | Water sample analysis   | Weekly                  | CRSCSDA       | 300,000                |
| 4   | Loss of flora and fauna habitat including endangered species          | • Minimize site clearance to the area required for civil work  
• Use light and noise proof equipment                                                                                                                  | As in 1&2                     | As in 1&2              | As in 1&2              | CRNP          | -                      |
| 5   | Soil Erosion                                                          | • Ensure that excavations and ditches are refilled  
• Re-vegetate/plant trees in the area cleared                                                                                                      | As in 1&2                     | As in 1&2              | As in 1&2              | CRSCSDA       | -                      |
| 6   | Noise Pollution                                                       | • Use light and noise proof equipment                                                                                                          | As in 2                       | As in 2                | As in 2                | CRSCSDA       | -                      |
| 7   | Water pollution                                                       | • Avoid dumping wastes into the surface water                                                                                                   | As in 3                       | As in 3                | As in 3                | CRSCSDA       | -                      |
|     | **Construction Phase**                                               |                                                                                                                                            |                               |                       |                        |               |                        |
| 8   | Erosion due to machinery tracks, damage to stream banks               | • Avoid creating and/or leaving ditches as much as possible  
• Where ditches or excavations are                                                                                                                  |                               |                       |                        |               | -                      |
<table>
<thead>
<tr>
<th></th>
<th>Unavoidable, ensure the site is reclaimed and natural trees/vegetation replanted</th>
<th>As in 1</th>
<th>As in 1</th>
<th>As in 1</th>
<th>CRNP, CRSCSDA</th>
</tr>
</thead>
</table>
| 9  | Contamination of surface water when hydraulic oil, motor oil or other harmful mechanical fluids are spilled or dumped | • Perform routine check on vehicles and machines daily, and ensure proper maintenance  
• Treat and scoop soil any time fluid drip is noticed | Vegetal cover  
Soil microbial | Field observation  
Soil test | Monthly | CRSCSDA |
|    |                                                                                 |        |        |        | -              |
|    |                                                                                  | 250,000|        |        |                |
| 10 | Loss of soil microbes and destruction of aquatic flora and fauna                 | • Same as above | As in 9 | As in 9 | As in 9        |
|    |                                                                                  |        |        |        | CRSCSDA        |
|    |                                                                                  |        |        |        | -              |
| 11 | Concrete slab rectangular piers footing may affect the flow velocity of the river and may lead to silting | • Redesign and make the pier footing triangular and/or bury the footing below the water bed | Physical evidence of buried piers footing  
Absence of siltation | Site observation  
Photograph | One-off | CRSCSDA |
|    |                                                                                  |        |        |        | 50,000         |
| 12 | May compact soil, affect slope stability and cause silting and water pollution  | • Ensure that engineering design and best construction practices are adhered to  
• Ensure that construction debris are disposed and kept away from contact with surface water | Absence of waste materials | Site inspection | Weekly | CRSCSDA |
|    |                                                                                  |        |        |        | 50,000         |
| 13 | Workers could be at risk from exposure to hazardous materials                   | • Use of PPEs should be enforced | Workers wearing PPE  
Type of PPEs available | Site inspection | Weekly | CRSCSDA |
<p>|    |                                                                                  |        |        |        | 50,000         |</p>
<table>
<thead>
<tr>
<th></th>
<th>Risk of fall/public safety from the bridge is likely in the absence of railing</th>
<th>• Provide railing on both sides of the bridge</th>
<th>Physical evidence of railing installed</th>
<th>Site observation Photograph</th>
<th>One off</th>
<th>CRSCSDA</th>
<th>50,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Noise from movement of machinery and people will threaten flora and fauna habitats in the Park</td>
<td>• Ensure that work is completed early  • Avoid working at night to limit noise and habitats disturbance</td>
<td>Delivery Compliance schedule, Observation</td>
<td>Site Monitoring</td>
<td>Daily</td>
<td>CRNP, CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Operation Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>The existence of the Bridge will increase human traffic/movement in and out of the Park which will threaten the integrity of the Park vis-a-vis illegal cutting of trees and hunting</td>
<td>• Monitor and enforce forest management rules  • Construct additional ranger posts  • Involve community people and leadership in operation  • Carry out conservation education</td>
<td>No of arrest made No of ranger post in place Level of community involvement No of trees felled, gunshots</td>
<td>Patrol Inspection Interview Patrol and Recording</td>
<td>Daily Monthly Monthly Monthly</td>
<td>CRNP CRNP CRNP CRNP</td>
<td>500,000</td>
</tr>
<tr>
<td>17</td>
<td>Activities of poaching may increase due to improved access to market and increase in the volume of commuters</td>
<td>• Do as in the above</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CRNP</td>
</tr>
<tr>
<td>18</td>
<td>Access created by the bridge construction may encourage illegal logging</td>
<td>• Do as in the above</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CRNP</td>
</tr>
<tr>
<td>19</td>
<td>The bridge will likely make farming more profitable and will probably increase the clearing of virgin forest within the park</td>
<td>• Sensitize community on the area of the forest demarcated for farming  • Implement enforcement in cooperation with community against encroachment</td>
<td>Reduction in illegal activities No of people aware of conservation significance</td>
<td>Survey, interview</td>
<td>Monthly</td>
<td>CRNP</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Monitoring of Positive Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------</td>
<td>---</td>
<td>----</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Employment of locals</td>
<td>-</td>
<td>No of locals employed</td>
<td>Record Survey</td>
<td>Monthly</td>
<td>CRSCSDA</td>
<td>500,000</td>
</tr>
<tr>
<td>21</td>
<td>Income of households</td>
<td>-</td>
<td>Increase income School enrolment</td>
<td>Survey</td>
<td>Quarterly</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Size of farm</td>
<td>-</td>
<td>Higher sales output</td>
<td>Survey</td>
<td>Annually</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Value of sales</td>
<td>-</td>
<td>Higher sales income</td>
<td>Survey</td>
<td>Annually</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Rate of death</td>
<td>-</td>
<td>Declined rate of death</td>
<td>Survey</td>
<td>Annually</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>No of child delivery via access of Bemi bridge</td>
<td>-</td>
<td>Increase number</td>
<td>Survey</td>
<td>Annually</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Improvement in Conservation operation</td>
<td>-</td>
<td>Decline in illegal activities</td>
<td>Survey</td>
<td>Quarterly</td>
<td>CRSCSDA</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Improvement in CRNP and community relationship</td>
<td>-</td>
<td>Decline in illegal activities</td>
<td>Survey</td>
<td>Quarterly</td>
<td>CRSCSDA</td>
<td></td>
</tr>
</tbody>
</table>

