Federal Republic of Nigeria

Science and Technology Education Post-Basic (STEP-B) Project

= Environmental and Social Management Framework (ESMF) =

Final Report
February 2007

The World Bank
# Table of Contents

List of Tables ................................................................................................................. ii
List of Figures .................................................................................................................. ii
List of Acronyms .............................................................................................................. iii
Executive Summary ......................................................................................................... v

1.0 Introduction ................................................................................................................. 1
  1.1 Project Background ................................................................................................. 1
  1.2 Objectives of the Environmental and Social Management Framework (ESMF) .... 4
  1.3 Study Approach & Methodology ........................................................................... 4

2.0 Project Description ..................................................................................................... 6
  2.1 Overview of Nigerian Higher Education Sector ....................................................... 6
  2.2 Assessment of Post –Basic Science and Technology Education in Nigeria ........... 7
  2.3 Project Description ................................................................................................. 11
  2.4 Project Components ............................................................................................... 14

3.0 Policy, Legal and Institutional Framework ............................................................... 19
  3.1 Policy Framework .................................................................................................. 19
  3.2 Legal Framework .................................................................................................. 20
  3.3 Assessment of the Legal Framework ..................................................................... 22
  3.4 International Environmental Agreements .............................................................. 22
  3.5 World Bank Safeguard Policies ........................................................................... 23
  3.6 Institutional Framework ......................................................................................... 24

4.0 Baseline Data ............................................................................................................. 28
  4.1 General Description and Location ......................................................................... 28
  4.2 Description of the Environment ............................................................................ 29

5.0 Potential Environmental and Social Impacts ............................................................. 33
  5.1 Environmental Impacts ......................................................................................... 34
  5.2 Social and Health Impacts .................................................................................... 35

6.0 Environmental and Social Screening Process ........................................................ 37
  6.1 The Screening Process ......................................................................................... 37
  6.2 Responsibilities for the Implementation of the Screening Process ......................... 39

7.0 Environmental and Social Management Plan (ESMP) ........................................... 40
  7.1 Mitigation Measures ............................................................................................... 40
  7.2 Implementation Arrangement ............................................................................... 43
  7.3 Capacity Strengthening for ESMP Implementation ............................................... 44
  7.4 Monitoring Plan .................................................................................................... 44
  7.5 ESMP Budget ........................................................................................................ 45

8.0 Public Consultation Plan .......................................................................................... 50
  8.1 Objectives ............................................................................................................. 50
  8.2 Identifying Stakeholders ....................................................................................... 50
  8.3 Consultation Strategies ......................................................................................... 50

ANNEX 1: Summary of World Bank Environmental and Social Safeguard Policies .......... 53
ANNEX 2a: Environmental and Social Screening (ESS) of Education Sub-projects .......... 55
ANNEX 2b: Standard Format for Screening Report ...................................................... 57
ANNEX 2c: Screening Report: Environmental and Social Checklist ............................ 58
ANNEX 3: Standard Format for Environmental and Social Management Plan (ESMP) .... 59
ANNEX 4: Guidance on Environmental & Social Management Plan by Project Phases .... 60
ANNEX 5: Procedures for Sub-project Requiring an ESIA ........................................... 63
ANNEX 6: General Environmental Management Conditions for Construction Contracts .. 64
List of Tables

Table 2.1: Educational Institutions by Ownership (2005) 8
Table 2.2: Enrolment in Educational Institutions 8
Table 2.3: Education Projects Typology 13
Table 4.1: Demographic Data 31
Table 5.1: Potential Environmental & Social Impacts 33
Table 5.2: Estimated Emissions from Construction Equipment 34
Table 6.1: Sub-project Environmental Categories 37
Table 6.2: Summary Environmental & Social Management Process by project phase 39
Table 7.1: Summary of Environmental Mitigation Measures 41
Table 7.2: Budget and Responsibilities 45
Table 7.3: Environmental and Social Management Plan 46
Table 8.1: Three Year Public Awareness Raising Plan 52

List of Figures

Figure 3.1: Administrative Map of Nigeria 24
Figure 4.1: Proposed Project Implementation Structure 28
Figure 7.1 ESMP Implementation System 43
Figure 8.1: Spectrum of Engagement 51
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIST</td>
<td>African Institute of Science and Technology, Abuja</td>
</tr>
<tr>
<td>ATV</td>
<td>Abuja Technology Village</td>
</tr>
<tr>
<td>AU</td>
<td>African union</td>
</tr>
<tr>
<td>CBN</td>
<td>Central Bank of Nigeria</td>
</tr>
<tr>
<td>CoE</td>
<td>College of Education</td>
</tr>
<tr>
<td>COL</td>
<td>Commonwealth of Learning</td>
</tr>
<tr>
<td>CPS</td>
<td>Country Partnership Strategy (World Bank)</td>
</tr>
<tr>
<td>DFID</td>
<td>Department for International Development (UK)</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ECOWAS</td>
<td>Economic Community of West African States</td>
</tr>
<tr>
<td>EMIS</td>
<td>Education Management Information System</td>
</tr>
<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
</tr>
<tr>
<td>ESA</td>
<td>Education Sector Analysis</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>ESMF</td>
<td>Environmental and Social Management Framework</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>ESMS</td>
<td>Environmental and Social Management Specialist</td>
</tr>
<tr>
<td>ESMU</td>
<td>Environmental &amp; Social Mitigation Unit</td>
</tr>
<tr>
<td>ESP</td>
<td>Education Strategic Plan</td>
</tr>
<tr>
<td>ETF</td>
<td>Education Trust Fund</td>
</tr>
<tr>
<td>FCE</td>
<td>Federal College of Education</td>
</tr>
<tr>
<td>FCT</td>
<td>Federal Capital Territory</td>
</tr>
<tr>
<td>FEPA</td>
<td>Federal Environmental Protection Agency</td>
</tr>
<tr>
<td>FGC</td>
<td>Federal Government College</td>
</tr>
<tr>
<td>FGN</td>
<td>Federal Government of Nigeria</td>
</tr>
<tr>
<td>FME</td>
<td>Federal Ministry of Education</td>
</tr>
<tr>
<td>FME(\text{Env})</td>
<td>Federal Ministry of Environment (now FMEH)</td>
</tr>
<tr>
<td>FMEH</td>
<td>Federal Ministry of Environment and Housing</td>
</tr>
<tr>
<td>FMLP</td>
<td>Federal Ministry of Labour and Productivity</td>
</tr>
<tr>
<td>FMOE</td>
<td>Federal Ministry of Education</td>
</tr>
<tr>
<td>FMST</td>
<td>Federal Ministry of Science and Technology</td>
</tr>
<tr>
<td>FOS</td>
<td>Federal Office of Statistics</td>
</tr>
<tr>
<td>FSC</td>
<td>Federal Science College</td>
</tr>
<tr>
<td>FUT</td>
<td>Federal University of Technology</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GER</td>
<td>Gross Enrolment Ratio</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information System</td>
</tr>
<tr>
<td>HEI</td>
<td>Higher Education Institution</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>HND</td>
<td>Higher National Diploma</td>
</tr>
<tr>
<td>HSE</td>
<td>Health, Safety &amp; Environment</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>IT</td>
<td>Industrial Training</td>
</tr>
<tr>
<td>JAM(B)</td>
<td>Joint Admission and Matriculation Board</td>
</tr>
<tr>
<td>JICA</td>
<td>Japanese International Cooperation Agency</td>
</tr>
<tr>
<td>JSS</td>
<td>Junior Secondary School</td>
</tr>
<tr>
<td>LGAs</td>
<td>Local Government Authorities</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>NA(B)(T)(E)(B)</td>
<td>National Business and Technical Examinations Board</td>
</tr>
<tr>
<td>NARICT</td>
<td>National Research Institute for Chemical Technology</td>
</tr>
<tr>
<td>NASR(D)(A)</td>
<td>National Space Research and Development Agency</td>
</tr>
</tbody>
</table>
NBS  National Bureau of Statistics
NBTE  National Board for Technical Education
NCCE  National Commission for Colleges of Education
NCE  National Certificate of Education
NCST  National Council on Science and Technology
ND  National Diploma
NECO  National Examination Council
NEEDS  National Economic Empowerment & Development Strategy
NERDC  National Education Research and Development Council
NGO  Non-Governmental Organisation
NICTIB  National Information and Communication Technology Infrastructure Backbone
NIIB  National Information Infrastructure Backbone
NITDA  National Information Technology Development Agency
NPE  National Policy on Education
NUC  National Universities Commission
NUT  National Union of Teachers
OP  Operational Policy (World Bank)
PCN  Project Concept Note
PPT  Project Planning Team
PSC  Project Steering Committee
PT  Project Team
RPF  Resettlement Policy Framework
S&T  Science and Technology
SED  Science Equipment Development Institute, Abuja
SEEDS  State Economic Empowerment & Development Strategy
SEPAs  State Environmental Protection Agencies
SIL  Specific Investment Loan
SIWES  Student Industrial Work Experience Scheme
SMCs  School Management Committees
SME  Small and Medium Enterprises
SMICT  Science, Mathematics and ICT
SMOE  State Ministry of Education
SMOF  State Ministry of Finance
SSCE  Secondary School Certificate Examination
SSIU  STEPB Sub-project Implementation Unit
SSS  Senior Secondary School
SSTC  Sheda Science and Technology Complex
STA  Study Area (six STEPB STA reports)
STAN  Science Teacher Association of Nigeria
STEPB  Science and Technology Education Post Basic
STR  Student Teacher Ratio
TOR  Terms of Reference
TVE  Technical and Vocational Education
TTL  Task Team Leader
TVET  Technical and Vocational Education and Training
UBE  Universal Basic Education
UN  United Nations
UNDP  United Nations Development Program
UNESCO  United Nations Educational, Cultural and Scientific Organization
UNICEF  United Nations Children’s Fund
WAEC  West Africa Examination Council
WB  World Bank
WHO  World Health Organization
Executive Summary

Nigeria’s education sector faces serious challenges in meeting the key objective of providing affordable, accessible and qualitative education. The major issues which cut across all levels of education include: (i) inequitable access to quality education (rural children and especially girls have less access to basic and secondary schooling than children from urban and relatively better-off families); (ii) inadequate education quality (although there are no in-depth data on the quality of learning and teaching available, Nigerian educators and public and private employers agree that the quality and relevance of education in Nigeria at all levels need to be significantly improved, based on international comparative standards and trends); (iii) inadequate management, planning and monitoring capacity (the capacity to develop strategic education sector plans and related annual implementation plans is weak in the education sector at federal, State and LGA levels); and (iv) inefficiencies in funding and lack of targeted funding based on performance and strategic economic needs.

Financing of Education in Nigeria is the responsibility of all tiers of the government. In 2001, it was estimated that the Federal Government accounted for about 20 percent of total education expenditures, while state and local governments accounted for approximately 80 percent, suggesting that state and local governments are the main financers of education. The greater portion of the education budget goes to post-basic education.

The Federal Government of Nigeria (FGN) is committed to developing the non-oil sector through investments in post-basic science and technology (S&T) education. In 2005, the government began an assessment of the status of federal post-basic S&T education (STEPB) in Nigeria by appointing a STEPB Technical Taskforce. This assessment focused on six key areas: (1) policies and strategies in S&T innovation related to federal post-basic education and training, (2) financing and expenditure trends in federal post-basic education and training with a focus on S&T, (3) teaching and learning, curricula and assessment practices in S&T post-basic education and training at the federal level, (4) the impact of information and communication technologies on teaching and learning, e-learning and open learning arrangements, (5) labor and employment issues related to federal S&T post-basic education and training, and, (6) backbone connectivity readiness and the needs of selected federal universities.

The FGN have expressed a strong interest in strengthening post-basic S&T education at the federal level to promote improved performance and relevance of education and research in S&T related fields and have requested the assistance of the World Bank and Department for International Development (DFID) with the implementation.

The science and technology (S&T) Education Post Basic (STEP-B) Project aims to support the FGN in improving the quality and relevance of the S&T programmes offered at Post-Basic Federal Institutions and increasing access for disadvantaged target groups (rural and female students); and the establishment of effective Public-Private Partnerships for S&T related programmes between Post-Basic Federal Institutions and businesses, in order to become better adapted to labour market demands.

The overall development objectives of the STEP-B project are to: (a) promote improved performance and relevance of education and research in S&T related fields driven by competitive inter-disciplinary teams of Nigerian scientists in selected federal institutions; (b) support programs and sub-projects that aim to have a quality and relevance enhancing impact on secondary and tertiary S&T education and training; and (c) support improved links between Nigerian federal institutions and international counterparts.

The STEP-B project is a three-year Specific Investment Loan (SIL) to support capacity enhancement in post-basic science and technology education at the federal level in Nigeria. The three main components:

- providing competitive fund for Quality Enhancement and Innovation and Quality Improvement;
- supporting the Emergence of Centers of Excellence in post-basic S&T; and
- strengthening policy, planning and management of post-basic S&T education.

The STEP-B Project is to be implemented in all post-basic federal educational institutions including senior secondary schools, universities, polytechnics, colleges of technology and research institutes. The
STEP-B has been classified as a category B project, implying that the impacts are small scale and site-specific; thus easily remedied.

In recognition of the fact that environmental and social concerns may result from sub-project activities, the World Bank Nigeria Country Office commissioned an Environmental and Social Management Framework (ESMF) study in fulfillment of the Bank’s requirement for project appraisal. This ESMF has been prepared to satisfy national and state regulatory requirements as well as World Bank’s safeguard policies that address the environmental and socio-economic consequences of the project. The existing environment is described only for those aspects of the physical, biological, social and economic environment that are relevant to the project. The legal framework also identifies the project-environment interactions during operational phase.

In addition, the ESMF defines standard procedures and methods for incorporating potential environmental and social impacts and their associated mitigation measures into the selection, planning and implementation of all sub-projects carried out under the project. The ESMF also provides guidelines for preparing an Environmental and Social Management Plan (ESMP) or an Environmental and Social Impact Assessment (ESIA) as may be applicable during project implementation.

The project will have both beneficial and negative impacts on the physical, biological and social environment. Both these impacts and their associated mitigation measures are discussed as well as the institutional mechanisms used to implement the ESMF. Roles and responsibilities are clearly stated, including capacity building efforts for participating stakeholders in the STEP-B Project.

The monitoring plan defines roles and responsibilities for routine monitoring of the project. Routine monitoring focuses mainly on construction supervision and health, safety and environmental (HSE) protection awareness. Routine monitoring requirements are defined according to potential impacts and recommended mitigation measures.

Finally, a consultation plan was developed to provide a framework for achieving effective stakeholder involvement and promoting greater awareness and understanding of issues.
1.0 Introduction

1.1 Project Background

Nigeria is a federation with a total population of about 137 million making it the largest nation on the African continent. There are 394 different languages spoken in Nigeria. Hausa, Yoruba and Igbo are spoken by over 50 percent of the population and are the major national languages. English is the official language and is widely spoken. Nigeria has decentralized government structures with Federal, State and Local Government Area levels. There are 36 states and the Federal Capital Territory (FCT) and 774 Local government areas.

The political and economic transformation taking place in Nigeria today provides an opportunity to turn the economy of Africa’s most populous nation around. Over the last 4 years, the FGN has begun to undertake significant economic and financial management reforms geared to reducing poverty as outlined in the country’s National Economic, Empowerment and Development Strategy (NEEDS). Among its core implementation strategies, the NEEDS emphasizes changing the way the Government works through improved efficiency, transparency and strengthened anti-corruption activities.

Despite its reform efforts, Nigeria still faces significant challenges in accelerating growth, reducing poverty and meeting the Millennium Development Goals (MDGs). Nigeria's economy depends heavily on the oil sector, which contributes 95 percent of export revenues, 76 percent of government revenues, and about a third of gross domestic product (GDP). But following many years of neglect of the non-oil sectors, GNI per capita (2004) is only about US$390 (Atlas method)\(^1\), which is low even compared to the sub-Saharan Africa average of US$600. It is important to note that Nigeria receives only US$2 per capita in official development assistance compared to an Africa average of US$28.

Over the past decade, Nigeria has been plagued by frequent political unrest. This political instability has generated negative effects on the education system. Following the political changes, which saw the reintroduction of democracy in the country, the new government acknowledged the need to revise and update the National Policy on Education to ensure that the education system meets the needs of a new democracy.

The education system of Nigeria is based on the National Policy on Education (1977, revised 1999). The system comprises 9 years of basic education (6 years of primary and 3 years of junior secondary education), 3 years of senior secondary, and 4 years of tertiary education.

Education plays a key role in national development and is an essential path of a nation’s well being. Through education, individuals are empowered to make choices that affect their health and livelihood. The United Nations’ International Conference on Population and Development encouraged governments’ world wide to ensure access to all to education beyond the primary level.

The Federal Government of Nigeria (FGN) has realized the importance of education for individual, social and political development and has responded to this with policy reforms across the entire education sector. The FGN has placed high priority on capacity development as a critical means of achieving poverty reduction. It has made significant strides in improving primary school enrollments and has undertaken major sector reforms to achieve universal primary education by the year 2015. However, in order to accomplish this, it will be necessary to also expand and strengthen secondary and university level education so that sufficient graduates are produced to staff lower level classrooms and manage schools. Post-basic education plays an important conditioning role in poverty reduction. It does this in four ways.

---

\(^1\) According to the World Bank’s *World Development Indicators Database*, Nigeria’s GNI per capita increased from US$260 to US$390 between 2000 and 2004.
- First, post-basic education alleviates poverty through the direct contributions to economic growth generated by its influence on a nation’s productivity and international competitiveness. It achieves this by training a qualified and adaptable medium and highly-skilled labor force, by assisting the nation to access and generate new knowledge, and by adapting global knowledge for local use. In this way, it helps to determine living standards.

- Second, post-basic education reduces poverty through redistribution and empowerment. Specifically, it generates empowerment through the building of social capital and facilitates redistribution by expanding opportunities for employability, income, and social mobility.

- Third, it strengthens the entire education sector. At present, significantly more Nigerians complete secondary education than tertiary education. As such, a revitalization of key skills within secondary education changes the skills profile of a large proportion of Nigerian employees with repercussions for the competitiveness of Nigerian industry. Tertiary institutions train (and re-train) teachers, school principals and system managers who impact the quality of basic education. Tertiary level graduates play a major role in curriculum development and evaluation for primary and secondary education. These researchers analyze education performance, identify problems, and provide policy advice. TVET institutions develop mid-level vocational skills that are critical to small businesses and semi-technical labor force needs.

- Fourth, post-basic S&T education contributes importantly towards the attainment of the Millennium Development Goals. Tertiary level research and technology engender improved food supply and rural incomes. Tertiary institutions train the professionals—doctors, nurses, teachers and administrators—who will oversee and implement MDG activities. In addition, they foster relevant capacities in science, applied technology and community service and produce graduates with skills to keep the machinery and equipment in the productive sectors operating with dependability and predictable standards of performance.

From a policy perspective, IDA has concluded that secondary and tertiary educations are among the key drivers of economic growth (Africa Action Plan, World Bank, 2005). This requires three fundamental and interrelated conditions: first, a critical mass of adequately trained graduates and researchers in order to increase a country’s ability to absorb technology and innovation; second, appropriate curricula, pedagogical methods, well qualified teachers and an enabling teaching and learning environment aimed at preparing young men and women to meet the expectations of the labor market, and thirdly, strong and effects links between firms and local repositories of knowledge and skills (e.g., universities, centers of excellence, technical and vocational training institutes). This project addresses Nigerian post-basic S&T education through the lens of these requirements.

Over time, the project is expected to benefit Nigeria by: (a) improving the local and international competitiveness of Nigeria through a S&T led growth; (b) laying the foundation for improvements in the productivity of Nigeria’s skilled workforce, national research and innovation; and (c) generating the skilled S&T human resources needed to successfully implement the Government’s National Empowerment and Economic Development Strategy (NEEDS). In the long run, only gains in Nigeria’s international competitiveness will generate the economic expansion necessary for sustainable poverty reduction.

The FGN is committed to developing the non-oil sector through investments in post-basic Science &Technology (S&T) education. To deepen its understanding of the status of federal post-basic S&T education (STEP-B), the Honorable Ministers of Education and Science and Technology appointed a STEP-B Technical Taskforce in early December 2005, the committee representatives of the S&T post-basic education sub-sector stakeholders in Nigeria.
The goal of the Taskforce was to shed light on 6 dimensions of STEP-B in Nigeria that bear on the sub-sector’s contribution to national development: (1) policies and strategies in S&T innovation related to federal post-basic education and training, (2) financing and expenditure trends in federal post-basic education and training with a focus on S&T, (3) teaching and learning, curricula and assessment practices in S&T post-basic education and training at the federal level, (4) the impact of information and communication technologies on teaching and learning, e-learning and open learning arrangements, (5) labor and employment issues related to federal S&T post-basic education and training, and, (6) backbone connectivity readiness and the needs of selected federal universities.

The STEP-B Project can promote positive economic transformation and improvement in key sectors—education, health, agriculture, energy, water and sanitation. The application of science can stimulate the economy through innovations in such areas as agricultural production, industry, communications, and health care. Similarly, local products and innovations can lead to technological breakthroughs and the birth of vigorous new companies to market them. Thus, the STEP-B Project and the support of projects tailored toward the development agenda in the Science Initiative offers the FGN an invaluable opportunity to invest in those science and technology initiatives that are innately relevant to national development.

The overall objectives of the STEP-B are to support:

- the FGN in improving the quality and relevance of the S&T programmes offered at Post-Basic Federal Institutions and increasing access for disadvantaged target groups (rural and female students); and
- the establishment of effective Public-Private Partnerships for S&T related programmes between Post-Basic Federal Institutions and businesses, in order to become better adapted to labour market demands.

At this time of project preparation, the sub-projects are not yet identified. Consequently, specific information on numbers of sub-projects, site location, local communities, geo-physical land features, nature etc. is not available. Therefore, exact details and intensity of social and environmental impacts and their effective mitigation cannot be determined during project preparation. Thus an Environmental and Social Management Framework (ESMF) needs to be prepared in line with the requirements of the World Bank and the existing national regulation (EIA Act No. 86 of 1992).

The ESMF is required to identify the environmental impact of the STEP-B and to establish a mechanism for determining and assessing future potential adverse environmental and social impacts of sub-projects that will be identified during project implementation.

The ESMF will be prepared according to national policies, regulations and guidelines as well as World Bank’s operational policies (OP). It will be designed to cover the issues identified in components of the STEP-B. Specifically, the ESMF will focus on

- assessing the potential environmental and social impacts of sub-projects (rehabilitation, extension or new constructions of educational infrastructures), whether positive or negative, and propose mitigation measures which will effectively address these impacts;;
- establishing clear directives and methodologies for the environmental and social screening of micro-projects to be financed by the project;
- identifying sector planning process with the policy, regulatory and institutional framework; on environmental principles, standards and guidelines pertaining to the STEP-B;
• informing the project preparation team and the Federal Government of potential impacts of different anticipated sub-projects and relevant mitigation measures and strategies.

The goal of the ESMF is to improve decision making and to ensure that the social infrastructures (schools) either newly built or rehabilitated being considered under STEP-B are environmentally sound and sustainable.

In recognition of the fact that environmental and social concerns may arise as a result of the proposed project, the World Bank commissioned EnvironQuest to develop an Environmental and Social Management Framework (ESMF) in fulfillment of the Bank requirements for project appraisal.

The World Bank's Operational Policy (OP) 4.01 requires that an ESMF be prepared which will establish a mechanism to determine and assess future potential environmental and social impacts of project investments under components 2 of the proposed STEP-B, and then to set out mitigation, monitoring and institutional measures to be taken during design, implementation and operation of the subprojects to minimize adverse environmental and social impacts to acceptable levels.

The operational policy further requires that the ESMF report must be disclosed as a separate and stand alone document as a condition for Bank Appraisal of the STEP-B. The disclosure should take place both in Nigeria where it can be accessed by the general public and local communities and at the Infoshop of the World Bank.

1.2 Objectives of the Environmental and Social Management Framework (ESMF)

The primary goal of this ESMF is to improve decision making and to ensure that sub-project activities (design, construction, expansion, upgrading of educational infrastructures) being considered under the proposed project are environmentally sound and sustainable.

More specifically, the objectives of the ESMF are to:

i Assess the potential environmental and social impacts of the sub-projects (rehabilitation, extension, or new constructions), whether positive or negative and propose mitigation measures which will effectively address these impacts;

ii Inform the project preparation team and the Nigerian Government of the potential impacts of different anticipated sub-projects and relevant mitigation measures and strategies;

iii Establish clear directives and methodologies for the environmental and social screening of sub-projects to be financed by the project; and

iv Identify potential environmental policies, legal and institutional framework pertaining to the project.

1.3 Study Approach & Methodology

The ESMF study was prepared in accordance with applicable World Bank safeguard policies and Nigerian environmental assessment guidelines. The distinct phases of the study include:

- Data Gathering;
- Literature review;
- Environmental screening and scoping;
- Identification of potential impacts;
- Identification of impact mitigation measures;
- Preparation of an Environmental and Social Management Plan; and
- Preparation of sub-project guidelines.

- Literature Review

The approach was based on review of available literature and other strategic planning
documents at the national and state level. Specifically, the following were reviewed: project concept notes (PCN), draft project appraisal document (PAD), draft project implementation manual (PIM), STEP-B synthesis report, situation analysis, national education policy, state education plan, federal and state environmental laws regulations, decrees, acts, policies and guidelines, World Bank safeguard policies and other relevant documents.

- **Data Gathering**

  EnvironQuest team assembled and evaluated relevant baseline data related to the physical, biological and socio-cultural environment of each participating state. The baseline data reviewed included: topography, soil, water resources, climate and meteorology; biological and socio-economics data.
2.0 Project Description

2.1 Overview of Nigerian Higher Education Sector

The education system of Nigeria is based on the National Policy on Education (1977, revised 1999). The system comprises 9 years of basic education (6 years of primary and 3 years of junior secondary education), 3 years of senior secondary, and 4 years of tertiary education. The purpose of basic education is to equip its recipients with basic knowledge and skills to allow them to function as competent and productive citizens in a free society.

There are 394 different languages spoken in Nigeria. Hausa, Yoruba and Igbo are spoken by over 50 percent of the population and have been declared the major national languages. English is the official language and is widely spoken. Language has created something of a problem with respect to education in Nigeria. Because the smaller languages are not written, devising instructional material in those languages is difficult.

Education is administered by three branches of government. Primary education is under the control of local governments. Secondary schools fall under the jurisdiction of the state governments except for the “Unity Schools” which are administered by the federal government. Higher education is administered by both the federal and state governments.

The origins of Nigeria’s higher education system date back to 1934 when the colonial government established Yaba Higher College. In 1948 the University College in Ibadan was founded and began offering degrees jointly with the University of London. In 1962, the federal government established the University of Lagos. The Northern, Western and mid-Western Region Governments established the Ahmadu Bello University, University of Ife and the University of Benin respectively. Between 1975 and 1977, the federal government established seven new universities and took over four regional universities.

In the 1980s and 1990s the government implemented a series of far-reaching education reforms. These reforms have significantly altered the structure of secondary education. Before the changes went into effect, secondary school education closely resembled the British system consisting of GCE ‘O’ levels followed by two years of GCE ‘A’ level courses. This structure has been replaced by three years of junior secondary and three years of senior-secondary schooling. As a result, the GCE ‘O’ and ‘A’ Levels have largely been phased out, and replaced by the Junior School Certificate and Senior School Certificate.

Curricula at all levels of education have also been reformed to put more of an emphasis on science and technology. Universities have also introduced a general studies requirement to give students broad-based knowledge in addition to specialization. At the primary and secondary levels, new courses, such as environmental studies and population studies, have been introduced for the first time.

Accreditation has been introduced at the tertiary level to ensure certain standards. Higher education has also come under increased centralized control through three national

- Technical Secondary Education

Technical secondary education is offered through a variety of programs at secondary schools to students from either primary or junior school, including academic, vocational and technical specialization subjects. Vocational and technical education is designed to train low-level manpower and is offered in technical colleges or business and engineering skills training centers.

A two-tier system of nationally certified courses is also offered, leading to the award of National Technical/Business Certificates and Advanced National Technical/Business Certificates. The lower level program lasts three years after Junior Secondary School and is the equivalent of Senior Secondary School. The Advanced program entails two years pre-entry industrial work experience and ranks on the level of lower tertiary programs. All certificates are awarded by NABTEB.
- **University Higher Education**

The system of higher education is binary and provided by universities, polytechnics, institutions of technology, colleges of education and professional institutions. Universities can be established by governments (federal and state) and private bodies. Federal institutions of have bigger enrolments than those owned by state governments and private bodies.

- **Non-University Higher Education**

Higher technical education is provided at technical colleges, polytechnics and colleges of education. Entry to colleges and polytechnics is based on JAMB-administered entrance examinations combined with results from secondary and vocational schools.

In the recent past the states education sector has had problems in the implementation of policies for the improvement and expansion of its system; this has contributed to its failure to assist in the social and economic development of the country.

A survey of the education system in Nigeria revealed pertinent issues such as inequitable access to quality education; poor education quality; inadequate management, poor planning, inadequate teacher supply, training and development requirements as well as lack of relevance of the curriculum to provide students with appropriate life skills for enhanced socio-economic development and poverty reduction.

### 2.2 Assessment of Post–Basic Science and Technology Education in Nigeria

Nigeria’s education sector faces the following key issues, which cut across all levels of education: (i) inequitable access to quality education (rural children and especially girls have less access to basic and secondary schooling than children from urban and relatively better-off families); (ii) inadequate education quality (although there are no in-depth data on the quality of learning and teaching available, Nigerian educators and public and private employers agree that the quality and relevance of education in Nigeria at all levels need to be significantly improved, based on international comparative standards and trends); (iii) inadequate management, planning and monitoring capacity (the capacity to develop strategic education sector plans and related annual implementation plans is weak in the education sector at federal, State and LGA levels); and (iv) inefficiencies in funding and lack of targeted funding based on performance and strategic economic needs.

Financing of Education in Nigeria is the responsibility of all tiers of the government. In 2001, it was estimated that the Federal Government accounted for about 20 percent of total education expenditures, while state and local governments accounted for approximately 80 percent, suggesting that state and local governments are the main financers of education. The few studies that have examined the financing of education in Nigeria suggest that public funding for education may have increased from about 2.8 to 6.2 percent of Gross Domestic Product (GDP) between 1999 and 2002, as opposed to the SSA country average of about 4.7–5.0 percent. The greater portion of the education budget goes to post-basic education.

At the post-basic level, there is an overwhelming demand for more and better quality education, especially in Science and Technology related areas (chemical technology, biogenetic sciences, health sciences, agricultural sciences, physical technology, handling and packaging of for example fisheries and agriculture product exports, mineral technologies, oil-products related technologies). However, rapid expansion during the 1980s and 90s without a matching increase in funding has led to a decline in the quality and relevance of S&T teaching and learning at the Post-Basic levels, and hence of the graduates from the system. Tables 4.2 and 4.3 below provide an overview of the Nigeria Education system.

---

1 Estimates on Nigeria’s total expenditures on education were partial and underestimated since most estimates do not include accurate and reliable data on expenditures by local governments, which are responsible for the funding of primary education.
Table 2.1: Educational Institutions by Ownership (2005)

<table>
<thead>
<tr>
<th></th>
<th>Federal</th>
<th>State</th>
<th>LGA</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td>26</td>
<td>24</td>
<td>0</td>
<td>23</td>
<td>73</td>
</tr>
<tr>
<td>Colleges of Education</td>
<td>22</td>
<td>41</td>
<td>0</td>
<td>9</td>
<td>72</td>
</tr>
<tr>
<td>Polytechnics</td>
<td>19</td>
<td>32</td>
<td>0</td>
<td>6</td>
<td>57</td>
</tr>
<tr>
<td>Mono-Technics</td>
<td>32</td>
<td>14</td>
<td>0</td>
<td>5</td>
<td>51</td>
</tr>
<tr>
<td>Secondary Schools</td>
<td>102</td>
<td>13,846</td>
<td>0</td>
<td>13,700</td>
<td>27,549</td>
</tr>
<tr>
<td>Primary Schools</td>
<td>0</td>
<td>0</td>
<td>50,750</td>
<td>9,020</td>
<td>59,800</td>
</tr>
</tbody>
</table>

In Nigeria approximately 35% of the age group currently receives three years of Junior Secondary Education (JSE) which includes compulsory Science and Mathematics programs. A proportion of the JSE graduates continues to senior secondary schools where they receive a traditional academic-based education or technical and vocational schools where job-oriented education is offered.

Table 2.2: Enrolment in Educational Institutions by Ownership (2005)

<table>
<thead>
<tr>
<th></th>
<th>Federal</th>
<th>State</th>
<th>LGA</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td>384,200</td>
<td>n.a.</td>
<td>0</td>
<td>n.a.</td>
<td>384,200</td>
</tr>
<tr>
<td>Colleges of Education</td>
<td>114,500</td>
<td>n.a.</td>
<td>0</td>
<td>n.a.</td>
<td>114,500</td>
</tr>
<tr>
<td>Polytechnics</td>
<td>196,093</td>
<td>165,824</td>
<td>0</td>
<td>2,293</td>
<td>364,210</td>
</tr>
<tr>
<td>Mono-Technics</td>
<td>10,095</td>
<td>10,142</td>
<td>0</td>
<td>1,258</td>
<td>21,496</td>
</tr>
<tr>
<td>Secondary Schools</td>
<td>n.a.</td>
<td>5,422,611</td>
<td>0</td>
<td>974,970</td>
<td>6,397,581</td>
</tr>
<tr>
<td>Primary Schools</td>
<td>0</td>
<td>0</td>
<td>20,688,800</td>
<td>1,578,650</td>
<td>22,267,450</td>
</tr>
</tbody>
</table>

Nigeria has adopted a strategic vision for tertiary education with emphasis on S&T enrollment. Current education policies call for increased enrolment in science for all tertiary students, improved research and technological infrastructure, and strong quality assurance mechanisms. Since the beginning of the implementation of the policy, over sixty percent of the students to be admitted into tertiary institutions have been reserved for the sciences and other disciplines viewed to be critical to national development. Tertiary enrollment is significantly higher than the average for SSA but still below world average. S&T students comprise about 52% of total enrollment and 34% of graduates with the majority being in the natural and social sciences.

Nigeria has made a number of important advances in building up its S&T capacity. Concerned about the lack of coordination, the FGN has recently established a National S&T Coordinating Council chaired by the President of the Republic to provide leadership in the development of S&T in the country. One element of the President’s initiative is the plan to create the Abuja Campus for the first Africa Institute for Science and Technology (AIST), the first of four such campuses in Africa. The AIST-Abuja campus is under development as part of the Abuja Technology Village initiative, for which the FGN will provide incentives to attract private investment. There is also a joint effort underway with UNESCO to develop a national strategy for science and technology. With US$ 2.6 million in funding ($1.5 million of which is Government project funding) the UNESCO initiative represents a significant step forward in developing an innovation policy document that will put Nigeria in position work proactively with donors regarding proposals within a multi-year Plan of Action on Science, Technology and Innovation.

In collaboration with UNESCO (Abuja Office), the FGN has launched a project to strengthen S&T education in primary and secondary schools and teacher colleges in Nigeria. Through this initiative science kits are distributed to primary and secondary schools in Nigeria and assistance is provided to teachers colleges to strengthen pedagogy and methodologies for S&T teaching. The project also includes a component to strengthen local capacity to manufacture school equipment and consumables. In addition, the African Development Bank (AfDB) is co-financing a project that supports Secondary Education and Vocational Training as well as limited support to tertiary institutions.
A Presidential initiative recently proposed is the National Science Foundation, an independent funding body for competitive research and innovation projects and programs. In addition, the African Development Bank (AfDB) is co-financing a project (US$45 million) that supports Secondary Education and Vocational Training as well as limited support to tertiary institutions.

The Carnegie Corporation is active in the process of supporting a $3.5 million project to strengthen private universities in Nigeria. Synergies between the Carnegie Corporation and the World Bank have developed. Coordination has facilitated an exchange of lessons learned by Carnegie in the course of their support to Nigerian post-basic education, which have been incorporated in the design of this project.

Despite these worthwhile interventions designed to strengthen the country’s S&T capacity, studies show that Nigeria has fallen well behind in terms of competitiveness internationally. Recent analyses identify the following main areas of weakness:

1. **Poor coordination between education and S&T policies and strategies.** Lack of an integrated and coordinated policy approach that better harmonizes priority-setting, strategy and governance in science and technology and education. Political will and some of the necessary policies to guide the development of education and S&T exist in Nigeria are in place, but coordination between these two areas is weak. Education and S&T are addressed in separate policies and there is currently no mechanism to ensure coordination.

2. **Overloaded and under-resourced S&T Curricula and Programs.** The combined effect of content-driven curricula, little hands-on learning, overloaded courses, and examination practices that cater only to the highest achievers, lowers the prospects of S&T graduates to enter the labor market and leaves learners discouraged from pursuing S&T studies. With instructors often poorly trained to engage students in practical work and with limited availability of the required equipment and few resources or adequate facilities for experimentation and research, post-basic S&T learners’ are not motivated to pursue further study or work in S&T-related areas.