**Total Cost of Monitoring and Enlightenment/Education**

N2,050,000
CHAPTER SEVEN: IMPLEMENTATION PROGRAMME AND ARRANGEMENT

7.1 Implementation Programmes
Some of the management programmes that must be part of the ESMP are highlighted below:

7.1.1 Environmental Monitoring and Auditing
In order to effectively and efficiently implement this ESMP, a system for monitoring and auditing has been built into the overall management plan. Monitoring and auditing assist in the examination of management, employee knowledge, programme responsibilities, records & effectiveness

Specifically, these help to:

- Improve environmental and social management practices;
- Check the efficiency and quality of the environmental management processes;
- Establish the scientific reliability and credibility of the ESMP for the project and,
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

The Environmental monitoring activities shall be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the project. Monitoring frequency shall be sufficient to provide representative data for the parameter being monitored. Monitoring shall be conducted by trained individuals who can carry out the monitoring and record-keeping effectively using properly calibrated and maintained equipment.

Monitoring data shall be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken. As part of monitoring programme, visual inspections and quality monitoring for light attenuation will be conducted daily, for instance.

7.2 Reporting Procedure
The nature of issues to report and manner of reporting are outlined below:

7.2.1 Complaints Register and Environmental Incidents
Any environmental or social incidents shall be documented. The report shall be transmitted to the relevant authority by the Management, where necessary/applicable. The reporting shall be with a view to taking appropriate mitigation measures.

All complaints received will be investigated and a response (even if pending further investigation) is to be given to the complainant within 5 days.