3. **Lack of a National Qualifications Framework (particularly at the vocational level) to provide to accommodate the rapidly changing demand for new skills and to allow the participation of various types of trainers and training institutions – formal and informal, public, private and community-based.**

4. **The under-representation and underachievement of female students in science and technology programs.** The under-representation and underachievement of female students in science and technology programs represents both an inequity but also avoidable inefficiency in the system. Despite the fact that the issue of improving girls education is being actively addressed at the basic level, post-basic level programs in science and technology are still characterized by stereotypical male-dominated enrolment patterns and low achievement of female students. At all levels female students in S&T-based studies are under-represented. Male students far outnumber female students in S&T programs at Federal Colleges (81%), Polytechnics (60%) and Universities (73%). At Polytechnics, in particular, enrolment follows a stereotypical pattern with female students taking the ‘softer’ options such as business management and secretarial programs, leaving technical subjects like welding and plumbing to male students.

5. **Slow and uncoordinated development of ICTs in Education.** There are a few promising cases of effective use of ICTs in education but development of this new mechanism for teaching and learning is uncoordinated and widespread availability is hindered due to several major constraints. The high cost of ICT connectivity, the dearth of a sufficient number of ICT technicians, limited teacher training in ICT-facilitated teaching, and low rates of ICT literacy militate against the impact that low-
cost, accessible ICT could have in broadening access to post-basic education in Nigeria.

6. Current funding procedures are input-based, not related to performance and outputs, and provide little incentive for creativity and innovation, and does not encourage partnership with industry and the private sector. Though up-to-date and reliable data is limited, observations of financing trends and expenditure patterns in Nigeria’s education sector show a demonstrable increase in education spending as a percentage of GDP since 1998. This increase is made even more dramatic by growth in per student expenditure even as a greater number of students pass through the post-basic sector. Almost two and a half times more expensive than non-S&T education on a per-student basis, S&T education consumes a much larger proportion of the federal education allocation than non-S&T education. Yet this financing decision is not buttressed by sufficient data regarding the link between S&T education funding levels and the number, type, and skill set of S&T graduates needed in industry, nor graduates’ value-addition in industry compared to non-S&T graduates.

7. Weak private sector participation in post-basic S&T education and research. Currently the private sector plays only a very small part in funding post-basic S&T education. Like in most other countries, the majority of the enrollment in private universities is in non-S&T programs. Though there are some promising examples, private sector funding of research in Nigeria is low but opportunities exist for expanding this role exist.

8. Insufficient data to facilitate informed decision-making. At present, available labor market information is insufficient to explain the reasons behind the apparent mismatch between supply and demand of S&T graduates. It is not clear whether: (a) there are no jobs because the economy is not growing fast enough, or (b) employers hesitate/have no incentives to employ S&T graduates because the regulatory system is too onerous, or (c) demand exists but for better or different skill sets, and/or (d) S&T graduates are employed in the informal sector (about which little is known) but formally recorded as unemployed.

9. At present, Nigeria’s federal expenditure on S&T is too low to reap the rewards that other countries have given more substantial contributions. Insufficient data are available to provide conclusions regarding research in the post-basic education sector. What is known of research in Nigeria suggests that the limited funding allocated is spread thinly among a large number of organizations/institutions with little strategic focus. Much of the research performed in Nigeria occurs in the university setting with 58 universities performing research (26 Federal, 23 State and 10 Private) and 44 polytechnics recognized as centers for research and development (R&D) activities. The federal institutions, together with the FMST research institutes, receive around 1% of the Federal Budget, an allocation which is considerably below what is needed to support adequately its operations, particularly in the capital-intensive R&D operations in such areas as Biotechnology, Space Research and Information Technology. For 2004, the approved Recurrent Budget of the Ministry was N3,352,167,903 (US$ 26 million with 1 NGN = 0.00780001 USD)\(^3\), constituting 0.6% of the national Recurrent Budget of N539,286,472,751 (US$ 4.206 billion). This is significantly lower than the 1980 Lagos Plan of Action’s target of 1% of GDP by 2000.

10. At current levels, FGN’s financing to university and polytechnic research is too low to create the enticing research environment that draws industry partners into the mutually beneficial research and development arrangements that define the research landscape in, for example, the East-Asian knowledge economies and elsewhere in the

---

developed world. With Nigeria’s private sector making only sporadic contributions to the S&T system and only small proportion of companies engaging in science-driven innovative activities, industry’s need for guaranteed quality and timeliness in delivery of results imposes pressures on researchers beyond what they can realistically deliver in the frame of current public support.

11. **Development of indigenous capacity in science and technology desires more attention.** Science provides the innovations that raise living standards and drive economic development and export growth. When local science communities can apply modern research to local challenges, they are better positioned to take significant steps toward addressing their countries’ economic, agricultural, environmental, health, and social needs.

12. **The process through which research performed translates into new goods, services, and processes that promote value-addition in Nigerian industry and enhanced competitiveness depends on a host of institutional linkages that are absent in the Nigerian context.** Institutional linkages between tertiary education institutions and industry are weak. Most Nigerian scientific institutions—academic research institutes, universities, technical colleges, public research institutions—operate in isolation from each other and, more importantly, from domestic and foreign markets. Institutes and universities do not collaborate with each other or work closely with domestic or foreign enterprises. Research is performed primarily in independent laboratories and institutes that frequently set priorities without regard to market demand, the technology upgrading and competitiveness needs of local enterprises, or even the Government’s own scientific priorities. The existing technology incubation centers through the Federal Ministry of S&T’s Technology Incubation Programme (TIP) number 37. Yet these numerous institutions designed for the purposes of bringing technologies to market have experienced limited success due to perceptions of poor quality and/or irrelevance to industry needs. Decisions about what R&D to conduct at the federal universities and federal R&D agencies and institutes are often taken without little regard to the needs of industry or in collaboration with individuals who actually work in industry. The net effect is an R&D system that is an overhead expense rather than a resource for generating wealth. Both increased collaboration and better responsiveness to commercial markets are required to generate an efficient, productive R&D system and an innovative economy. Recent reforms in Hungary and the EU, as well as earlier reforms in the US, Finland, Korea, China, India, Brazil, Mexico and Israel, among others, were all designed to create closer links between research institutes and universities on the one hand and domestic and global markets and private enterprises on the other hand.

13. **In general, national development plans call for higher value-addition, more agro-processing opportunities, and a continued diversification of exports.** This puts new and greater demands on research and extension services, which are being reformed to be more responsive to clients’ (farmers) needs. Research and extension services are being reformed. But the long-term success of these reforms will require a growing critical mass of qualified researchers and extension workers contracted to solve problems with the latest and best technological solutions.

### 2.3 Project Description

The Federal Government of Nigeria has placed high priority on capacity development as a critical means of achieving poverty reduction. It has made significant strides in improving primary school enrollments and has undertaken major sector reforms to achieve universal primary education by the year 2015. However, in order to accomplish this, it will be necessary to also expand and strengthen secondary and university level education so that sufficient graduates are produced to staff lower level classrooms and manage schools. Post-basic education plays an important conditioning role in poverty reduction. It does this in four
ways. First, post-basic education alleviates poverty through the direct contributions to economic growth generated by its influence on a nation’s productivity and international competitiveness. It achieves this by training a qualified and adaptable medium and highly-skilled labor force, by assisting the nation to access and generate new knowledge, and by adapting global knowledge for local use. In this way, it helps to determine living standards.

Second, post-basic education reduces poverty through redistribution and empowerment. Specifically, it generates empowerment through the building of social capital and facilitates redistribution by expanding opportunities for employability, income, and social mobility.

Third, it strengthens the entire education sector. At present, significantly more Nigerians complete secondary education than tertiary education. As such, a revitalization of key skills within secondary education changes the skills profile of a large proportion of Nigerian employees with repercussions for the competitiveness of Nigerian industry. Tertiary institutions train (and re-train) teachers, school principals and system managers who impact the quality of basic education. Tertiary level graduates play a major role in curriculum development and evaluation for primary and secondary education. These researchers analyze education performance, identify problems, and provide policy advice. TVET institutions develop mid-level vocational skills that are critical to small businesses and semi-technical labor force needs.

Fourth, post-basic S&T education contributes importantly towards the attainment of the Millennium Development Goals. Tertiary level research and technology engender improved food supply and rural incomes. Tertiary institutions train the professionals-doctors, nurses, teachers and administrators who will oversee and implement MDG activities. In addition, they foster relevant capacities in science, applied technology and community service and produce graduates with skills to keep the machinery and equipment in the productive sectors operating with dependability and predictable standards of performance.

From a policy perspective, IDA has concluded that secondary and tertiary educations are among the key drivers of economic growth (Africa Action Plan, World Bank, 2005). This requires three fundamental and interrelated conditions: first, a critical mass of adequately trained graduates and researchers in order to increase a country’s ability to absorb technology and innovation; second, appropriate curricula, pedagogical methods, well qualified teachers and an enabling teaching and learning environment aimed at preparing young men and women to meet the expectations of the labor market, and thirdly, strong and effects links between firms and local repositories of knowledge and skills (e.g., universities, centers of excellence, technical and vocational training institutes). This project addresses Nigerian post-basic S&T education through the lens of these requirements.

Over time, the project is expected to benefit Nigeria by: (a) improving the local and international competitiveness of Nigeria through a S&T led growth; (b) laying the foundation for improvements in the productivity of Nigeria’s skilled workforce, national research and innovation; and (c) generating the skilled S&T human resources needed to successfully implement the Government’s National Empowerment and Economic Development Strategy (NEEDS). In the long run, only gains in Nigeria’s international competitiveness will generate the economic expansion necessary for sustainable poverty reduction.

The proposed S&T Education Post Basic (STEP-B) Project to be implemented in all post-basic federal educational institutions including senior secondary schools, universities, polytechnics, colleges of technology and research institutes aims to support:

- the FGN in improving the quality and relevance of the S&T programmes offered at Post-Basic Federal Institutions and increasing access for disadvantaged target groups (rural and female students); and
The rationale for Bank involvement in this project has four elements. First and foremost, the Bank is a major development partner for the Government of Nigeria, and the proposed intervention addresses human development, productivity and growth issues that are central to the long-term success of Nigeria’s development strategy. The World Bank-DFID partnership recognizes that Nigeria is at a turning point, one that requires a significant, consistent response from the international community. Working with the Federal Government within the NEEDS and SEEDS framework, the CPS specifies four priority areas: (a) support to national initiatives in the social sectors; (b) financing investments in infrastructure; (c) dialogue and advice on the investment climate and policies to grow the private sector; and (d) financial and technical support to work on improved accountability, transparency and fighting corruption.

Second, the World Bank’s support to S&T has proven successful in promoting economic growth in those sectors and countries in which such support has been provided. Due to the Bank’s intensive involvement in private sector development, agriculture, education, and other S&T-related areas such as health, it is uniquely positioned to cultivate the cross-sectoral and system-wide issues and obstacles that constrain the science and technology from contributing to economic growth.

Third, S&T is beginning to elicit greater attention due to its economic growth potential as well as its roles in poverty reduction and research and development. The World Bank, like DFID and most bilateral and multilateral donors today, is building its knowledge base in S&T for development. As a result of the increasing donor interest in support to S&T, a vast amount of experience and potential for partnership exists that the World Bank is well positioned to leverage.

Fourth, the Bank has experience and expertise in the reform and promotion of national science and technology systems and in education reform, through work with several other client countries. The success of the Millennium Science Initiative projects in Uganda demonstrates this most vividly. As a result of those successes, the Bank is recognized by clients and the international S&T policy community as a leader in transferring best practice in S&T and education systems and capacity development.

Based on the three components of the STEP-B project all the activities listed in Table 2.1 will be included in the project, as is typically the case with most World Bank education project.

### Table 2.3: Education Projects Typology

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Typical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Infrastructure Development</td>
<td>Significant expansion of an existing school</td>
</tr>
<tr>
<td>Infrastructure Rehabilitation or</td>
<td>New Roof, structural repairs, etc.</td>
</tr>
<tr>
<td>Expansion</td>
<td>New classroom wing, laboratories, library, etc.</td>
</tr>
<tr>
<td>Institutional Strengthening</td>
<td>Design or improvement of strategies, plans and programs</td>
</tr>
<tr>
<td></td>
<td>Upgrading educational management</td>
</tr>
<tr>
<td>School Coverage/Technical Assistance</td>
<td>Expansion of Coverage</td>
</tr>
<tr>
<td></td>
<td>Quality enhancement</td>
</tr>
<tr>
<td></td>
<td>Improving availability of instructive material</td>
</tr>
</tbody>
</table>

The Project development objectives are to: (1) promote improved performance and relevance of education and research in S&T related fields driven by competitive inter-disciplinary teams of Nigerian scientists in selected federal institutions; (2) support programs and sub-projects that aim to have a quality and relevance enhancing impact on secondary and tertiary S&T
education and training; and (3) support improved links between Nigerian federal institutions
and international counterparts. By using merit-based and transparent selection procedures,
the STEPB project will help to strengthen and restructure selected segments of Nigeria’s post-
basic education and training base in S&T related fields.

Key performance indicators to be assessed for STEPB Project progress include:

- Total public and non-public annual recurrent expenditure per student constant naira in
  federal post-basic S&T institutions (to track possible shifts in educational quality).
- Annual federal budgetary allocation to the federal post-basic S&T institutions in
  constant naira with 2006 as the base year (to ensure that project funds supplement the
  government's financial effort, rather than substitute for it).
- An assessment of the labor market for federal post-basic S&T graduates will be
  carried out in Year 4 of the project (to assess possible improvements in educational
  relevance).
- Number of fully accredited and partially accredited academic courses in federal post-
  basic S&T institutions by discipline during the planned 2010 accreditation exercise
  (to show quality trends in teaching and learning in comparison to the year 2005
  accreditation exercise).
- Assessment of trend in female enrollment in federal S&T programs in selected federal
  post-basic S&T institutions (to assess improvements in equity in access).

If the project is successful, the number of employers of S&T graduates with expressing
satisfaction with the quality of graduates employed will increase (by 35%). As well, the
pipeline of science and engineering undergraduates and postgraduates enrolled in key
disciplines will increase (by 20%). Further, the share of private sector financing of S&T
education in those STEPB institutions designated as Centers of Excellence will increase.
Finally, the number of senior secondary students planning careers in S&T fields will increase.
These outcomes will, in turn, increase the private sector absorption of both people and
knowledge, creating greater competitiveness and new areas of comparative advantage in the
Nigerian economy.

The STEPB Project, however, is a small investment in comparison to the needs and size of the
entire post-basic S&T education subsector. Therefore, the STEPB Project will pilot
innovations that render the economic benefits of S&T (as opposed to funding the creation of
infrastructure, though some infrastructure financing will likely be justified) and that are
sustainable beyond the life of the Project. The STEPB Project seeks to pilot reforms and
innovations in a limited number of selected STEPB areas key to national development needs.
In this way, the project will be catalytic while avoiding the pitfall of spreading resources too
thinly across a wide number of initiatives.

2.4 Project Components

The STEP-B project is a three-year Specific Investment Loan (SIL) to support capacity
enhancement in post-basic science and technology education at the federal level in Nigeria.
The STEP-B Project has three components:

Component 1: Competitive Fund for Quality Enhancement and Innovation and Quality
Improvement.

This component supports a facility to provide competitively-awarded quality improvement
grants to federal post-basic institutions through three windows

Window A: Competitive grants for research and technology development (USD 30 million)

Window A is intended to improve access to research as part of S&T teaching and learning in
post-basic education and support high quality research of relevance to local and national S&T
needs. Sub-project proponents may be individual STEPB institutions or a cluster of
institutions working in partnership.
Two funding categories in Window A are available: (1) Institutional Grants of up to US$250,000 (US Dollars two hundred and fifty thousand) to support S&T research capacity building within STEPB institutions, and (2) Partnership Grants of up to US$ 800,000 (US Dollars eight hundred thousand) to encourage and support partnership among STEPB institutions and with industry in S&T research and technology development. This larger threshold will only be available to institutions that team up at least two institutions to undertake joint research activities (i.e., partnerships are encouraged to cut across the entire post-basic S&T education sub-sector at the federal level, particularly where such partnerships include support to senior secondary S&T education institutions, the private sector, etc.).

**Window B: Grants for technology partnerships between federal STEPB institutions and private enterprises (USD 15 million)**

Insufficient incentives have facilitated bridges between federal post-basic S&T education institutions and industry for the purposes of technology development. Rather, the research performed in post-basic education institutions has not generally transferred to industry. Within the FMST’s own federal research institutions (e.g., National Engineering Design Development Centre, National Centre for Genetic Resources and Biotechnology, Nigerian Building and Road Research Institute, etc.) progress toward commercialization of funded research is limited. Across Nigeria’s S&T system, the pathway from knowledge production to technological development has been blocked. Overcoming the gap separating knowledge-production institutions from investors, users, and entrepreneurs is the goal of Window B. This objective will be addressed in three ways (1) grants for STEPB institution-enterprise studies and technology scanning exercises, (2) grants to STEPB institution-enterprise technology partnerships, (3) grants to an “Innovators of Tomorrow” program to fund young entrepreneurs seeking to develop technologies in industry.

The purpose of the technology scanning grants for STEPB institution-enterprise teams is to fund federal post-basic S&T institutions and their industry-based partners to determine the commercial feasibility of ideas and to convert research into commercial relevant technology development proposals. Activities appropriate for support through technology scanning grants include firm-based needs-analysis, technology audits of available technological solutions to identified needs, technology development proposals, and collaborative technological development and research. A maximum of 5 technology scanning grants up to $100,000 will be awarded during each Round of competition. At least two Rounds will be convened on a twice-yearly cycle.

Technology partnerships will also be eligible for support through Window B. Technology partnership grants will be awarded to teams composed of at least one STEPB institution and at least one private sector firm that is keen to pursue joint research and technology development. Support to the partnership aims to bridge the STEPB institution-industry divide. The program will provide grant financing to enable scientists working in collaboration with enterprises to demonstrate the technical feasibility of small-scale laboratory discoveries and also to enable them to develop a business plan and detailed marketing strategy. The grants will be awarded to new or existing partnerships engaged in a three-stage process of: (1) development/refinement of a commercially promising S&T idea that is still at the concept stage, (2) investigation of the feasibility of the idea and proof of concept, and (3) preliminary prototype development and follow-on R&D. A maximum of 5 partnership technology development grants up to $200,000 will be awarded during each Round of competition.

The Innovators of Tomorrow grant recognizes the potential in Nigeria’s emerging entrepreneurs and innovators, graduating from federal STEPB institutions. This national competition will award grants of up to $20,000 to 25 students yearly. Eligible applicants are students completing their final year of study in a Bachelor’s of Arts or Sciences program from a Nigerian tertiary education institution. Applicants for the award must be able to demonstrate exceptional entrepreneurialism and innovativeness in an area of economically
promising technology development. The opening of each year’s competition as well as the recipients of the *Innovators of Tomorrow* award will be nationally publicized. A subcommittee of the Technical Review Committee will adjudicate the competition and select the awardees annually.

**Window C: Competitive grants for improving teaching and learning development (USD 22.5 million)**

This window seeks to raise the quality of post-basic S&T teaching and learning activities, sharpen the relevance to local and national needs of S&T teaching and learning activities and improve their efficiency and management. Window C will also support mechanisms that promote greater access to S&T tertiary level programs, particularly for females.

Eligible institutions will be any federal post-basic S&T training institution in the country—Senior Secondary Schools, Polytechnics, Monotechnics, Federal Colleges of Education, Federal College of Science and Technology, Federal Universities, etc.

It is expected that activities to be financed under Window C will include the following:

- Enhanced learning and training opportunities related to regional skills needs
- Enhanced teacher and lecturer development and support programs
- Institutional strategies and programs for improving the public understanding of science and technology and for attracting more students, particularly females, to choose a career path in the sector
- Mechanisms for improving the quality of intake into tertiary S&T programs and reducing failure and drop-out rates
- Strategies for using ICT to improve STEPB teaching and learning
- Cooperation between federal STEPB institutions and private sector institutions that lead to more relevant teaching, research and development activities (e.g., industry internships for students and lecturers, “industrialist in the classroom” programs, mentorship programs with leaders in business for S&T students, etc.)

**Component 2: Supporting for the Emergence of Centers of Excellence in post-basic S&T.**

The objective of second component is to inject a small number of highly promising, high quality STEP-B institutions with the resources necessary for them to emerge into centers of excellence, raising the national competence of Nigeria in the S&T area addressed by the Center and increasing the economic benefits derived from the Center. This component will support the development of Centers of Excellence in S&T in selected tertiary education institutions. Such Centers can address not only S&T subjects but also S&T education and S&T policy.

Funding under this Component will provide grants to help transform groups of researchers, faculty, staff, professors, teachers, and entrepreneurs in STEP-B institutions into globally-recognized Centers of Excellence. These Centers of Excellence would be selected on the basis of the following criteria: (i) their potential for conducting world class scientific research and technology development; (ii) the relevance of that research to the current or future scientific and economic development of Nigeria, including potential relevance to Nigerian industry or the possibility of forging partnerships with local or foreign business firms; (iii) their plans for teaching graduate and undergraduate students and for providing fellowships to train and attract the next generation of scientists; (iv) their potential for and interest in conducting multidisciplinary research, and (v) their proposals for outreach activities to STEPB institutions (e.g., Senior Secondary Schools, Universities, Polytechnics, Monotechnics, etc).

The Component’s objective will be achieved by financing the following activities:

- Purchase of new, modern laboratory equipment
- Cooperative international scientific projects with research teams outside Nigeria
• Stipends for doctoral students and post-doctoral scholars to conduct research at the Centers. This will encourage a younger generation of scientists to pursue scientific careers in fields supported by the Centers
• Grants to attract visiting professors from outside Nigeria to teach and conduct research at the Centers. These visiting professors could be either expatriate Nigerian scientists currently living and working outside Nigeria or foreign scientists
• Organization of conferences and workshops in Nigeria and grants for Nigerian scientists to attend international conferences and workshops outside Nigeria

**Component 3: Strengthening policy, planning and management of post-basic S&T education.**

The objective of Component 3 is to initiate multiple complementary initiatives that will achieve a sector-wide impact, raising the quality, relevance, and access to STEP-B in Nigeria. The Component includes discrete sub-components for support to: (i) national policy and planning, institutional strengthening and management capacity building, and (ii) project management and administration as detailed below.

**Sub-component 3A - Supporting national policy and planning and institutional strengthening (USD 15 million)**

This sub-component provides support for S&T policy and planning initiatives as well as institutional strengthening activities that address identified systemic shortcomings. These activities will provide opportunities scale-up innovative developments of national significance in post-basic S&T education. Priority activities to be supported under the sub-component are those that align institutional reform and priority-setting with on-going initiatives such as that of UNESCO’s project for the development of a Plan of Action on Science, Technology and Innovation and the recently announced Presidential Initiative on S&T will be prioritized.

Impinging the ability of policy makers and planners to strengthen the quality, output, and impact of STEP-B institutions in Nigeria is the current dearth of monitoring and benchmarking data of the S&T sector. Not only is this data required to monitor and evaluate the STEP-B Project, but more broadly it provides the rationale for institutional reform. For example, equipped with broad baseline data on the number of science and engineering students, the number of drop-outs, the number of degrees (bachelor, Master and PhD) granted in different S&T disciplines, the number of passes in science and mathematics at Senior Secondary level, the FGN will be on firmer ground to address particular weaknesses in the current system and leverage particular successes.

Another cluster of activities funded under this sub-component are those that address the institutional impediments that have limited the number and impact of graduates from federal STEP-B institutions with appropriate and relevant S&T skills necessary to gain employment in productive sectors, thereby enhancing national competitiveness, promoting knowledge generation, technology development, and innovation to meet Nigeria’s development goals. These activities will trigger sector-wide improvement and/or relate to the expansion of post-basic S&T teaching and learning opportunities.

**Sub-component 3B - STEPB project management and administration (USD 7.5 million)**

This sub-component will support the management of the STEP-B project. Costs to be covered in sub-component 3B include:

• Equipment and training for project management (such as development of a STEP-B Project portal that will receive electronic submissions from grant proponents, announce Calls for Proposals and short-listed candidates, etc.)
• Technical assistance for all project activities as required
• Operational costs for project implementation
• Capacity building for monitoring and evaluation
• Contractual services commissioned by the STEP-B project secretariat
Eligible institutions for Component 3 support are STEP-B institutions, including FME or FMST agencies and other institutions as determined. Prior to the beginning of each year, the STEPB Project Coordinator will propose, after wide consultation, activities to be funded under Component 3 during the subsequent year. These activities will form part of the annual Project Implementation Plan that will be approved by the STEPB Project Steering Committee at appraisal.
3.0 Policy, Legal and Institutional Framework

Nigeria has developed a number of important initiatives in policies, laws and regulations applicable to educational sector and in accordance with the environmental issues under the sub-projects of the STEP-B project. Internationally, agencies such as the World Bank, DFID and other development agencies usually set environmental criteria for projects, which must be met by project proponents before said agencies invest in them.

The major national policies and regulations (environmental and educational) that are considered relevant to the project are summarized in this section.

3.1 Policy Framework

National Policy on Education

The policy document addresses the issues of imbalance in the provision of education in different parts of the country with regard to access, quality of resources and girls’ education. It seeks to inculcate national consciousness, unity, training and appropriate skill acquisition as well as mental and physical competence for the survival of the individual and Nigerian society.

National Policy on Science and Technology

The policy was formulated in 1986 for the overall national development through the effective application of scientific and technologically skills for the production of goods and services and to ensure a better quality of life for the country. The revised policy addresses the need for a coherent, systematic and comprehensive approach to the determination of technological programmes and their implementation. The policy also takes into account domestic productions in agriculture and rural development, food security, industrial manufacture, infrastructural services such as information and communications technology (ICT), space exploration and biotechnology.

National Policy on the Environment

The stated goal of the National Policy on the Environment is to achieve sustainable development in Nigeria, and in particular to:

1. Secure a quality of environment adequate for good health and well being;
2. Conserve and use the environment and natural resources for the benefit of present and future generations;
3. Restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of living natural resources and ecosystems;
4. Raise public awareness and promote understanding of the essential linkages between the environment, resources and development, and encourage individual and community participation in environmental improvement efforts; and
5. Co-operate in good faith with other countries, international organizations and agencies to achieve optimal use of trans-boundary natural resources and effective prevention or abatement of trans-boundary environmental degradation.

National Economic Empowerment and Development Strategy (NEEDS)

NEEDS was designed to boost economic growth and help the country achieve the Millennium Development goals. The objective of NEEDS is to enable Nigeria achieve a turn around and grow a broad based market oriented economy that is private sector - led and in which people can be empowered so that they can, as a minimum, afford the basic needs of life. It is therefore a pro-poor development strategy with sources of economic empowerment being gainful employment and provision of social safety nets for vulnerable groups.
3.2 Legal Framework

A number of national and international environmental guidelines are applicable to the rehabilitation, construction and upgrading of facilities and other sub-projects under the STEP-B. In Nigeria, the power to enforce all activities that might impact the environment is vested in the Federal Ministry of Environment and Housing (formerly Federal Ministry of Environment). Internationally, agencies such as the World Bank, DFID and other development agencies usually set environmental criteria for projects they are involved in.

− Federal

The Federal Ministry of Environment (FMEnv) was created in 1999 to take over the function of the Federal Environmental Protection Agency (FEPA). The ministry was later merged with the Federal Ministry of Housing to form the Federal Ministry of Environment and Housing (FMEH) in 2006. FMEH has a mandate to co-ordinate the environmental protection and conservation of natural resources for sustainable development in Nigeria. The specific responsibilities of the ministry are to:

1. monitor and enforce environmental protection measures;
2. enforce international laws, conventions, protocols and treaties on the environment;
3. prescribe standards and make regulations on air quality, water quality, pollution and effluent limitations, the atmosphere and ozone layer protection, control of toxic and hazardous substances; and
4. promote cooperation with similar bodies in other countries and international agencies connected with environmental protection.

As contained in FEPA Acts 58 of 1988 and 59 of 1992. FMEH has put in place statutory documents to aid the monitoring, control and abatement of industrial waste. The statutory documents currently in place include:

2. National Environmental Protection (Effluent Limitations) Regulations (S.1.8) 1991;
3. National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) (S.1.9) 2004;
4. National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations (S.1.15) 1991;
5. Guidelines and Standards for Environmental Pollution Control in Nigeria 1991;
10. Environmental Impact Assessment (EIA) Act No. 86 of 1992; and

These statutory documents clearly state the restrictions imposed on the release of toxic substances into the environment and the responsibilities of all industries whose operations are likely to pollute the environment. Such responsibilities include provision of anti-pollution equipment and adequate treatment of effluent before being discharged into the environment, etc. (S.1.8 & 9).

FMEH also has put in place procedural and sectoral guidelines detailing the EIA process including a categorization of environmental projects into Categories I, II and III (referred to by the World Bank as categories A, B and C respectively). These guidelines require that a
complete EIA be performed for Category I projects. Category II projects may not require an EIA depending on the screening criteria, while Category III projects do not require an EIA. The sectoral guidelines on infrastructure development apply to this project as schools rehabilitation is classified as a category II project.

In addition, the following laws are considered relevant to the project:

**National Building Code**

The National Building Code (NBC) provides guidelines for regulating the building construction activities across the country. It serves as a model code for adoption by all agencies involved in building construction works by public works departments, local bodies and construction companies. The code contains administrative regulations, development control rules and general building requirements; fire safety requirements; stipulations regarding materials, structural design and construction (including safety); and building and plumbing services.

**Child Rights Act (2003)**

The act gives full protection to privacy, honour, reputation, health and prevention from indecent and inhuman treatment through sexual exploitation, drug abuse, child labour, torture, maltreatment and neglect to a Nigerian Child. It also declares that every child has a right to life, to be allowed to survive and develop.

**Land Use Act**

The legal basis for land acquisition and resettlement in Nigeria is the Land Use Act of 1978 which was modified in 1990. The following are selected relevant sections:

Section 1: Subject to the provision of this Act, all land comprised in the territory of each state in the Federation is vested in the Governor of each state and 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.

Section 2: (a) All land in urban areas shall be under the control and management of the Governor of each State; and (b) all other land shall be under the control and management of the local government within the area of jurisdiction in which the land is situated.

Therefore, according to the Land Use Act, all land in Nigeria is vested in the Governor of each State, and shall be held in trust for the use and common benefit of all people. The 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**

By the provision of acts, edicts and laws the states have also set up State Environmental Protection Agencies (SEPAs) as the regulatory bodies to protect and manage the environmental issues in the states.

The functions of the SEPAs include:

1️⃣ Enforcement of all environmental legislations and policies;
2️⃣ Coordination and supervision of environmental assessment studies;
3️⃣ Minimization of impacts of physical development on the ecosystem;
4️⃣ Preservation, conservation and restoration to pre-impact status of all ecological processes essential to the preservation of biological diversity;
5️⃣ Protection of air, water, land, forest and wildlife within the states;
6️⃣ Pollution control and environmental health in the states; and
Co-operation with FMEH and other agencies to achieve effective prevention of abatement of trans-boundary movement of waste.

3.3 Assessment of the Legal Framework

The existing legal framework for environmental assessment in Nigeria is considered adequate. Detailed laws, regulations and guidelines have been developed and serve as the framework for conducting EIAs in both the public and private sectors. The implementation of these rules has been poor due to lack of adequate enforcement.

EIA Act

The Act does not encourage the participation of people whose lives are likely to be affected by a project; rather, it encourages the collection and documentation of technical information which is confusing and unintelligible to a majority of people. All too often, the provisions enshrined in the law are not enforced.

FEPA Sectoral Guideline

FEPA’s Guideline covering infrastructural projects deals with both the procedural and technical aspects of EIA for construction projects. The guideline stresses the need to carry out an EIA at the earliest stage possible. Infrastructure Project EIAs have been conducted in rather loose form, and often taken as a supplementary requirement to overall economic and engineering issues.

Environmental Policy

The policy and its laudable institutional arrangements have not yielded the desired results. This is principally due to weak enforcement; inadequate manpower in the area of integrated environment management; insufficient political will; inadequate and mismanaged funding; a low degree of public awareness about environmental issues; and a top–down approach to the planning and implementation of environmental programmes.

Land Use Act

The Land Use Act points out that the interests of individuals and communities have been reduced to mere rights of occupancy, which can be revoked by the appropriate authorities on certain conditions such as ‘over-riding public interest’ (right-of-way, mining activities etc). Moreover, the law is ambiguous in certain respects and makes interpretation difficult. The Act which grants excessive powers to the Federal and State Governments has a dramatic impact on land rights. It does not provide adequate security against forced evictions, harassment, and threats.

Education Policy

The major problems hindering the actualization of the policy objectives are inadequate manpower; insufficient political will; mismanaged funding; a low public participation in policy formulation; and a top–down approach to the planning and implementation of environmental programmes.

Universal Basic Education Act

The UBE programme implementation has been hindered by poor project supervision, poor funding and lack of commitment from state governments. Based on this, critical issues of poor facilities and unbalanced access to education have remained unaddressed.

3.4 International Environmental Agreements

Nigeria is a signatory to the following relevant international conventions:

The Convention Concerning the Protection of the World Cultural and Natural Heritage, The World Heritage Convention, 1972;
The Framework Convention on Climate Change, Kyoto Protocol, 1995;
The Convention on Biological Diversity, 1992;

Nigeria also has obligations to protect the environment through various commitments to the African Union (AU), the Economic Community of West African States (ECOWAS) and the Commonwealth. It is also committed through relations with the European Community under the Lome IV Convention.

3.5 World Bank Safeguard Policies

The STEP-B project has been categorized as B implying that the expected environmental impacts are largely site-specific, that few if any of the impacts are irreversible, and that mitigation measures can be designed relatively readily. The environmental assessment for a Category B project,

- examines the project’s potential negative and positive environmental impacts,
- recommends measures to prevent, minimize, mitigate, or compensate for adverse impacts, and
- recommends measures to improve environmental performance

The World Bank has 10 Environmental and Social Safeguard Policies to reduce or eliminate the adverse effects of development projects, and improve decision making. These operational policies include:

- OP/BP 4.01: Environmental Assessment
- OP/BP 4.04: Natural Habitats
- OP 4.09 : Pest Management
- OP/BP 4.12: Involuntary Resettlement
- OD 4.20: Indigenous Peoples
- OPN 11.03: Cultural Property
- OP 4.36: Forestry
- OP/BP 4.37: Safety of Dams
- OP/BP 7.50: Projects on International Waters
- OP/BP 7.60: Projects in Disputed Areas

Details on the Bank Environmental and Social Policies are presented in Annex 1. Based on the general applicability of Safeguard Policies to Education Projects, OP 4.01 would be triggered by the proposed STEP-B sub-project activities.

**OP 4.01 Environmental Assessment**

The objective of OP 4.01 is to ensure that projects financed by the Bank are environmentally and socially sustainable, and that the decision making process is improved through an appropriate analysis of the actions including their potential environmental impacts. Environmental assessment (EA) is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project.
OP 4.01 is triggered if a project is likely to present some risks and potential adverse environmental impacts in its area of influence. Thus, in the case of the education projects, potential negative environmental and social impacts due to construction and rehabilitation activities are likely to include loss of vegetation, soil erosion, soil and groundwater pollution, air pollution, public health impacts such as traffic hazards, noise, dust, and loss of livelihoods.

3.6 Institutional Framework

The FME is the main STEP-B project implementing agency in close collaboration with the FMST. The FME will have the overall responsibility for project coordination and implementation. A light administrative structure to be housed inside the National Universities Commission (NUC) will administer the STEPB Project and manage related outreach and policy activities. The implementation arrangements for the STEP-B Project are described below including roles and responsibilities of the key institutions.

![Project Implementation Structure](image)

**Figure 3.1: Project Implementation Structure**

*Federal Ministries of Education (FME)*

The FME has responsibility for harmonizing educational policies and providing sustainable environment for education in Nigeria and to achieve human development objectives. For the effective implementation of the STEP-B project, the ministry will work in collaboration with the Federal Ministries of Science and Technology (FMST), Finance (FMF) and the World Bank. Other responsibilities include:

- formulating a national policy on education;
- collecting and collating data for educational planning and financing;
- maintaining uniform standard of education throughout the country;
- controlling the quality of education in the country and developing curricular and syllabuses at the national level and;
- acts as a liaison on educational matters between Nigeria and foreign countries, international and national organization, agencies and foundations

*Federal Ministry of Science & Technology (FMS&T)*

The FMS&T is responsible for coordinating the use of technology to achieve national development in the education, medicine, agriculture, and communication sector. The ministry plan and guide S&T research and development (R&D). Specific responsibilities include:

- keeping abreast with latest progress in R&D in S&T among industrial and educational communities within the country, the sub-region ad overseas
- ensuring that the various R&D efforts of public S&T establishments fit in with the overall development plan of the nation
- linkage of researchers and their establishments with entrepreneurs for commercialization of successful research results
- utilizing the facilities of Technology Incubation (TI) and S&T parks (SP) to nurture new projects especially in the areas of national priority
- promoting projects that are strategic to the cause of aggregate national development
- advising government on S&T policy matters

  - **National Universities Commission (NUC)**

The NUC is an agency entity under the FME responsible for coordinating, financing and maintaining standard and orderly development of the universities in Nigeria. It is the main channel for federal funds for university education in the country. The commission is also empowered to:

  - advice on the creation of new universities and other degree granting institutions,
  - distribute government grant in accordance with a set formula,
  - collect, analyse and furnish information relating to university development and education
  - act as the agency for channeling all external aid to Nigerian universities

  - **STEP-B Project Steering Committee (PSC)**

The STEPB Project Steering Committee (STEPB PSC) is the main policy body for the STEPB Project. The function of the STEPB PSC is to provide policy guidance during implementation of the STEPB Project and to facilitate coordination between the different federal ministries and their affiliated institutions (e.g., NUC, NBT, NCCE, etc.). The Permanent Secretary of the Federal Ministry of Education will serve as Chair of the PSC.