The following information must be provided:

- Time, date and nature of the incident/report;
- Type of communication (e.g. telephone, personal meeting);
- Name, house location and contact telephone number of person making the complaint.
- Details of response and investigation undertaken as a result of the incident/complaint;
- Name of person undertaking investigation of the incident/complaint;
- Corrective action taken as a result of the incident/complaint.

### 7.2.2 Record keeping

Good records are the paper trail that will prove that this ESMP is working as intended. Keeping records of inspection of maintenance programme, waste management, etc will be useful to demonstrate that the ESMP is being complied with or not. The type of records from the various management and monitoring programmes may include:

- completed forms, checklists and maintenance logs
- identified problems and corrective actions undertaken
- monitoring data / results

### 7.3 Implementation / Institutional Arrangement

The resources required for implementing the ESMP are basically personnel and finance. The key stakeholders in this ESMP implementation are the project engineers, contractor, Cross River State National Park and the World Bank.

The project team shall ensure that implementation process complies with all relevant policies and procedures of both the World Bank and Nigeria.

The environmental/social officer attached to the CRSCSDA and the monitoring and evaluation Manager/officer will be responsible for the implementation of the ESMP in close collaboration with the Cross River National Park.

The monitoring and evaluation (M& E) officer at the CRSCSDA will be responsible for the implementation of the environmental monitoring and the ESMP. He/she is also to ensure that the contractors adhere to the General Environmental Management Conditions for Construction contracts. His/her responsibilities shall include:

- Coordination, liaison with and monitoring of the contractors;
- Compilation and preparation of periodic environmental reports for submission to the World Bank;
- Review of EIA reports from consultants in collaboration with EPAD and FME
- Data Management; and
- Sub-project Inspections

**World Bank**

The World Bank performs the following role;

- Ensure that its Safeguard Policies are complied with.
- Responsible for the final review and clearance of the ESIA,
• Ensures that environmental safeguards are taken care of during World Bank supervision mission.

**Cross River State National Park (CRNP)**

• Ensures full implementation of her Park conservation policies  
• Liaises with CRSCSDA and community leadership for effective coordination and results 
• Ensures clear demarcation of forest conservation area from agricultural cultivation area, sensitizes community on the demarcation 
• Responsible for all monitoring that affects its operation

**Cross River State Community and Social Development Agency**

• Ensure that there are sufficient resources (time, money and people) to manage the implementation of the ESMP,  
• Ensure the coordination and involvement of the inter-agencies and stakeholders in the implementation of the ESMP  
• Ensure bid documents include actions to address adverse impacts resulting from construction work,  
• Ensure that the ESMP reflects any changes during the construction process that may have a significant environmental or social impact,  
• Liaison with CRNP in organizing and implementing nature conservation enlightenment/education to the Okwangwo community

**Environmental Officer /Monitoring and Evaluation Officer/Manager**

• Ensure that there are sufficient resources (time, money and people) to supervise the environmental issues of the works.  
• Ensure that any changes during construction process that may have significant environmental or social impact are communicated to the EPAD in time and advice on actions to be taken and costs involved.  
• Ensure that the State Ministry of Environment is sufficiently informed on monitoring results.

**Contractor**

• Ensure that there are sufficient resources (time, money and people) to manage the environmental issues of the works.  
• Be responsible for ensuring that all site staff, including sub-contractors and sub-contracted activities will comply with the projects ESMP.  
• Ensure that any changes during the construction process that may have a significant environmental and social impact are communicated to the Supervising Engineer in time and manage them accordingly.  
• Ensure that the Environmental Supervising Engineer is sufficiently informed on contractor’s monitoring results.  
• Ensures that PPEs is provided to staff, and that staff are educated on their use  
• Ensures that safety rules/OHSE for construction workers are fully complied with.

**Okwangwo/Okwa Community Leadership**
- Ensures support with the CRNP to punish community members who would illegally encroach the forest land, poach, log or hunt in the protected area
- Complains to the relevant authority (CRSCSDA/CRNP) on any observation or concern with respect to the bridge project

### 7.4 Disclosure
This ESIA was prepared in line with the guidelines of the ESMF of CSDP which is in adherence to the disclosure policies of the World Bank and the Federal Ministry of Environment. It was equally prepared in consultation with stakeholder agencies such as Ministry of Environment, Forestry Commission, Cross River National Park Wildlife Conservative Society and the enclave communities of project area of influence.