The main responsibilities of the STEPB PSC include: (1) overall policy guidance with reference to the project to ensure that all activities support through the STEP-B Project align with national development goals in science and technology, education, etc; (2) coordination among the different FGN ministries and organizations involved in the project; (3) receiving and examining annual implementation plans of the STEPB Project; and (4) monitoring the progress reports on the implementation submitted by the STEPB Project Coordinator.

  - **STEP-B Technical Review Committee (TRC)**

Sub-project proposals will be reviewed by the STEPB Technical Review Committee (TRC). Its membership will include a much smaller number of international reviewers as needed in addition to two standing international members. The STEPB Technical Review Committee (TRC) shall review all completed proposals submitted for evaluation through the competitive components of the project (Components 1 and 2). The TRC will consist of seven distinguished scientists of international stature. Five of these will be Nigerians, and two will be international experts based outside Nigeria, such as Nigerian scientists in the diaspora. The TRC will appoint one of the Nigerian members as a Committee Chair/Convener.

The functions of the Technical Committee are: (1) to review sub-project proposals and allocate scores according to the agreed criteria; create short lists of finalists for each grant category; (2) to recommend winning proposals for grant awards, according to the criteria and ranking procedures specified in the Sub-Project Preparation Guide (SPPG); (3) to facilitate networking with international and national institutions and organizations for the purpose of developing a database of competent reviewers in various fields who will be contracted to review proposals as required according to the content and disciplinary emphasis of the proposal; and (4) to observe the highest standards of probity in discharging its responsibilities, to promote a culture of scientific integrity, and mechanisms for quality assurance

  - **STEPB Project Secretariat (STEPB PS)**

The STEPB Project Secretariat will be responsible for day-to-day implementation of the project and will serve as the main link between the project management and the beneficiary institutions on one hand, and the STEPB Project Steering Committee and World Bank Task
Manager, on the other. The STEPB Project Coordinator shall be the head of the Project Secretariat and shall have the overall responsibility of managing the Secretariat and ensuring STEPB project implementation. The Project Coordinator will facilitate the work of the STEPB Project Steering Committee and the Technical Review Committee and will serve as Secretary and ex-officio member of the Steering Committee.

Designated members of the STEPB Project Secretariat will be responsible for the management and administration of the Project and will perform all administrative, procurement, financial management, auditing and overall management tasks required for successful STEPB Project implementation and monitoring. It will be staffed by permanent employees from the post-basic S&T education supervisory agencies in relevant disciplines who will be seconded to the Secretariat. The STEPB Project Secretariat will follow the normal procedures for reporting to the STEPB Project Steering Committee. The STEPB Project Coordinator will be the main link between the project and the World Bank Task manager for the STEPB project.

- **National Council on Science and Technology (NCST)**

  The council is responsible for setting goals, formulating policies and promoting S&T as an instrument for developing an indigenous technological capacity for sustainable development in order to improve the quality of life in Nigeria.

- **National Commission for Colleges of Education (NCCE)**

  The commission has responsibility to:
  - co-ordinate all aspects of non-degree teacher education in Nigeria;
  - make recommendations on the national policy necessary for full development of teacher education and the training of teachers;
  - make recommendations on the development of pre-vocational, technical, agricultural, business and home economics education; and
  - undertake periodic review of terms and conditions of service of personnel in the Colleges of Education and make recommendations thereon to the Government.

- **National Board for Technical Education (NBTE)**

  The NBTE is responsible for quality assessment and program accreditations at polytechnics, professional institutions, technical colleges and training centers. It also sets guidelines and standards for admissions to the different programs in the institutions.

- **National Business and Technical Examinations Board (NABTEB)**

  NABTEB has responsibility to harmonize and conduct all technical and business examinations in Nigeria. Included among these are Pitman Series, Trade Test, etc.

- **Nigerian Educational Research and Development Council (NERDC)**

  The NERDC has responsibility for promoting, encouraging and coordinating research programmes in Nigeria. It is also assigned to:
  - identify educational problems in Nigeria needing research
  - encourage research into education problems
  - commissioning and financing research projects
  - maintaining a central register for educational research projects
  - publish or sponsor the publication of the result of educational research, particularly in relation to Nigerian problems

- **Federal Ministry of the Environment and Housing (FMEH)**

  The ministry has a mandate to co-ordinate environmental protection and conservation of natural resources for sustainable development in Nigeria. The specific responsibilities of the ministry are to:
monitor and enforce environmental protection measures;
- enforce national and international environmental laws, conventions and protocols;
- prescribe standards and limits on air duality, water quality, pollution and effluent;
- limitations, the atmosphere and ozone protection, control of toxic and hazardous
substances; and promote cooperation and international environmental protection
agencies.

State Environmental Protections Agencies/Authorities (SEPAs)

Most states have set up Environmental Protection agencies as the regulatory body to protect
and manage the environmental issues in their domain. The functions of the SEPAs include:

- Enforcement of all environmental legislations
- Minimization of impacts of physical development on the ecosystem
- Preservation, conservation and restoration to pre-impact status of all ecological
processes essential for the preservation of biological diversity.
- Protection of air, water, land, forest and wildlife within the state
- Pollution control and environmental health in the state
- Collaborate with FMEH and other agencies to achieve effective prevention of
abatement of trans-boundary movement of waste
4.0 Baseline Data

4.1 General Description and Location

Nigeria is situated in the western portion of Africa, and lies between latitudes 4° 00’ N and 14° 00’ N, and longitudes 20° 50’ E and 14° 45’ E. Nigeria is bordered by Chad to the northeast, Cameroon to the east, Benin Republic to the west, Niger to the northwest and the Atlantic Ocean to the south. The country’s total area is 923,768 sq km, of which 910,768 sq km is land and 13,000 sq km is water.

Nigeria was created by the merging of the northern and southern protectorate by the British Colonial Government in 1914. The country gained independence on October 1st, 1960 and was declared a republic in 1963. The country is divided into 36 states and a federal territory.

Figure 4.1: Administrative Map of Nigeria

The scope of the ESMF covers all federal post-basic S&T educational institutions located in all the six geo-political zones of the country (Figure 4.1) as identified in the project concept note (PCN). A description of the physical, biological and socio-economic environment of Nigeria is presented below.
4.2 Description of the Environment

The main characteristics of the biological, physical and socio-economic environment of the project area are summarized below.

4.2.1 Physical Environment

Climate

Nigeria’s climate varies from arid in the north, to tropical in the centre and equatorial in the south. The climate is largely controlled by prevailing winds and nearness to the Atlantic Ocean. The two dominant air masses are the dry wind from the Sahara and the wet wind from the Atlantic Ocean. Marginal alterations have been recorded due to landform characteristics, configuration of surrounding shoreline and the generally flat topography of the country.

Rainfall

Rainfall is the single most important element for defining the climatic seasons in the tropics. Hence, Nigeria has two dominant seasons; the wet and the dry seasons. Rainfall throughout Nigeria depends on the interaction of the tropical maritime air mass and the tropical continental mass which meet along the inter-tropical convergence zone (ITCZ). The annual average rainfall around the country is between 750mm and 3000mm.

Temperature

Nigeria’s climate is characterized by relatively high temperatures throughout the year. The average annual maximum varies from 35°C in the north to 31°C in the south; the average annual minimum from 23°C in the south to 18°C in the north. On the Jos plateau and the eastern highlands altitude makes for relatively lower temperatures, with the maximum no more than 28°C and the minimum sometimes as low as 4°C.

Wind

Two principal wind currents affect Nigeria. The south-westerlies dominate the rainy season of the year while north-easterlies dominate the dry season. Depending on the shifts in the pressure belts in the Gulf of Guinea, these winds are interspersed respectively by south-easterlies and north-westerlies in different parts of the year. The wetter winds prevail for more than 70% due to the strong influence of the breeze from the Atlantic Ocean.

Mean annual wind speed varies between 2 to 6 m/s. Speeds in dry season (November - March) are lower. In the wet season (April–October), daily average speed could rise to 15 m/s. Values of up to 25 m/s are sometimes experienced due to inducement by convective rainfall activities and relative diffusion.

Ambient Air Quality

The quality of air in some parts of the country is within the National Ambient Air Quality Standards (NAAQS). However, air quality in major industrialized cities (Lagos, Port Harcourt, Aba, Kaduna, Kano, and Ibadan) is relatively high. Nigeria adopted the WHO standards as the national standards for air emissions against which air quality parameters monitored are compared in order to ascertain its “cleanliness”.

Geology

Nigeria lies on the southern portion of the West African Craton. The geological setting comprises broadly crystalline basement complex rocks and sedimentary formations. They occur in equal proportions around the country. The former are highly mineralized and give rise to soils of high nutrient status, although variable from place to place. The latter are found in the south-east, north-east and north-west of the country, and give rise to sandy and less variable soils that are deficient in plant nutrient.

Topography
Nigeria has varying landforms and most part of the country is dominated by plains, generally less than 610m above sea level. The eastern border with the Republic of Cameroun is lined by an almost continuous range of mountains which rise to about 2,419m at Chappal Waddi, the highest known point in Nigeria.

In the North, the Jos Plateau rises abruptly from a general level of about 609.5m in the Hausa Plains to an average level of some 1,219m but reaches 1,781.6m in Shere Hills. The area west of the River Niger is dominated by the plain, which rises gently from the coast northwards to the area of crystalline rocks where inselbergs rise abruptly above the surrounding plains. The Idanre Hills, the highest point of these inselbergs, rises to about 981m above sea level.

In general, the land surface of the country could be classified into three broad physical units or major relief features namely: the plains; the highlands; the troughs and the river valleys.

Soils Characteristics
The broad pattern of soil distribution in the country reflects both the climatic conditions and the geological structure; heavily leached, reddish-brown, sandy soils are found in the south, and light or moderately leached, yellowish-brown, sandy soils in the north. The difference in colour relates to the extent of leaching the soil has undergone.

Nigeria soils are highly weathered and are characterized by light texture, low pH, low organic matter, low potassium levels, variable phosphorous levels with clay contents ranging between 7%-43%.

Surface and Ground Water Hydrology
Nigeria has two major rivers, the Niger and the Benue, which traverse the northwest and northeast portion of the country, then merge at Lokoja before draining down to the Atlantic. There are several other rivers and quite a number of minor streams and rivulets that crisscross the entire Nigerian land mass. These include the Ogun, Oshun, Imo, Cross, Osse, Nun and the Anambra rivers in the south and the Kaduna, the Gongola, Katsina-Ala and the Hadeija in the North.

Generally the water quality in the rivers of Nigeria is very good. The average electrical conductivity in the main rivers ranges between 48-65 Umhos/cm² and the total dissolved solids (TDS) concentration is about 100mg/l. The pH is less than 6.5, although higher values were reported in swamps and floodplains with levels of 100-150 Umhos/cm². These rivers are also low in nutrients, with an average nitrogen content of 0.32mg/l and a total phosphorous content of 0.1 mg/l. The data indicate water of high quality according to FEPA limits.

4.2.2 Biological Environment

Fauna
Animals found in both forest and savannas include leopards, cats, monkeys, gorillas, and wild pigs. Today these animals can be found only in protected places as the Yankari Park, Gashaka Gumti Park, and Cross River Park. Rodents such as the squirrel, porcupine, and cane rat constitute the largest family of mammals. The northern savannah abounds in guinea fowl. Other common birds include quail, vultures, kites, bustards, and gray parrots. The rivers contain crocodiles and a great variety of marine life.

In the rain forest, few large animals notably gorillas, chimpanzees, baboons and monkeys are present. Crocodiles, lizards, and snakes of many species are also present. Hippopotamuses, elephants, giraffes, leopards, and lions now remain only in scattered localities and in diminishing number. Wildcats, however, are more common and widely distributed. Wildlife in the savanna includes antelope, lions, leopards, gazelles, and desert hyenas. Nigeria also abounds in bird life with a great number of species being represented.

Flora
Vegetation varies dramatically in relation to climate, soil, elevation, and human impact on the environment. In the low-lying coastal region, mangroves line the brackish lagoons and creeks, while swamp forest grows where the water is fresh. Farther inland, this vegetation gives way to tropical forest, with its many species of tropical hardwoods, including mahogany, iroko, and obeche.

North of the forest is the Guinea Savanna, a region of tall grasses and trees. The southern margin of the Guinea Savanna has been so altered by humans that it is also called the derived savanna. Beyond the Guinea savanna lies the Sudan Savanna, a region of shorter grasses and more scattered, drought-resistant trees such as the baobab, tamarind, and acacia. In the northeastern corner of Nigeria, the very dry semi-desert Sahel Savanna persists.

4.2.3 Socio-Economics

Demographics

The provisional figure from the 2006 census, estimate the population to be 140 million which placed it among the ten most populous nations in the world. The population density has thus increased from 141 per sq km in 2002 to 151 per sq km. Regional differences are significant; population is densest in the south and sparsest in the north. According to the UN, the annual population growth rate for 2000–2005 is 2.53%, with the projected population for the year 2015 at 190 million (Table 4.3).

<table>
<thead>
<tr>
<th>Table 4.1: Demographic Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (000s)</td>
</tr>
<tr>
<td>Urbanization level (%)</td>
</tr>
<tr>
<td>Urban population (000s)</td>
</tr>
<tr>
<td>Urban population growth rate (%)</td>
</tr>
<tr>
<td>Rural population growth rate (%)</td>
</tr>
</tbody>
</table>

Source: UN Habitat 2004

The UN Population Reference Bureau estimated that 44% of Nigerian population lived in urban areas in 2001. The principal cities include Lagos, Kano, Ibadan, Kaduna, and Port Harcourt. The prevalence of AIDS/HIV has had a significant impact on Nigeria’s population growth. In 2001, the United Nations estimated that 5.8% of adults between the ages of 15–49 were living with HIV/AIDS.

Ethnic Groups and Religion

Nigeria is composed of more than 250 ethno-linguistic groups. Three dominant ethnic groups are the Yorubas, the Hausas and the Igbos. The Yoruba predominate in the South West. The Igbo predominate in South East. The Hausa and Fulani constitute the largest single groups in North. Other important groups include the Kanuri; the Edo (Bini); the Ibibio; the Ijaw; the Tiv; and the Nupe.

English is the official language while the vast majority of the population conducts commercial activities in their ethnic language. The literacy level of the population is 57.1% (male: 67.3%, female: 47.3%). Nigerians are predominantly Muslims and Christians with few animists.

Land Use Pattern

The estimated land area of Nigeria is 924,000 km². Land use varies based on location and the needs of the community. However, the major uses of land revolve around agriculture, industry and social needs such as the provision of infrastructure. Recent data shows that about 60% of the land area of Nigeria is under various forms of food (crop and animal) production and forest plantation.
Land Tenure

The Land Use Decree of 1978 vests all land in the state through the office of the governor. Land is to be held in trust and administered for the use and common benefit of all Nigerians according to the provisions of the Act. By this legal instrument, the state replaced the traditional institutions of obaship and chieftaincy in their roles as keepers of communal land.

Control and management of land in urban areas is the responsibility of the state governor, while all other land (rural, public, etc.) is the responsibility of the Local Government of the area. The governor is empowered to designate certain areas as urban land and to grant statutory rights of occupancy of fixed periods and rights of access to any person, subject to rental arrangements fixed by and payable to the state. The local government can grant a customary right of occupancy to land in the local government area (LGA) to any person or organization for agriculture, grazing, residential or other purposes.

Economics

Nigeria’s economy depends heavily on the oil sector, which contributes 95 percent of export revenues, 76 percent of government revenues, and about a third of gross domestic product (GDP). Despite the country’s relative oil wealth, poverty is widespread - about 37% of the population lives in extreme poverty (World Bank, 2006).

Nigeria’s major industries are located in Lagos, Sango Otta, Port Harcourt, Ibadan, Aba, Onitsha, Calabar, Kano, Jos and Kaduna.

Facilities

The main transportation means in Nigeria is the road. Water transportation is fairly developed in some coastal areas. Air transportation is considered fair with major airports in Lagos, Abuja, Port Harcourt, Kano and Kaduna. The railway sector has experienced a major decline in the last decades but efforts are being made to revive it.

Electricity is supplied through the national grid. The power supply is erratic; and government is promoting the development of independent power supply to augment the current inadequate supply.

With regard to educational facilities, Nigeria is reasonably served. There are over 65 universities consisting of federal, state and private owned. High schools in most states are insufficient and are in dilapidated state.

Presently the Federal Government is refurbishing all existing tertiary health institutions nationwide. There is at least 1 primary health care institution in each of the 744 LGAs.
5.0 Potential Environmental and Social Impacts

The implementation of the STEP-B project will enhance the economic, social and political development of Nigeria through innovations in such areas as agriculture, industry, communications, and health care. Similarly, local products and innovations can lead to technological breakthroughs and the birth of new companies to market them. Thus, the STEP-B Project and the subprojects tailored toward the development agenda in the science initiative offers the FGN an invaluable opportunity to invest in S&T initiatives that are relevant to national development.