Therefore, all reasonable efforts must be made in accordance with the law to disclose/display the ESIA report in strategic accessible places to the stakeholders for their accessibility and comments. It should also be disclosed at the Ministry of Environment and at the World Bank infoshop.

### 7.5 Implementation Schedule
The following are the major issues to feature in the implementation of the ESMP of this ESIA with detail schedule provided in Table 7.1

- Preparation and submission of the Action plan;
- Nominating Environmental Management Representative;
- Finalizing site(s) and layout plan(s) for construction of temporary yards incorporating environmental requirements;
- Preparation and submission of construction schedule;
- Implementation of mitigation and enhancement measures;
- Monitoring and reporting on ESMP implementation
- Environmental auditing
Table 7.1: Implementation Schedule

<table>
<thead>
<tr>
<th>S/N</th>
<th>Activity Description</th>
<th>Responsible</th>
<th>Pre-Construction</th>
<th>Construction</th>
<th>Operation</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Disclosure of ESIA Report</td>
<td>FMEnv</td>
<td></td>
<td></td>
<td></td>
<td>Feb 2014</td>
</tr>
<tr>
<td>2.</td>
<td>Allocating Budget for ESMP</td>
<td>CRSCSDA</td>
<td></td>
<td></td>
<td></td>
<td>Mar 2014</td>
</tr>
<tr>
<td>3.</td>
<td>Appointing Support Staff for ESIA</td>
<td>Contractor</td>
<td></td>
<td></td>
<td></td>
<td>Mar 2014</td>
</tr>
<tr>
<td>4.</td>
<td>Review and Approval of Contractor’s EMS/HSE Plan</td>
<td>CRSCSDA</td>
<td></td>
<td></td>
<td></td>
<td>Mar 2014</td>
</tr>
<tr>
<td>5.</td>
<td>Finalising site and layout plan of construction plan</td>
<td>Contractor</td>
<td></td>
<td></td>
<td></td>
<td>Apr 2014</td>
</tr>
<tr>
<td>6.</td>
<td>Implementation of Mitigation Measures</td>
<td>Contractor</td>
<td></td>
<td></td>
<td></td>
<td>Apr 2014</td>
</tr>
<tr>
<td>7.</td>
<td>Supervising ESIA/ESMP Implementation</td>
<td>Contractor/WM</td>
<td></td>
<td></td>
<td></td>
<td>Apr 2014</td>
</tr>
<tr>
<td>8.</td>
<td>Monitoring &amp; Reporting on ESMP Implementation</td>
<td>CRSCSDA /Contractor</td>
<td></td>
<td></td>
<td></td>
<td>From Apr 2014</td>
</tr>
<tr>
<td>9.</td>
<td>Enlightenment/Education</td>
<td>CRSCSDA /CRNP</td>
<td></td>
<td></td>
<td></td>
<td>April 2014</td>
</tr>
<tr>
<td>10.</td>
<td>Environmental Auditing</td>
<td>CRSCSDA /FMEnv</td>
<td></td>
<td></td>
<td></td>
<td>Feb 2015</td>
</tr>
</tbody>
</table>
CHAPTER EIGHT PUBLIC CONSULTATIONS

8.1 Introduction
Public consultation is pivotal for sustainable project development and attracts a lot of emphases in all projects funded by World Bank. To this end, public and stakeholder consultation was accorded priority from inception and will continue to be a driven tool all through the project cycle.

8.2 Objective of the Stakeholder Consultation
- To inform the stakeholders about the aim and objectives of the sub-project
- To involve stakeholders early in the project to be part of the design and planning of the project
- To elicit the inputs and concerns of the different stakeholders and mainstream their inputs into planning template
- To ensure that through meaningful engagement, encumbrances are eliminated for sustainable project actualization

8.3 Stakeholder Identification and Engagement Strategy
Following the review of the ESIA ToR and other relevant documents, the Consultant had an initial project delivery meeting with the management of CR-CSDA. This meeting featured amongst other things the identification of the project stakeholders and mechanism for consulting/engaging them.