However, the rehabilitation and maintenance of S&T infrastructures (e.g. centers of excellences, laboratories, workshops, etc) may cause negative environmental impacts. Poor planning or bad practices in rehabilitation and maintenance could have negative effects. Table 5.1; gives an overview of the major environmental impacts resulting from the construction and operation of S&T education infrastructures (laboratories, workshops etc).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>1. Possible increase in soil erosion as a result of the rehabilitation activities (clearing of vegetation and soil excavation)</td>
</tr>
<tr>
<td></td>
<td>2. Loss of productive topsoil resulting from site clearance</td>
</tr>
<tr>
<td></td>
<td>3. Soil contamination resulting from the release of chemicals (lubricant, fuel, paint) from the machineries</td>
</tr>
<tr>
<td>Water</td>
<td>1. Run-off erosion may occur from unprotected excavated areas during heavy rain resulting to sedimentation of the nearby water-bodies</td>
</tr>
<tr>
<td></td>
<td>2. Potential pollution of the water bodies through run-off of hazardous construction waste (lubricants, cements, paint and fuels)</td>
</tr>
<tr>
<td></td>
<td>3. Contamination of surrounding water bodies through improper disposal of wastewater and sewage during renovation and operation</td>
</tr>
<tr>
<td></td>
<td>4. Possible run off from the temporary solid waste storage site into the drainage system (during the project operational phase)</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>1. Destruction of vegetation, loss of habitat and biodiversity</td>
</tr>
<tr>
<td></td>
<td>2. Possible loss of endangered and rare species</td>
</tr>
<tr>
<td></td>
<td>3. Change in land use and disturbance of ecosystem</td>
</tr>
<tr>
<td></td>
<td>4. Contamination of biota</td>
</tr>
<tr>
<td>Air</td>
<td>1. Particulate matters emission from construction activities</td>
</tr>
<tr>
<td></td>
<td>2. Emission of pollutants (NOx, SOx, CO, THC) from the construction machineries</td>
</tr>
<tr>
<td></td>
<td>3. Possible release of microorganisms to the air during the operational phase of the project</td>
</tr>
<tr>
<td>Noise</td>
<td>1. Construction equipment will generated noise above normal level</td>
</tr>
<tr>
<td></td>
<td>2. Change in natural drainage pattern</td>
</tr>
<tr>
<td></td>
<td>3. Destruction of vegetation and trees</td>
</tr>
<tr>
<td></td>
<td>4. Deforestation and desertification</td>
</tr>
<tr>
<td>Landscape</td>
<td>1. Possible loss of crops, properties, and sources of livelihood</td>
</tr>
<tr>
<td></td>
<td>2. Disruption of vehicle movement pattern, leading to traffic congestion</td>
</tr>
<tr>
<td></td>
<td>3. Loss of crops, properties, and sources of livelihood</td>
</tr>
<tr>
<td></td>
<td>4. Increase in employment rate (Skilled and unskilled labor)</td>
</tr>
<tr>
<td></td>
<td>5. Increase in the population of the area (school and community)</td>
</tr>
<tr>
<td>Public Health &amp; Safety</td>
<td>1. Potential transmission of diseases e.g. HIV/AIDS</td>
</tr>
<tr>
<td></td>
<td>2. Contamination of local water supplies</td>
</tr>
<tr>
<td></td>
<td>3. Obstructions owing to presence of road side barriers</td>
</tr>
<tr>
<td></td>
<td>4. Noise &amp; vibration disturbance</td>
</tr>
</tbody>
</table>
5.1 Environmental Impacts

Construction Phase

i  Flora and Fauna
The construction of buildings for laboratories, workshops etc and/or expansion and upgrading of existing ones could result in clearing and depletion of vegetation that will result in: loss of plant cover, disturbance and loss of fauna habitats, weakening and degradation of soils, disturbance of the natural landscape and disfiguring of the natural morphology.

ii  Soil and Land Degradation
Earth-moving equipment such as excavators will be used in cutting and excavation. This earth moving equipment will expose the soil to erosion and also compact it and break down the soil structure which will potentially decrease the drainage of the areas. Furthermore, the risk of accidental discharge of hazardous products, leakage of hydrocarbons, oils or grease from construction machinery also constitute potential sources of soils and water pollution.

iii  Vehicular Traffic
Construction works will result in a high traffic volume around the schools and within the communities. Wastes generated from project activities such as cement bags, paint drums and debris will result in pollution and constitute obstructions to vehicular traffic. The transport of raw materials will introduce a number of heavy trucks on the access road and this could increase the risk of motor accidents and result in vehicular-pedestrian conflicts.

iv  Waste Management
Activities at construction sites will produce construction wastes such as excavated soils and debris. Excavated wastes could obstruct the general public, the movement of the workers and vehicles as well as affect the aesthetics of the environment.

v  Slope, erosion and drainage
If the topography of the project area is hilly, erosion problems during construction are likely to be more severe, as compared to a flat area. However, if the area is flat, water will not drain away easily, and stagnant pools of water will be created. These pools, if not drained regularly will provide favourable breeding grounds for mosquito and other disease vectors.

vi  Air Quality
Air Quality will be impacted by emissions from vehicles, earthmoving equipment and released particulate matters. At the peak of construction; various equipment rated between 200-600 horsepower and burning diesel fuel will be operated. The USEPA AP-42 Emission Factors for diesel industrial engines was used to estimate emissions from construction equipment. These are shown in Table 5.2.

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Quantity Emitted (kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrates</td>
<td>160</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>6400</td>
</tr>
<tr>
<td>Sulphates</td>
<td>10</td>
</tr>
<tr>
<td>Particulates less than 10µm</td>
<td>10</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>15300</td>
</tr>
<tr>
<td>Aldehydes</td>
<td>10</td>
</tr>
</tbody>
</table>

vii  Water Quality
Water quality will be impacted by wastewater discharges from construction activities. These will include discharges from onsite sewage system and rainwater run-off from the developed areas such as workshops etc. The discharge of this wastewater into surface waters will impact water quality by causing changes to its physical, chemical and biological properties.
Given the high anticipated volume of waste/spoil that will be generated, it is likely that the waste will be stockpiled on road sides. If it is not properly contained, rains could carry it along with runoff into other surface waters, leading to increased turbidity and siltation. This could affect aquatic resources such as fisheries and aquatic invertebrates.

**Operation Phase**

*i  Water Resources*

There may be high demand for water in some of the institutions and this will require increased extraction ground water (bolehole). The water quality of surrounding water bodies could be deteriorated as a result of run-off of waste water generated by the project activities or from improper waste management.

*i  Air Pollution*

Laboratory and workshop equipment may emit air pollutants which may increase respiratory disorders.

*ii  Solid Waste*

Solid waste from sub-project activities may attract pests and disease vectors and pollute soil and water.

*iii  Visual Intrusion*

Rehabilitation and construction will change the characters of the area (marred landscapes). The clearing of vegetation required for the expansion of existing buildings will impact the visual amenity of nearby houses and surrounding communities.

**5.2 Social and Health Impacts**

**Construction Phase**

*ii  Loss of Livelihood*

Land acquisition for construction of new buildings could cause changes in land use pattern and result in displacement, especially in the urban areas. This will cause significant disruption to school communities as it could affect small businesses such as cafeterias, mechanic shops etc.

*iii  Disruption of Utilities Service*

The excavation during construction may cause temporary disruptions of utility services such as electricity and water. Such disruptions may incur the anger of the communities in the project area.

*iv  Contractors’ (Workers) Camp*

The civil work contractor will have to establish and operate a camp which will house offices, workshops etc. Potential impacts disposal of liquid and solid wastes, theft, alcoholism and sexually transmitted diseases (especially HIV/AIDS).

*v  Occupational Safety and Health*

The safety of the local population may be at risk during construction activities. The movement of trucks to and from the site, the operation of various equipment and machinery and the actual construction activities will expose the workers to work-related accidents and injuries. Pollutants such as dust and noise could also have negative implications for the health of workers and near-by communities.

*vi  Noise*
Noise and vibration caused by machines, site vehicles, pneumatic drills etc will be commonplace during construction activities. These impacts can affect the quietness of the communities and provoke irritation and anger.

vii Traffic
Communities around the construction sites (where facilities are being upgraded or constructed) will experience heavier human and vehicular traffic. Construction related activities will be a nuisance to road users e.g. storage of construction stones by the road side.

Operation Phase
i Improved educational quality and access to education
The project implementation will improve access to quality education, especially for science and technology related course and also to this deprived groups (e.g. girls, poor rural families and rural communities).

ii National Development
The impacts of the project on national development are largely positive. The project will alleviate poverty, strengthen the education sector and contribute to the attainment of the millennium development goals.

iii Community Development
Positive impacts on community development would include enhancement of educational standards, diversification of knowledge notably in the scientific and technical fields, and improved access to formal education previously unavailable to a large number of rural communities.

iv Girl Child Education
The project will improve girls’ enrollment in post-basic S&T educational institutions. This will bridge the gender and regional disparity in education in Nigeria and ensure an increased female participation in S&T education.
6.0 Environmental and Social Screening Process

The screening process determine which project and sub-project activities are likely to have negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the project as appropriate; to review and approve the project’s proposals; to monitor environmental parameters during the implementation of activities.

The extent of environmental assessment that might be required prior to the commencement of the projects will depend on the outcome of the screening process. The seven stages of the environmental and social screening process leading to the review and approval of the education project activities to be implemented are described below.

6.1 The Screening Process

The purpose of the screening process is to determine whether sub-projects are likely to have potential negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the sub-projects design; to review and approve sub-projects proposals and to monitor environmental parameters during implementation. The extent of environmental and social work that might be required for the sub-projects prior to implementation will depend on the outcome of the screening process.

6.1.1 Screening of Sub-projects

The screening process is the first step in the ESMF process. One of the objectives of the screening process is to rapidly identify those sub-projects which have little or no environmental or social issues so that they can move to implementation in accordance with pre-approved standards or codes of practices or other pre-approved guidelines for environmental and social management.

For each sub-project proposal the STEP-B Project Secretariat’s Environmental and Social Management Specialist (ESMS) shall carry out a screening process. The ESMS will complete the Environmental and Social Screening Form (Annex 2b). Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, or recommend the execution of an Environmental Impact Assessment (EIA), if necessary.

The sub-projects Screening Reports will be submitted to the STEP-B Project Coordinator (SPC), who will review the results and recommendations, and confirm that the sub-projects fall within Environmental Category B and that the recommended Action Plan is appropriate. The STEP-B PS will then submit the Screening Report with their recommendations to the World Bank’s Task Team Leader (TTL) for a no-objection to proceed with the detailed ESMP or ESIA. Annexes 2a, b and c provide the process and screening report format and the environmental and social checklists.

6.1.2 Project Categorization

Each sub-project under the STEP-B project shall be assigned an appropriate environmental category, based on the information provided in the environmental and social screening form. Each sub-project will be categorized into one of two categories:

<table>
<thead>
<tr>
<th>Category B:</th>
<th>A proposed project is classified as Category B if its potential adverse environmental and social impacts are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. The scope of Environmental Assessment (EA) for a</th>
</tr>
</thead>
</table>
Category B project may vary from project to project, but it is narrower than that of Category A EA.

Category C: A proposed project is classified as Category C if it has little or no potential adverse environmental and social impacts. These impacts are reversible; and in most cases mitigation measures can be designed more readily than for Category A projects.

The assignment of the appropriate environmental category will be based on the provisions in OP 4.01 Environmental Assessment. Consistent with this operational policy, most activities under the education project are likely to be categorized as B or C for that matter, meaning that their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are site-specific, few if any of the impacts are irreversible, and can be mitigated readily.

### 6.1.3 Conducting Environmental Assessments

Upon receiving a no-objection to the Screening Report, the STEP-B PS will recommend the preparation of EA documents. This could either be an ESMP or ESIA based on each sub-project category. The EA document will consist of the set of mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate, offset, or reduce adverse environmental and social impacts to acceptable levels. Additionally, the EA document will also provide a specific description of institutional arrangements and an estimate of the costs of the measures and activities recommended. The mitigation and monitoring measures recommended in the EA will be developed in consultation with all the affected groups to include their concerns and views in the design of the EA.

Typically, the ESMP will follow a mandatory format as shown in Annex 3, and as the Annex portrays, the infrastructure-specific ESMPs will include the following:

1. Description of the sub-project;
2. Baseline conditions;
3. Potential negative and positive impacts;
4. Analysis of alternatives;
5. Mitigation measures for negative impacts;
6. Monitoring and supervision;
7. Implementation arrangements; and
8. Record of public consultations and disclosure

Detailed guidance on ESMP, potential impacts and mitigation measures by the different sub-project phases are provided in Annex 4. In some cases, an ESIA which will include a detailed ESMP will be more appropriate than an ESMF depending on the conditions at the site. Annex 5 shows the procedures for sub-projects requiring an ESIA. The EAs must be conducted by consultants approved by the World Bank Environmental Specialist and the STEP-B PS.

### 6.1.4 Review and Approval

The STEP-B ESMS will review all EA reports (ESIA, ESMP etc) and make recommendations as to whether the reports are acceptable. Based on the results of the review process, the STEP-B PS will make recommendations to the World Bank/FMEH for approval/rejection of the review results and the proposed mitigation measures. The EA reports will have to be reviewed in the light of the ESMS recommendations prior to approve/rejection by the World Bank/FMEH. If the EI is approved, the FMEH issues the necessary environmental permit that confirms the EA has been satisfactorily completed and the project may proceed.

### 6.1.5 Public Consultations and Disclosure

The preparation of the EA documents will include on-site consultations with local stakeholders for each sub-project. The public consultation process will be carried out during
the screening process and review of EA documents. All draft EAs will be submitted to the World Bank and FMEH for comment and clearance for public disclosure. Upon clearance, the STEP-B PS will disclose the documents at the States and request the World Bank to disclose the documents at the Bank’s Info Shop.

6.1.6 Environmental Monitoring

Oversight for the environmental and social management process of the sub-projects will be assured by the STEP-B PS Environmental and Social Management Specialist. The environmental monitoring and supervision program for the implementation of the STEP-B will serve as an integral part of the operational activities of the STEP-B PS and will generate the requisite information for environmental management and environmental information dissemination.

The following monitoring indicators are proposed for assessing the efficiency of the mitigation measures:

- Safe waste management related to construction works
- Reforestation and land restoration after construction and or rehabilitation
- Compliance with the STEP-B Environmental Guidelines for Contractors
- Best practice in the implementation of project activities
- Equipment for safe medical waste management provided by projects where required.

6.2 Responsibilities for the Implementation of the Screening Process

The ESMF will be implemented by the STEP-B Project Secretariat. The STEP-B PS will collaborate with the FMEH and the World Bank to ensure effective execution. Table 6.2 provides a summary of the stages and institutional responsibilities for the screening, preparation, assessment, approval and implementation of the education construction/rehabilitation activities.

<table>
<thead>
<tr>
<th>Stages</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sub-project Screening</td>
<td>STEP-B PS ESMS</td>
</tr>
<tr>
<td>2. Sub-project Categorization (B or C)</td>
<td>STEP-B PS ESMS</td>
</tr>
<tr>
<td>3. Conducting Environmental Assessment</td>
<td>Proponent/Consultants</td>
</tr>
<tr>
<td>4. Review and Approval</td>
<td>STEP-B PC</td>
</tr>
<tr>
<td>5. Public consultations and disclosure</td>
<td>STEP-B PS/Proponent</td>
</tr>
<tr>
<td>6. Monitoring</td>
<td>STEP-B PS/Proponent/SEPAs/FMEH</td>
</tr>
</tbody>
</table>

Contract Provisions and Pre-Tender Meeting

Specific provisions will be included in construction contracts to mandate the use of formal health, safety and environment (HSE) measures to minimize accidents and avoid fatalities during construction. Standard environmental and social requirements (as contained in the general environmental management conditions for construction contracts in Annex 6), including provision for HIV/AIDS awareness campaigns and distribution of condoms will be incorporated into the contract provisions.

To ensure full understanding of the contract requirements by the contractors at the pre-bid inspection stage, all participating contractors will attend a Pre-Tender Meeting, where they will be briefed on their responsibilities to address environmental, social, health and safety issues.
7.0 Environmental and Social Management Plan (ESMP)

An Environmental and Social Management Plan (ESMP) as an EA instrument defines project-specific proposed environmental and social control and mitigation measures, monitoring programs, and responsibilities and must be developed based upon an assessment of environmental and social impacts and risks for the proposed project. This ESMP is intended to ensure efficient environmental management of these activities. The ESMP includes the following sections:

- the potential environmental and social impacts,
- the proposed mitigation measures,
- arrangement for ESMP implementation,
- responsibilities for ESMP and mitigation measures implementation;
- capacity building needs; and
- ESMP implementation budget.

7.1 Mitigation Measures

Environmental mitigation consists of measures that can reduce the negative environmental impacts associated with implementation (construction, expansion, rehabilitation etc) of the project. Mitigation measures have been identified that would reduce both existing and potential impacts associated with existing facilities and rehabilitation/upgrading/new construction and operations of the STEP-B. Potential impacts and the mitigation measures are identified in Table 7.1.

The table indicates the areas to which the potential impact applies. In addition, mitigation measures are identified as either social or physical measures. Social mitigation includes the measures used to mitigate effects such as noise and other effects to the human environment. Physical mitigation includes measures that address impacts to the physical environment, such as vegetation, air quality, and others. The measures serve as the basis for the cost estimates.

Design Measures

The quantities, specifications and estimated costs of design measures to avoid or mitigate negative impacts will be assessed by the civil design contractor and incorporated into the bidding documents. The contractor will execute all required works and will be reimbursed through pay items in the bill of quantities, which will be financed by the project.

HIV/AIDS Awareness Program

The quantities, specifications and estimated costs of the HIV/AIDS Awareness Program and condom distribution will be assessed by the design consultant and incorporated into the works bidding documents. The contractor will execute the program through a subcontractor and will be reimbursed through pay items in the bill of quantities, which will be financed by the project.

Post Construction Costs

During implementation, the costs of mitigation in the course of maintenance contracts will be incurred by the contractor and borne by the STEP-B PS.
### Table 7.1: Summary of Environmental Mitigation Measures

<table>
<thead>
<tr>
<th>Potential Impacts</th>
<th>Recommended Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td></td>
</tr>
</tbody>
</table>
| ① Visual impact following the disposal of construction and demolition waste onto roadsides | ① Regular collection and evacuation of work site refuse towards authorized dumps  
  ② Involvement of the Local Government Authorities and Communities in the selection of discharge sites |
| **Noise**                                                                        |                                                                                                   |
| ① Employees and communities exposed to high noise level                           | ① Installation of sound insulation.  
  ② Disturbance of school and education activities during construction works         | ③ Schedule work periods to avoid school hours |
| **Air Quality**                                                                  |                                                                                                   |
| ① Emission of pollutants from mobile (vehicles) and stationary (mixers, generators etc) sources. | ① Introduction of dust reduction measures in construction sites  
  ② Air pollution from burning of demolition wastes e.g. wood, paper etc            | ③ Safety measures put in place |
| **Soil**                                                                         |                                                                                                   |
| ① Point source contamination from diesel, lubricants etc around workshop areas.   | ① Appropriate containment measures for all operational areas and proper disposal of used lubricants.  
  ② Increased soil erosion due to vegetation clearing, soil trampling and compaction | ③ Soil erosion control measures (e.g. reforestation, reseeding of grasses, land preparation, terracing etc) |
| ② Increased rapid runoff due to vegetation clearing and soil compaction diminishing infiltration capacity |                                                                                                   |
| ③ Deterioration of soil characteristics due to increased erosion                 |                                                                                                   |
| **Water Quality**                                                                |                                                                                                   |
| ① Potential pollution of surface and ground water though runoff of pollutants e.g. lubricating oil, diesel fuel etc from workshop areas etc | ① Appropriate containment measures for all operational areas and proper disposal of used lubrication oil.  
  ② Water pollution due to seepage from tanks (diesel, sanitary wastes etc)       | ③ Work sites Installed far from waterways |
| ③ Water pollution due to seepage from tanks (diesel, sanitary wastes etc)        | ③ Regular collection of work sites wastes for proper disposal  
  ③ Lack of water for sanitation or toilet facilities                              | ④ Liquid waste discharged at designated outfalls after effluent treatment to protect water resources |
<p>| ③ Heavy water usage resulting in reduction of surface and groundwater sources     | ③ Regular emptying of on-site latrines and toilets                                                |                                                                                                   |
| <strong>Biological Resources</strong>                                                          |                                                                                                   |
| <strong>Vegetation</strong>                                                                   |                                                                                                   |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Environmental Impacts</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation</td>
<td>Vegetation clearing resulting in loss of valuable habitat, species diversity and population levels. Impacts on protected areas; critical habitats for rare species or of ecologic or domestic importance.</td>
<td>No siting and excavations in sensitive habitat. Careful planning and selection of sites. Forests and cultural heritage sites protection enforced.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>Wildlife impacted through direct loss, loss of movement corridors, and indirectly through introduction of noise and pollutants.</td>
<td>Pre-construction focused surveys, dust and noise abatement measures, and minimization of construction generated pollutants.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Expansion and new construction encroaching on the wetland and directly impact wetland plant communities.</td>
<td>Preservation, restoration, and enhancement of existing wetland. Sensitive and critical habitats avoided.</td>
</tr>
<tr>
<td>Farmlands and Grazing Areas</td>
<td>Land take for new school construction could lead to loss of farmland and grazing areas.</td>
<td>Farmland and grazing areas should be relocated to other areas. If possible avoid farmlands and grazing areas.</td>
</tr>
<tr>
<td>Solid/Hazardous Waste Management</td>
<td>Solid waste generated from demolition and construction activities containing potentially hazardous materials (e.g. asbestos). Waste generation during building works piling on the roadside.</td>
<td>Quick sorting, collection and disposal of waste removed from the sites in accordance with applicable regulations.</td>
</tr>
<tr>
<td>Social</td>
<td>Health and Safety</td>
<td>Conduct an awareness raising campaign for the work sites staff and the users of school infrastructures (pupils, students, teachers, etc.). Conduct awareness raising campaigns on HIV/AIDS.</td>
</tr>
<tr>
<td>Land Use</td>
<td>Involuntary displacement of populations or economic activities. Changes of existing uses within affected communities.</td>
<td>Acquisition and relocation should occur in accordance with appropriate regulations including World Bank OP/BP 4.12 Involuntary Resettlement. Avoid facilities in areas that will need resettlement, the displacement; or the encroachment on historic, cultural or traditional use areas.</td>
</tr>
</tbody>
</table>
7.2 Implementation Arrangement

The resources required for implementing the ESMP are basically personnel and finance. The key stakeholders in the ESMP implementation are the STEP-B PS, contractor/consultants, FMEH, SEPA and the grantee institutions.