The primary stakeholders are:
- The enclave communities (Okwangwo, Okwa 1 and Okwa 11)
- Women and children in the project community
- The Cross River National Park
- Wildlife Conservation Society and,
- The Forestry Commission

These categories of stakeholders are seen as primary stakeholders because they will be directly impacted by the benefit or otherwise of the Bemi Bridge construction. Secondary stakeholders are those involved in funding, and or have responsibilities for implementation and monitoring other than the groups earlier identified. Under this are:
- World Bank
- CR-CSDA and,
- Ministry of Environment

8.4 Approach and Method for Consultation
The CR-CSDA was instrumental for accompanying the consultant to the various stakeholders and in scheduling meeting dates with them. Accordingly, the stakeholders were given the right of choice of meeting venue. Based on this, focal group discussion with the CR-National Park was held at Azara Hotel in Calabar, while the meetings with other stakeholders held in their respective offices/community.

The traditional method for community consultation in the rural area of project influence was explored. This involved a meeting with the Chairmen of the 3 enclave communities, explaining the aim and
objectives of the project and the essence of community consultation. The Chairmen of these villages agreed to hold the public forum at the Okwangwo village hall, and used their traditional time crier to notify their community about the meeting date and venue. It was informed that the time crier messenger had to embark on the notification process a second time, which corresponded to the night preceding the meeting date.

8.5 **Major points and outcome of consultation with the Stakeholders**

### 8.5.1 Public Consultation with Okwangwo, Okwa 1 and Okwa II communities

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>January 30, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting Venue</td>
<td>Okwangwo Village Hall</td>
</tr>
<tr>
<td>Attendance</td>
<td>The meeting was attended to by World Bank team, Consultant, CR-CSDA and 137 members of the 3 enclave communities</td>
</tr>
<tr>
<td>Preamble</td>
<td>The chairman of Okwangwo welcomed the World bank team and consultants. The village heads from Okwa 1 and 2 were recognized and eminent representatives in attendance were introduced including women leaders. The World Bank team headed by the Country Senior Environmental Specialist stated the aim and objectives of the project and why the beneficiary community are being consulted</td>
</tr>
<tr>
<td>Perception of the community about the project</td>
<td>The villagers expressed gratitude for the bridge construction stating that the bridge was of most critical need to them. They stated that in 1977 a woman in labour died due to inaccessible means to convey her to the hospital in Butatung over the Bemi River. It was informed that during the rainy season many people got trapped on their way from market at Bemi river as a result of rise in water level. The difficulty posed by lack of access road has affected them in many spheres of socio-economic aspects. Therefore, to them, the bridge was a dream come true.</td>
</tr>
</tbody>
</table>
| Concerns raised    | • That CR-National Park do not carry them along as expected in the protection activities of the Park  
• That the community has been laid back in all areas of development  
• That they need better feeder road to complement the access provided by the Bemi bridge  
• That they need health centres  
• That they want their youths trained and employed to reduce the reliance on forest resources and agriculture |
| How concerns were addressed | • They were told that the CR-CSDA will ensure that there is a better coordination and cooperation between the enclave community and the Park authority  
• That the requests bordering on physical development of their area is noted and will be taken for the action of the State government given that it is not within the component and budget of the present project |
| Commitment of the community to project sustainability | The community committed to the Park conservation by ensuring that any member of their community that defaults the rules including encroachment in forest land, poaching and/or felling of forest tree will be punished according to the laws. Documented |
laws, penalties and responsibility for enforcement was provided that shows their commitment to support CR-National Park operations (see appendix 3)