The grantee federal institutions shall establish a STEPB Sub-project Implementation Unit (SSIU) to serves as interface between the institution and STEPB PS. The SSIU shall ensure that implement process complies with all relevant policies and procedures. Figure 7.1 shows the system to be used for managing the STEP-B ESMF, particularly relationships and reporting responsibilities.

![Figure 7.1: ESMP Implementation Arrangement](image)

The STEP-B PS will provide staff to achieve the following objectives:

1. propose management rules and specific measures that are compatible with sustainable development while implementing the project
2. promote awareness by its personnel and the general public regarding environmental protection,
3. propose concrete means of applying the ESMP.

The environmental specialist attached to the STEP-B PS will be responsible for the implementation of the ESMP in close collaboration with SEPAs and FMEH. Alternatively, EnvironQuest has identified several skills that are requisite to ensuring compliance with the ESMP. The management plan will be executed by a group of professionals (ESMU) to be hired by the STEP-B PS. These professionals will be qualified in the following disciplines:

1. Environmental Assessment & Monitoring
2. Soil & Water Conservation
3. Civil Engineering
4. Public Health
5. Sociology and Socio-Economics

These individuals will form the core of the ESMP implementation team that will be directly accountable to the STEP-B Project Coordinator. Initiatives should be taken to ensure that each person identified to implement specific aspects of the ESMP fulfill his/her responsibilities as part of his/her daily activities. Each individual will be required to develop a process to ensure the implementation of the ESMP occurs in a structured and formal manner and to ensure that personnel identified to assist in performing tasks defined in the ESMP have the necessary skills to manage the environmental aspects of their work. The PPT will present all results of environmental monitoring to the FMEH and SEPA and will indicate which specific member of the ESMP team should be contacted for clarification of issues outlined in the results presented.
The environmental specialist at the STEP-B PS will be responsible for the implementation of the environmental monitoring and the ESMP. His/her responsibilities shall include:

1. Coordination, liaison with and monitoring of the contractors;
2. Compilation and preparation of periodic environmental reports for submission to the World Bank;
3. Review of ESIA reports from consultants in collaboration with SEPA and FMEH;
4. Data Management; and
5. Sub-project Inspections

The World Bank has the overall responsibility to ensure that its Safeguards Policies are complied with. In addition, the WB is responsible for the final review and clearance of the ESMPs (or ESIAs); as well as for the review and approval of ESMP TORs.

7.3 Capacity Strengthening for ESMP Implementation

In order for STEP-B PS to effectively carry out the environmental and social management responsibilities for sub-project implementation, institutional strengthening will be required. Capacity building will encompass STEP-B Project Secretariat and sub-project executing institution. The STEP-B should therefore ensure that the following concerns and needs are addressed:

- Institutional structuring within the relevant departments to ensure that required professional and other technical staff are available;
- Establishment of consultancy groups to ensure cross departmental discussions and information exchanges.

To successfully implement this ESMP, it is recommended that the assessment of comprehensive training needs and the development of a training strategy plan be carried out as an initial implementation activity which will, *inter alia*, determine and conform whether the intense training programme proposed will suffice or is required. Proposed training needs for the ESMS at STEP-B project secretariat are as follow:

- Environmental and Social Management Process.
- Use of Screening form and Checklist
- Preparation of terms of reference for carrying out EA
- Design of appropriate mitigation measures.
- Review and approve EA reports
- Public consultations in the ESMF process.
- Monitoring mitigation measures implementation.
- Integrating ESMP into sub-projects implementation.

The proposed capacity building programme will be conducted over 5 days and be implemented biannually, over the first four years of the project cycle. The total cost is estimated at US $25,000. This estimate is based on the assumption that resource persons are likely to come from other parts of the country and therefore require travel allowances; participants will come from the institutions and attend during the day only but will receive a per diem.

7.4 Monitoring Plan

The objective of the monitoring plan is to establish appropriate criteria to verify the predicted impact of the project, and to ensure that any unforeseen impacts are detected and the mitigation adjusted where needed at an early stage. The plan will ensure that mitigating measures are implemented during renovation, upgrading and maintenance. Specific objectives of the monitoring plan are to:

1. check the effectiveness of recommended mitigation measures;
2. demonstrate that sub-project activities are carried out in accordance with the prescribed mitigation measures and existing regulatory procedures; and
3. provide early warning signals whenever an impact indicator approaches a critical level.
Oversight for the environmental and social management process of the sub-projects will be assured by the supervisory consultants in collaboration with the STEP-B Project Secretariat. Monitoring will be conducted during all phases of the project: design, construction, execution, operation and maintenance.

**Monitoring Procedure**

The STEP-B Project Secretariat Environmental and Social Specialists will prepare a long term monitoring strategy that will encompass clear and definitive parameters to be monitored for each sub-project. The monitoring plan will take into consideration the scope of development, the environmental and social sensitivity and the financial and technical means available for monitoring. The plan will identify and describe the indicators to be used, the frequency of monitoring and the standard (baseline) against which the indicators will be measured for compliance with the ESMP.

A number of indicators would be used in order to determine the status of the affected environment as follows:

- Has the pre-project human and natural environmental state been maintained or improved at the education facilities and;
- Has the effectiveness of the ESMF technical assistance, review, approval and monitoring process been adequate to pre-empt and correct negative impacts inherent in certain types of educational infrastructure projects.
- Environmental Indicators: Loss of vegetation; Land degradation; Compliance with Legislations.
- Social indicators: Population incomes; number of people provided with environmental training to implement the ESMF; The number of local workers used during of the works

### 7.5 ESMP Budget

Based on available data, a sum of US$60 million will be allocated to the project. Of the total budget, it is recommended that at least 3% should be allocated to environmental and social concerns.

**Table 7.2: Budget and Responsibilities**

<table>
<thead>
<tr>
<th>Item</th>
<th>Budget (US$)</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation</td>
<td>$600,000</td>
<td>STEP-B PS/SEPA/FMEH</td>
</tr>
<tr>
<td>Management</td>
<td>$230,000</td>
<td>STEP-B PS/SSIU</td>
</tr>
<tr>
<td>Capacity Strengthening</td>
<td>$25,000</td>
<td>STEP-B PS /World Bank</td>
</tr>
<tr>
<td>Monitoring</td>
<td>$500,000</td>
<td>STEP-B PS /SEPA/FMEH</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,350,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Table 7.3: Environmental and Social Management Plan

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation Measures</th>
<th>Implementation Schedule</th>
<th>Monitoring Indicators</th>
<th>Monitoring</th>
<th>Responsibility</th>
<th>Frequency</th>
<th>Cost Estimate (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Re-vegetate the construction site by planting rapidly growing vegetation/plants</td>
<td>During and after the construction activities</td>
<td>Erosion</td>
<td>Monitor erosion occurrence within and around the construction site</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$450</td>
</tr>
<tr>
<td></td>
<td>Use excavated soil for construction work</td>
<td>During construction</td>
<td>Soil</td>
<td>Ensure that all the excavated soil are used for construction</td>
<td>SSIU/ESMU</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure immediate clean up of the area by removing the contaminated topsoil and disposing properly in a designated place</td>
<td>During construction</td>
<td></td>
<td>Monitor and document the contaminated soil disposal procedure</td>
<td>SSIU/ESMU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil contamination resulting from the release of chemicals (lubricant, fuel, paint) from the machineries</td>
<td>Re-vegetate the construction site by planting rapidly growing vegetation/plants</td>
<td>During and after the construction activities</td>
<td>Erosion</td>
<td>Monitor erosion occurrence within and around the construction site</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$450</td>
</tr>
<tr>
<td></td>
<td>Use excavated soil for construction work</td>
<td>During construction</td>
<td>Soil</td>
<td>Ensure that all the excavated soil are used for construction</td>
<td>SSIU/ESMU</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure immediate clean up of the area by removing the contaminated topsoil and disposing properly in a designated place</td>
<td>During construction</td>
<td></td>
<td>Monitor and document the contaminated soil disposal procedure</td>
<td>SSIU/ESMU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Attend to any excavation area as quick as possible or create an embankment to avoid run off</td>
<td>During excavation activities</td>
<td>Sediments</td>
<td>Monitor BOD, Nitrate, pH, Heavy metals of the nearby water bodies before the construction and thereafter weekly during the construction activities</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$1,800</td>
</tr>
<tr>
<td>Run-off erosion may occur from unprotected excavated areas during heavy rain resulting to sedimentation of nearby water-bodies</td>
<td>Create barrier for appropriate containment measures</td>
<td>During construction</td>
<td>Sediments</td>
<td>Monitor BOD, Nitrate, pH, Heavy metals of the nearby water bodies before the construction and thereafter weekly during the construction activities</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$1,800</td>
</tr>
<tr>
<td>Run-off erosion may occur from heaps of excavated soils during heavy rain resulting to sedimentation of nearby water-bodies</td>
<td>Proper disposal of construction waste</td>
<td>During construction</td>
<td>Sediments</td>
<td>Monitor BOD, Nitrate, pH, Heavy metals of the nearby water bodies before the construction and thereafter weekly during the construction activities</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$1,800</td>
</tr>
<tr>
<td>Potential water pollution through run off of hazardous construction waste (lubricants, paint)</td>
<td>Proper disposal of construction waste</td>
<td>During construction</td>
<td>Heavy metals</td>
<td>Monitor BOD, Nitrate, pH, Heavy metals of the nearby water bodies before the construction and thereafter weekly during the construction activities</td>
<td>Contractor/supervising consultant</td>
<td>Weekly</td>
<td>$1,800</td>
</tr>
<tr>
<td><strong>Air</strong></td>
<td>Particulate matters emission from excavation and construction activities</td>
<td>Spray water periodically to control dust</td>
<td>During excavation and construction activities</td>
<td>PM</td>
<td>Monitor PM, NOx, SOx, THC and CO in the surrounding air before the construction and thereafter hourly during the construction</td>
<td>Contractor/ supervising consultant</td>
<td>SSU/ESMU</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>Noise resulting from the construction works</td>
<td>Equipment (e.g. cement-sand mixer machine) to be placed as far as possible from the sensitive area/ human settlement</td>
<td>During construction activities</td>
<td>Noise</td>
<td>Monitor staff compliance to the use of ear muffs/plugs</td>
<td>Contractor/ supervising consultant</td>
<td>SSU/ESMU</td>
</tr>
<tr>
<td><strong>Ecosystem</strong></td>
<td>Destruction of vegetation, loss of habitat and biodiversity</td>
<td>Re-vegetate the construction site by planting rapidly growing vegetation/plants</td>
<td>During and after construction</td>
<td>Vegetation</td>
<td>Monitor the re-vegetation process</td>
<td>Contractor/ supervising consultant</td>
<td>SSU/ESMU</td>
</tr>
<tr>
<td>Social</td>
<td>Soil</td>
<td>Water</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>Possible displacement of settlements and business</td>
<td>Contamination of soil as a result of waste (reagent, solid waste) disposal</td>
<td>Depletion of water resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible loss of crops, properties, and sources of livelihood</td>
<td>Pre-treat waste before disposal (through neutralization, thermal pretreatment, oxidation, etc)</td>
<td>Contamination of surrounding water bodies through improper disposal of waste water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible disruption of vehicle movement pattern, leading to traffic congestion</td>
<td>Before disposal</td>
<td>Possible run off from the temporary solid waste storage site into the drainage system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relocate the affected people in accordance with appropriate regulations (World Bank OP/BP.4.12: Involuntary Resettlement Policy) Provide alternative route for traffic</td>
<td>Before disposal</td>
<td>Dispose waste as soon as possible to avoid leachate generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before Construction begins</td>
<td>pH, BOD, COD, Nitrate etc (based on the type of chemical waste generated)</td>
<td>Increase in water utility payment. Increase in water flow meter reading pH, BOD, COD, Nitrate etc (based on the type of chemical waste generated)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complaints from the affected people Road traffic</td>
<td>Monitor the surrounding soil pH, BOD, COD, Nitrate etc (based on the type of chemical waste generated). Monitoring to be before construction and monthly during the construction</td>
<td>Monitoring the water flow meter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document relocation procedures</td>
<td>Monitor the road traffic before and during construction activities</td>
<td>Monitor the surrounding water bodies pH, BOD, COD, Nitrate etc (based on the type of chemical waste generated). Monitoring to be before construction and monthly during the construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor/supervising consultant</td>
<td>Respective institution's SSU</td>
<td>Respective institution's SSIU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSIU/ESMU</td>
<td>Respective institution's Laboratory attendants</td>
<td>Monthly</td>
<td>$350</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EnvironQuest**
<table>
<thead>
<tr>
<th>Category</th>
<th>Issue Description</th>
<th>Action</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air</strong></td>
<td>Possible release of microorganism to the air</td>
<td>Ensure appropriate bio-safety procedures are observed in the laboratories (e.g. International Best Practice in Safety of Research Laboratories, see appendix 1)</td>
<td>Implement mitigation measures through the operation phase</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>Renovation will involve use of equipment that are expected to generated noise</td>
<td>Install sound proof at the areas where the noise can not be reduced or mitigated to limit the noise to these areas. Ensure staff at these areas are adequately protected with ear muffs/plugs</td>
<td>Ensure that efficient equipment are used</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Increase in the population of the area (school and school community) Increase in employment rate (Skilled and unskilled)</td>
<td>Increase the infrastructure in the area to accommodate the population</td>
<td>During construction and operational phases</td>
</tr>
</tbody>
</table>
8.0 Public Consultation Plan

To ensure the successful implementation of the ESMF, the FME through the STEP-B PS has responsibilities to effectively engage stakeholders in achieving the objectives of the project for the benefit of all. The implementation of the ESMF depends on the meaningful participation of all stakeholders for success.

This Public Awareness Plan describes the avenues that will be used to convey the plan implementation information to the public. The Word Bank procedures for consultation and disclosure of safeguard related documents will be undertaken for the STEP-B project.

8.1 Objectives

This plan provides a framework for achieving effective stakeholder involvement and promoting greater awareness and understanding of issues so that the project is carried out effectively within budget and on-time to the satisfaction of all concerned.

To ensure effective implementation of this plan, the STEP-B Project Secretariat shall be committed to the following principles:

- promoting openness and communication;
- ensuring effective stakeholder involvement in the development of the project;
- increasing public knowledge and understanding of the project implementation process;
- using all strategies and techniques which provide appropriate, timely and adequate opportunities for all stakeholders to participate; and
- evaluating the effectiveness of the engagement plan in accordance with the expected outcomes.

8.2 Identifying Stakeholders

Stakeholders for the purpose of this project shall be defined as all those people and institutions that have an interest in the successful planning and execution of the project. The potential stakeholders in the implementation of this plan include the following:

Government Agencies
- Federal Ministry of Education
- Federal Ministry of Science and Technology
- National University Commission
- Nigeria Education Research and Development Council
- National Board for Technical Education
- National Commission for Colleges of Education

Post-Basic Educational Institutions
- Federal Universities
- Federal Polytechnics and Colleges of technologies
- Centers of excellence

Others
- Researchers
- Students

8.3 Consultation Strategies

The focus of this public involvement program/plan is to inform the public and invite input relating to the plan and its implementation. As elements of the plan proceed from planning into execution, the STEP-B PS’ objective will be to maintain the public awareness and understanding of the plan. The implementing agencies (FME, FMS&T etc) shall execute a program comprising strategic elements to accomplish the public consultation objective. A comprehensive public awareness program will include the following:

- Develop and distribute a project newsletter
- Organize seminars and workshops
- Develop and maintain a project web site
- Develop radio and television adverts
- Prepare project press releases
- Prepare posters and erect billboards

The level of stakeholder involvement will be based on the project phase, location and expected outcome. The extent of stakeholders’ involvement would be based on the following:

- the project is likely to have significant impacts, that is, high impacts in one area/location, or relatively small impacts spread out over a large area; and
- the project involves significant issues, that is, the wider stakeholder may be affected.

**Figure 8.1: Spectrum of Engagement**

The objective of the public awareness program is to convey information to interested groups. By utilizing a multi-faceted approach to convey information, the consultation/awareness efforts will be optimized.

- **Newsletters**

  Newsletters will be written in English language to include project progress and information, calendars of events, telephone numbers, and information about the web site, location maps, and photographs of ongoing efforts. The newsletters will be printed and distributed quarterly throughout implementation period.

  Articles contained in the newsletters will focus on timely or current major events or activities. In addition to case studies, each newsletter will include items that will appear consistently from newsletter to newsletter. Such items are question and answer columns, invitations for questions and comments, project locations, the website address, a calendar of events and project office telephone numbers.

- **Seminars and Workshops**

  Seminars and workshops will offer the public an opportunity to understand the objectives of the project.