### 8.5.2 Consultation with Cross River National Park

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>January 31, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting Venue</td>
<td>Azara Hotel</td>
</tr>
<tr>
<td>Attendance</td>
<td>The meeting was attended to by World Bank team, Consultant, CR-CSDA and 3 representatives of the CR-National Park</td>
</tr>
<tr>
<td>Preamble</td>
<td>The General Manager of Cross River State CSDP welcomed all in attendance. He laid the foundation for the discussion before leaving the room for the World Bank staff and Consultant to take over. The Senior Environmental Specialist stated the aim and objectives of the project and why the CR-National Park as primary stakeholder is being consulted</td>
</tr>
<tr>
<td>Perception of CR-National Park</td>
<td>The CR-National Park supported the construction of the Bemi bridge citing that the access provided by the construction of the bridge would enhance Park protection activities vis-à-vis increase patrols and Conservation Education activities to the enclave communities both during the dry and rainy season</td>
</tr>
</tbody>
</table>
| Concerns raised | • That the Bridge might further deepen the illegal activities of poachers and hunters  
• That the Park is constrained by the lack of adequate patrol vehicles and insufficient budgetary provisions to intervene in the area of provision of alternative livelihood to the enclave communities. |
| How concerns were addressed | • That since in the wisdom of CR-National Park, the construction of the bridge is seen in the positive light, all that is required is to design mitigation measures for those adverse impacts that are reversible  
• The ESIA team agreed with the Park authority on the need for increase patrols and Conservation Education and promised to provide for this in the ESMP  
• The need to work in coordination with community leadership was pointed out as a measure that will yield faster result in the conservation efforts |
| Commitment of the CR-National Park | The CR-National Park promised to implement the agreed suggestions to ensure that it protects its park but requested for funding to help it procure patrol vans and increase its ranger posts |
### 8.5.3 Consultation with Wildlife Conservation Society (WCS)

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>January 31, 2014</th>
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</thead>
<tbody>
<tr>
<td>Meeting Venue</td>
<td>WCS office, Calabar</td>
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<tr>
<td>Attendance</td>
<td>The meeting was attended to by World Bank team, Consultant, CR-CSDA and 2 Senior Officers of the WCS</td>
</tr>
<tr>
<td>Preamble</td>
<td>The General Manager of Cross River State CSDP welcomed all in attendance. He laid the foundation for the discussion before leaving the room for the World Bank staff and Consultant to take over. The Senior Environmental Specialist stated the aim and objectives of the project and why the WCS as primary stakeholder are being consulted. It was pointed out that the consultation was meant to amongst other things lead to improved management and conservation efforts which exist in other places such as Korup-Cameroon, Lake District-England and Whanganui-New Zealand where bridges were constructed inside national parks</td>
</tr>
<tr>
<td>Perception of WCS</td>
<td>The perception of the WCS was that the access provided by the bridge construction will adversely affect the integrity of the Park conservation</td>
</tr>
</tbody>
</table>
| Concerns raised    | • That the access provided by the construction of the bridge would affect the conservation of flora and fauna habitats.  
• They believe that the illegal activities of poaching, hunting and logging will increase.  
• WCS observed that Korup Bridge was for pedestrian use  
• They claimed that similar bridges constructed on the edge of Cross River National Park at Bashu and Ekonganaku witnessed an upsurge in illegal logging inside the park as soon as they were completed.  
• While agreeing on the possibility of mitigation measures to sustain the integrity of the Park, the WCS stated that the Korup National Park bridge is usually locked each night, and has a brigade of gendarmes permanently posted at the bridge who check everyone entering/leaving the park. |
| How concerns were addressed | • The ESIA team informed the WCS that their suggestions and mitigation measures to the concerns raised would form input decisions when developing the ESMP and therefore urged the WCS to come up with all measures it deems applicable  
• It informed the WCS about the different views shared by CR-National Park and the villagers and stated that given the distance of the bridge to the community (18km) it is not likely that the access provided by the bridge will trigger much negative impacts that will be irreversible  
• The ESIA team emphasized the need to work in coordination with community leadership and stakeholders as a measure that will yield faster result in the conservation efforts |
| Commitment of the WCS | WCS promised to work together with stakeholders in the effort to ensure that nature conservation of the area is not defeated by the presence of the bridge. |
Public Consultation at Okwangwo Community Halt

Men and Women Seated together during the Consultation Meeting at Okwangwo

A more view of women presence at the Okwangwo Consultation
REFERENCES


• McGuire and Morrall (2000) ‘Strategic Highway improvements to minimize Environmental Impacts within the Canadian Rocky Mountain National Parks’ Canadian Journal of Civil Engineering Vol. 27


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• World Bank (1999), Safeguard Policies: Operational/Bank Policy 4.01
• World Bank (1998), Pollution Prevention and Abatement Handbook
# ANNEXES

Annex 1: Public Consultation Attendance Record

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Annex 2: Contact Of Other Stakeholders Met

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Annex 3: Terms of Reference

The terms of Reference for ESIA include:
1. Conduct an Environmental and Social Assessment of the bridge to identify potential environmental and social impacts including cumulative impacts of possible increased access in and out of the park;

2. Appraise the project activities and determine any potential negative and positive impacts on the environment and enclaves living in and around the bridge, including identifying the existing state of the environment and identifying sensitive components of the existing environment within the project and area of potential project influence.

3. Carry out consultations with relevant stakeholders, including project affected persons, forestry and national park officials, environmental NGOs etc, to obtain views and suggestions regarding the environmental and social impacts of the bridge. The outcome of the consultations will be reflected in the ESIA report and incorporated into the project design as appropriate.

4. Identify existing and expected environmental regulations (Local, State, Federal) that affect the development and advise on standards, consents and targets.

5. Prepare and cost an Environmental and Social Management Plan (ESMP) detailing mitigation measures, institutional roles and responsibilities in the operationalization of the ESMP, which should include:
   a) Identification of aspects of location and operations, which may cause adverse environmental, social, health and economic effects;
   b) Recommendation of measures during operations to avoid and ameliorate these effects and increase beneficial impacts;
   c) Identification of any environmental issues and concerns which may, in the future, affect the development and conservation objectives within the area.
GOVERNMENT OF CROSS RIVER STATE
NIGERIA
MINISTRY OF ENVIRONMENT

Ref: ME/AD/235/Vol.1/3

February 13, 2011

The General Manager
Cross River State Community and
Social Development Agency
World Bank Assisted
37 B Ndilem Usang Isq Road
Calabar

RE: CLEARANCE TO INTERVENE IN OKWANGWO COMMUNITY,
EASTERN BOKI

I have directives to refer to your letter reference, No.
CRS/CSDA/COMM/42/Vol.1/4, dated 28th September, 2010 on the above
subject matter; and to convey the Hon. Commissioner’s approval for you to
proceed to intervene in the Okwangwo Community as requested.

However, this clearance is on condition that you please collaborate with the
Cross River National Park (CRNP) to ensure compliance with enabling laws.

Thank you.

Fidelis A. Anukwa
Director, Climate Change
for: Commissioner

The following has been signed for
2/14/12

Abo, 2/14/12

3/1/12

74
BRIEFS ON THE MEETING WITH DR. AMOS ABU (SENIOR ENVIRONMENTAL SPECIALIST)
WORLD BANK AID CROSS RIVER NATIONAL PARK MANAGEMENT, 5TH JULY 2012.
RE: BAM BREZE PROJECT

Reference is the recent visit of a team of World Bank officials on the above subject matter and
the subsequent meeting held with the management of Cross River National Park in the town
Bridge project, the management of the park wish to restructure the commission to ensure
and conserve the resources within the Cross River Division of the park in line with the
National Park Service vision and mandate.

The decision to allow the construction of the bridge project within the Buffer zone of the park
was taken after series of consultative meetings with all the affected communities on the
possible impact of the project on the resources of the park as well as some of the central
issues to be implemented as provided on section 46 subsection (1) and (4) of the National
Park Service Act.

In addition, the decision was also based on the fact that conservation and development are
interdependently linked and in most cases, reaching an acceptable solution to the project of the
been bridge project is the best option.

While we appreciate the concern of WCS, the park management had during the meeting with
the affected support zone communities agreed to build a patrol post by the bridge and remove
a 24 hour checkpoint to monitor and control the movement of produce on a safer guard
measure.
This is in addition to other mitigating measures such as stone pitching of the approaches of the
Bridge as well as the erection of vehicle barriers by the Agency that is implementing the
project.

On the other hand, the park management strongly believes that the bridge project would
greatly enhance park protection activities as it would facilitate access into that axis of the park
by the park Rangers during the raining season, a situation which hitherto had been practically
impossible in the past.