- **Web Site**

  A website will be developed to make the implementation program accessible to those who have internet access. The proposed website shall include at least the following:
- Home page, and general project information,
- Current sub-project information
- Contact information (phone and mail) for questions and comments
- Current newsletter
- Comment/Enquiry form

The website shall be updated regularly—on monthly basis as the plan implementation activities progresses. Frequent updating of site information leads to constant evolution of the site, making it interesting for the viewer. The website shall be online by October 1, 2007.

- **Radio and Television Adverts**

Radio jingles and TV adverts shall be developed and aired in all state capitals. Pertinent information will be offered at intervals to maintain viewers’ interest on the topic. Two radio jingles and two TV announcements shall be broadcasted in English languages every month, totalling 48 radio and TV messages in major languages per annum.

- **Press Releases**

STEP-B PS will prepare press releases for distribution to the general public at project milestones.

- **Posters**

Posters shall be pasted in strategic places to make it accessible to the post-basic institutions students and teachers. A total of 1000 posters are projected for all the post-basic S&T institutions.

The plan and cost of implementing the public awareness strategies is presented in Table 11.1

**Table 8.1: Three Year Public Awareness Raising Plan**

<table>
<thead>
<tr>
<th>Media</th>
<th>No of Messages</th>
<th>Frequency</th>
<th>Duration</th>
<th>Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>2</td>
<td>2 per month</td>
<td>5 years</td>
<td>20,000</td>
</tr>
<tr>
<td>Television</td>
<td>2</td>
<td>2 per month</td>
<td>5 years</td>
<td>60,000</td>
</tr>
<tr>
<td>Printed</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Website</td>
<td>1 English</td>
<td>Monthly update</td>
<td>5 years</td>
<td>10,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>170,000.00</td>
</tr>
</tbody>
</table>
ANNEX 1: Summary of World Bank Environmental and Social Safeguard Policies

- **Environmental Assessment (OP 4.01).** Outlines Bank policy and procedure for the environmental assessment of Bank lending operations. The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA process. This environmental process will apply to all STEP-B sub-projects.

- **Natural Habitats (OP 4.04).** The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified. Should the sub-project-specific ESMPs indicate that natural habitats might be affected negatively by the proposed sub-project activities with suitable mitigation measures, such sub-projects will not be funded under the project.

- **Pest Management (OP 4.09).** The policy supports safe, affective, and environmentally sound pest management. It promotes the use of biological and environmental control methods. An assessment is made of the capacity of the country’s regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. This policy will most likely not apply to STEP-B sub-projects.

- **Involuntary Resettlement (OP 4.12).** This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. This policy will most likely not apply to STEP-B as this project will not entail taking of land or restriction of access to sources of livelihood.

- **Indigenous Peoples (OD 4.20).** This directive provides guidance to ensure that indigenous peoples benefit from development projects, and to avoid or mitigate adverse effects of Bank-financed development projects on indigenous peoples. Measures to address issues pertaining to indigenous peoples must be based on the informed participation of the indigenous people themselves. Sub-projects that would have negative impacts on indigenous people will not be funded under STEP-B.

- **Forests (OP 4.36).** This policy applies to the following types of Bank-financed investment projects: (a) projects that have or may have impacts on the health and quality of forests; (b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and (c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned. The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures. Sub-projects that are likely to have negative impacts on forests will not be funded under STEP-B.

- **Cultural Property (OP 11.03).** The term “cultural property” includes sites having archeological (prehistoric), paleontological, historical, religious, and unique natural values. The Bank’s general
policy regarding cultural property is to assist in their preservation, and to seek to avoid their elimination. Specifically, the Bank (i) normally declines to finance projects that will significantly damage non-replicable cultural property, and will assist only those projects that are sited or designed so as to prevent such damage; and (ii) will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. The management of cultural property of a country is the responsibility of the government. The government’s attention should be drawn specifically to what is known about the cultural property aspects of the proposed project site and appropriate agencies, NGOs, or university departments should be consulted; if there are any questions concerning cultural property in the area, a brief reconnaissance survey should be undertaken in the field by a specialist.

• **Safety of Dams (OP 4.37).** For the life of any dam, the owner is responsible for ensuring that appropriate measures are taken and sufficient resources provided for the safety to the dam, irrespective of its funding sources or construction status. The Bank distinguishes between small and large dams. Small dams are normally less than 15 m in height; this category includes, for example, farm ponds, local silt retention dams, and low embankment tanks. For small dams, generic dam safety measures designed by qualified engineers are usually adequate. This policy does not apply to STEP-B since the policy is not triggered under the project.

• **Projects on International Waterways (O 7.50).** The Bank recognizes that the cooperation and good will of riparians is essential for the efficient utilization and protection of international waterways and attaches great importance to riparians making appropriate agreements or arrangement for the entire waterway or any part thereof. Projects that trigger this policy include hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, and similar projects that involve the use or potential pollution of international waterways. This policy will not apply to STEP-B.

• **Disputed Areas (OP/BP/GP 7.60).** Project in disputed areas may occur between the Bank and its member countries as well as between the borrower and one or more neighbouring countries. Any dispute over an area in which a proposed project is located requires formal procedures at the earliest possible stage. The Bank attempts to acquire assurance that it may proceed with a project in a disputed area if the governments concerned agree that, pending the settlement of the dispute, the project proposed can go forward without prejudice to the claims of the country having a dispute. This policy is not expected to be triggered by STEP-B sub-projects.
ANNEX 2a: Environmental and Social Screening (ESS) of Education Sub-projects

This stage marks the beginning of the ESIA or ESMP process, which should be initiated as early as possible along with the sub-project planning process after the sub-project is conceived. During this stage, the important functions that need to be performed are:

i. Establish the likely study area by identifying broad boundaries for the sub-project;
ii. Make a preliminary assessment of the significance of potential environmental impacts, and likely mitigating measures;
iii. Identify possible alternatives and the major potential environmental impacts associated with each, as well as the likely corresponding mitigation measures;
iv. Estimate the extent and scope of ESIA to be performed, and offer an initial recommendation as to whether a full ESIA is required;
v. Estimate the time frame of the ESIA study;
vi. Identify the expertise and human resources needed for the ESIA study; and
vii. Prepare the terms of reference for the conduct of an initial environmental examination.

The value of conducting environmental and social screening at the early conception and planning phase of a development project is to provide useful technical input to the project team for their planning and budgeting, thereby eliminating the possibility of costly remedial environmental work and delays caused by problems with adverse environmental damage. Such early input on environmental considerations also provides useful information that helps the project team to gain government approval and win public acceptance.

The environmental and social screening process considers the following aspects in the recommendation: project type, environmental and social setting, and magnitude and significance of potential environmental and social impacts. Some of the typical questions asked in the environmental and social screening process are outlined in the figure in the next page.
Annex Figure 2a-1: Typical Environmental Screening Procedure
ANNEX 2b: Standard Format for Screening Report

1. GENERAL DESCRIPTION
   1.1. Overview of the study area
   1.2. List of Selected Schools

2. PROJECT-SPECIFIC SCREENING (FOR EACH SUB-PROJECT):
   2.1. Existing infrastructure
   2.2. Proposed Works
   2.3. Estimated Cost
   2.4. Summary of Environmental and Social Issues
       2.4.1. Land Resources
       2.4.2. Hydrology and Water Resources
       2.4.3. Air and Noise
       2.4.4. Biological Resources
       2.4.5. Socio-Economic and Cultural
           2.4.5.1. Population
           2.4.5.2. Employment and Other Benefits
           2.4.5.3. Resettlement
           2.4.5.4. Other site-specific issues
   2.5. Environmental Screening Category
   2.6. Applicable Safeguard Policies

3. ESMP ACTION PLAN

4. ATTACHMENTS
   4.1. Maps
   4.2. Photos
   4.3. Location and Administrative Maps
   4.4. Environmental and Social Checklist
## ANNEX 2c: Screening Report: Environmental and Social Checklist

<table>
<thead>
<tr>
<th>State:</th>
<th>Local Government:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Name:</td>
<td>Location:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue</th>
<th>Degree*</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worksite/Campsite Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water Resources &amp; Hydrology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources of Water for Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage Issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Biological Resources | | |
| Special Trees/Vegetation around | | |
| Protected Areas directly affected | | |
| Others | | |
| **Air Quality & Noise** | | |
| Special issues (e.g. quiet zone for hospital) | | |
| Residential Areas | | |

| Socio-Economic & Cultural | | |
| Involuntary Resettlement** | | |
| Graveyards and Sacred Areas affected | | |
| Cultural Resources | | |
| Population affected/provided access | | |
| Others | | |

*Degree: N = Negligible or Not Applicable  
L = Low  
M = Moderate  
H = High

**If yes, indicate # of persons likely to be affected and nature of the effect
ANNEX 3; Standard Format for Environmental and Social Management Plan (ESMP)

EXECUTIVE SUMMARY

1. PROJECT DESCRIPTION
   1.1. Overview of the Local Government where the school are located
   1.2. List of Selected Schools
   1.3. Environmental Screening Category

2. POLICY AND ADMINISTRATIVE AND LEGAL FRAMEWORK

3. SCHOOL-SPECIFIC ESMPs (FOR EACH SCHOOL):
   3.1. Location
   3.2. Proposed Works
   3.3. Estimated Cost
   3.4. Baseline Data
      3.4.1. Land Resources
      3.4.2. Hydrology and Water Resources
      3.4.3. Air and Noise
      3.4.4. Biological Resources
      3.4.5. Socio-Economic and Cultural
   3.5. Potential Impacts
      3.5.1. Land Resources
         3.5.1.1. Construction Phase
         3.5.1.2. Post Construction Phase
      3.5.2. Hydrology and Water Resources
         3.5.2.1. Construction Phase
         3.5.2.2. Post Construction Phase
      3.5.3. Air Quality and Noise
         3.5.3.1. Construction Phase
         3.5.3.2. Post Construction Phase
      3.5.4. Biological Resources
         3.5.4.1. Construction Phase
         3.5.4.2. Post Construction Phase
      3.5.5. Socio-Economic and Cultural
         3.5.5.1. Construction Phase
         3.5.5.2. Post Construction Phase
   3.6. Analysis of Alternatives
   3.7. Mitigation Measures
      3.7.1. Construction Phase
      3.7.2. Post Construction Phase
   3.8. Monitoring and Supervision Arrangements
   3.9. Summary ESMP Table

4. ATTACHMENTS
   4.1. Photos
   4.2. Summary of Consultations and Disclosure
   4.3. Other
# ANNEX 4; Guidance on Environmental & Social Management Plan by Project Phases

<table>
<thead>
<tr>
<th>Phases</th>
<th>Issue/Potential Impact</th>
<th>Mitigation Measure(s)</th>
<th>Implementing Responsibility</th>
<th>Monitoring Responsibility</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Phase</td>
<td>Impacts on physical environment: air quality, hydrology, waste, soils, noise</td>
<td>Consider the impact of the construction activities on the physical environment for the design of civil works</td>
<td>Design Consultant</td>
<td>PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Impact on Air Quality: Emission of dust and other pollutants</td>
<td>Bid document will include requirement to ensure: - Adequate watering for dust control - Prohibition of open burning - Ensure stockpile of materials are properly secured - Proper unloading/storage of construction materials - On-site mixing of materials in shielded area - Equipment and materials to be properly covered during transportation.</td>
<td>Design Consultant</td>
<td>PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Noise impact</td>
<td>Bid document to include requirement to ensure: - Noise silencers be installed on all exhaust system - Use of ear plugs for construction workers - Equipment placed as far as possible from sensitive land users.</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Impact on hydrology: Degradation of surface water quality</td>
<td>The contract document should specify: - use of good engineering practice during construction, including adequate supervision - Minimal water usage in construction area - Minimal soil exposure time during construction - Minimal chemical usage (lubricants, solvents, petroleum products.</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Alteration of surface drainage</td>
<td>Contract document to include requirement to ensure: - installation of adequately sized drainage channels - stabilization of slopes to avoid erosion</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Waste generation and disposal (solid/ oily/hazardous)</td>
<td>Contract document to include requirement to ensure: - Provision of waste management plan, - Proper handling and disposal /recycling of oily waste</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Impact on Soil: Increased soil erosion</td>
<td>Contract document to include requirement to ensure: - Use of less erodable materials, - Lined down-drains to prevent erosion</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic Impact: Disruption during work- demand for local infrastructure increase</td>
<td>- Avoid the creation of congested and unsafe road conditions at intersections and in villages or cities.</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
</tr>
<tr>
<td>Disruption to traditional lifestyles and other services</td>
<td>- Ensures access to homes, businesses, other key services</td>
<td>Design Consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Construction Impact on Air Quality: Emission of dust and other pollutants</td>
<td>- Periodically use water to spray areas under construction&lt;br&gt;- Construction workers to wear face masks and gloves&lt;br&gt;- Ensure that all equipment and materials loaded on trucks are covered during transportation</td>
<td>Contractor, Supervising consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Noise Impact</td>
<td>- Noise standards to be enforced to protect construction workers&lt;br&gt;- Ensure that silencers are installed on all exhaust systems.&lt;br&gt;- Ear plugs to be worn by construction workers&lt;br&gt;- Turn off construction equipment when not in use</td>
<td>Contractor, Supervising consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Impact on hydrology: Degradation of surface water quality</td>
<td>- Use good engineering practice during construction&lt;br&gt;- Ensure wastewater from cleaning of equipment is not disposed of in water course.&lt;br&gt;- Wastewater should be collected and treated suitably before being disposed of in water courses.&lt;br&gt;- Ensure minimal use of water in construction area&lt;br&gt;- Minimal soil exposure time during construction</td>
<td>Contractor, Supervising consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Alteration of surface drainage</td>
<td>- Install adequately sized drainage channels&lt;br&gt;- Ensure stabilization of slopes to avoid erosion</td>
<td>Contractor, Supervising consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Solid waste generation and disposal</td>
<td>- Ensure all waste earth and materials associated with construction activities are disposed land without prior consent of PPT.&lt;br&gt;- Daily life rubbish and waste materials associated with construction activities should be daily collected and disposed of in suitable approved dumpsites.&lt;br&gt;- Ensure that solid wastes are not disposed of in water courses.</td>
<td>Contractor, Supervising consultant</td>
<td>ESMU/PPT</td>
<td>To be determined</td>
<td></td>
</tr>
<tr>
<td>Poor Sanitation at construction camp and site Accidental spill of toxic</td>
<td>- Provide adequately located and maintained latrines&lt;br&gt;- Design and implement safety measures</td>
<td>Contractor</td>
<td>ESMU/PPT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Environmental & Social Management Framework

| Impact on Soil: Increased soil erosion | - Provide an emergency plan to contain accidental spill  
| - Avoid erosion of cuts and fills by providing proper drainage.  
| - Lined down-drains to prevent erosion | Contractor, Supervising Consultant | ESMU/PPT |

| Impact on vegetation | - Replanting of land within project area. | Contractor, Supervising Consultant | ESMU/PPT |

| Health and Safety Impact | - Ensure adequate health facility systems are in place on-site to deal with influx of temporary workers.  
| - Ensure use of nets, insect repellent and other malaria preventive measure for workers on site.  
| - Health education about STDs should be introduced.  
| - Training of construction crew and supervisors on health and safety guidelines  
| - Personal protective equipment to be worn by all workers | Contractor, Supervising Consultant | ESMU/PPT |

| Socioeconomic Impact: Loss of property | - Avoid or reduce loss of property  
| - Avoid land where farmers will be displaced. | Contractor, Supervising Consultant/ESMU | To be determined |
ANNEX 5; Procedures for Sub-project Requiring an ESIA

**Step 1: Screening**

To determine the depth of ESIA required, potential impacts in the following areas need to be considered:

- Social issues
- Health issues
- Protected areas
- Cultural heritage
- Existing natural resources such as forests, soils, wetlands, water resources
- Wildlife or endangered species habitats

**Step 2: Scoping**

To identify the relevant environmental and social issues, this step determines:

- Level of detail required for the ESIA
- Extent of the area to be covered in light of the potential impact zones
- Timeframe for the ESIA based on the potential impact zones
- Sequencing and scheduling of the various ESIA tasks
- Preliminary budgets

**Step 3: Preparation of Terms of Reference for Sub-project ESIs**

Based on the screening and scoping results, ESIA terms of reference will be prepared. A local consultant will conduct the ESIA and the report should have the following format:

- Description of the study area
- Description of the sub-project
- Legislative and regulatory considerations
- Determination of the potential impacts of the proposed sub-projects
- Environmental Management Plan
- Public consultations process
- Development of mitigation measures and a monitoring plan, including cost estimates.
ANNEX 6: General Environmental Management Conditions for Construction Contracts

General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor’s obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:

(a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

(b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

(c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

(d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

(e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

(f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

(g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.

(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
(j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Worksite/Campsite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bunded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
   a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.
   
   b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
   
   c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
   
   d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
   
   e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
   
   f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29. Minimize erosion by wind and water both during and after the process of reinstatement.

30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

**Water Resources Management**

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream, and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.

38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

**Traffic Management**

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

**Blasting**

42. blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.

44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

**Disposal of Unusable Elements**

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client’s premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.

47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

**Health and Safety**

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

**Repair of Private Property**

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner’s satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

**Contractor’s Health, Safety and Environment Management Plan (HSE-MP)**

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor’s EHS-MP will serve two main purposes:
   • For the Contractor, for internal purposes, to ensure that all measures are in place for adequate HSE management, and as an operational manual for his staff.
   • For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the HSE aspects of the project, and as a basis for monitoring of the Contractor’s HSE performance.

55. The Contractor’s EHS-MP shall provide at least:
   • a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
• a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
• a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
• the internal organizational, management and reporting mechanisms put in place for such.

56. The Contractor’s EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor’s EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

HSE Reporting

57. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor HSE report is given below. It is expected that the Contractor’s reports will include information on:
• HSE management actions/measures taken, including approvals sought from local or national authorities;
• Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);
• Lack of compliance with contract requirements on the part of the Contractor;
• Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and
• Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.

58. It is advisable that reporting of significant HSE incidents be done “as soon as practicable”. Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE’s reports to the Client.

Training of Contractor’s Personnel

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfill their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:
• HSE in general (working procedures);
• emergency procedures; and
• social and cultural aspects (awareness raising on social issues).

Cost of Compliance

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item “Compliance with Environmental Management Conditions” in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable HSE impact.
Example Format: HSE Report

Contract:
Period of reporting:

HSE management actions/measures:
Summarize HSE management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), HSE training, specific design and work measures taken, etc.

HSE incidents:
Report on any problems encountered in relation to HSE aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

HSE compliance:
Report on compliance with Contract HSE conditions, including any cases of non-compliance.

Changes:
Report on any changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects.

Concerns and observations:
Report on any observations, concerns raised and/or decisions taken with regard to HSE management during site meetings and visits.

Signature (Name, Title Date):
Contractor Representative
Example Format: HSE Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:
Date of Incident: Time:
Location of incident:

Name of Person(s) involved:

Employing Company:

Type of Incident:

Description of Incident:
Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:
Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):
Contractor Representative