While thanking you for your understanding, it is important to say that the park management is
open and willing to welcome any other suggestion and or to collaborate with other
stakeholders on how best to protect the resources of the park especially in the area of
providing alternative employment and livelihood to the enclave communities.

Thank you very much

[Signature]

Joseph Assam Nte
For: conservator of park
NIGERIA NATIONAL PARK

CROSS RIVER NATIONAL PARK

HEAD OFFICE:
Akamkpa Town
Akamkpa Local Govt. Area
Cross River State

POSTAL ADDRESS:
P.M.B 1028, Cross River State

CALABAR, ADDRESS:
Cross River National Park Contact Office,
Federal Secretariat
2nd Floor

CRNP/PROT/41/111/556
Our Ref:
The General Manager,

Your Ref:

Date: 3rd February, 2014

Tel: 08037929263
RE: CONSTRUCTION OF THE BRIDGE ACROSS SEMI RIVER IN OKWANGWO RANGE OF THE CROSS RIVER NATIONAL PARK

Sequel to the meeting of 31st January, 2014 between the management of CRNP, CRS Community and Social Development Agency and the World Bank Consultants at Axari Hotel, Calabar, I am directed to forward a summary/statistics of Park Management operations within the Okwangwo Division from 2009-2013 (Table 1).

The request by the World Bank consultants was to support and buttress Park Management's position that the access provided by the construction of the bridge would enhance Park protection activities vis-à-vis increase patrols and Conservation Education activities to the enclave communities both during the dry and rainy season.

It is however important to point out here that although patrol and Conservation Education activities to the Okwangwo axis of the Park has improved, the Park is constrained by the lack of adequate patrol vehicles and insufficient budgetary provisions to intervene in the area of provision of alternative livelihood to the enclave communities.

We therefore solicit for support/assistance from NGO's and donor agencies in these areas to enable the Park Management effectively protect the Park and set up mitigating measures against any perceived adverse impact of the bridge on the conservation of the Park.

Thank you.

Joseph A. Ntui
For: Conservator of Park
APPLICATION FOR COMMUNITY DEVELOPMENT ASSISTANCE

Sir, we the above mentioned community wish to apply for assistance from your agency.

Our community has been denied of a lot of development project, this has left us behind in terms of development. Therefore sir, we see your agency as God sent to bring development to the abundant communities like ours.

Sir, we wish to humbly apply for the construction of a bridge across Lami Stream and two (2) single cells culverts to enable bicycle, motor bike pass across the rainy season.

Sir, we shall be very grateful if our application is given due consideration.

Thanks
From your Beloved Community
Okwango

Sign: [Signature]
Chief Otu
(Village Head)

Sign: [Signature]
Mrs. Mary Ogunyin (Women Leader)

Sign: [Signature]
Richard Otu (Chairman)
Our Ref: FC-HQ/C.216/Vol.3/61

15th April, 2011

The General Manager,
CRS Community and Social Dev. Agency,
1378 Nkabem Usang Iso Road,
Calabar.

RE: CLEARANCE TO INTERVENE ON OKWANGWO COMMUNITY EASTERN BOKI

I am directed to refer to your letter No. CRS/CSPA/COMM/42/Vol.4 dated 28th September, 2010 requesting for clearance to intervene in Okwangwo community in building of a bridge and culverts and to convey approval for you to go ahead with your intended intervention of Bridge and Culvert construction for the community.

Richard O. Iyamba
HOD, CPC
For: Chairman Forestry Commission

Approval

[Handwritten note:]
OAO
Be more a UPA
for Okwangwo community

[Handwritten note:]
Tatata
26/1/11
APPLICATION FOR COMMUNITY DEVELOPMENT ASSISTANCE

We, the undersigned, in the capacity of the community, wish to apply for

the assistance of the government.

The community has been affected by a lack of development, and we

are unable to carry out any projects due to the lack of financial

resources.

We request assistance to construct a new bridge to connect two

villages and to provide basic amenities like electricity and clean

water.

We understand the importance of this project and promise to make

every effort to repay the assistance.

Signatures:

[Signatures of community leaders]

Date: [Date]

[Stamp or official seal]