FEDERAL GOVERNMENT OF NIGERIA



FEDERAL MINISTRY OF WATER RESOURCES

SUSTAINABLE POWER AND IRRIGATION IN NIGERIA (SPIN)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

DRAFT FINAL REPORT

JULY 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank				
AI	Access to Information Policy				
ATA	Agricultural Transformation Agenda				
BMP	Biodiversity Management Plan				
BP	Business Policy				
CADP	Commercial Agriculture Development Project				
CBN	Central Bank of Nigeria				
СМО	Catchment Management Office				
CPS	Country Partnership Strategy				
CSO	Civil Society Organization				
DA	Designated Accounts				
DFID	LIK Department for International Development				
FA	Environmental Assessment				
FAP	Emergency Prenaredness and Action Plans				
FCOWAS	Economic Community of West African States				
	Economic and Einancial Crimes Commission				
	Epyiropmental and Social Assossment				
	Environmental and Social Impact Assessment				
ESIA	Environmental and Social Impact Assessment				
EU	European Union				
	Food and Agriculture Organization of the United Nations				
FEPA	Federal Environmental Protection Agency				
FGN	Federal Government of Nigeria				
FM					
FMARD	Federal Ministry of Agriculture and Rural Development				
FMEnv	Federal Ministry of Environment				
FMLP	Federal Ministry of Labour and Productivity				
FMoF	Federal Ministry of Finance				
FMP	Federal Ministry of Power				
FMWR	Federal Ministry of Water Resources				
FPR	Farmer Participatory Learning				
GDP	Gross Domestic Product				
HA	Hydrological Area				
IBRD	International Bank for Reconstruction and Development				
IDA	International Development Association				
IFC	International Finance Corporation				
IMA	Irrigation Management Association				
IPM	Integrated Pest Management				
IUCN	International Union for the Conservation of Nature				
IWMI	International Water Management Institute				
IWRM	Integrated Water Resources Management				
JICA	Japan International Cooperation Agency				
LBRBDA	Lower Benue River Basin Development Authority				
LUA	Land Use Act				
LUAC	Land Use Allocation Committee				
M&E	Monitoring and Evaluation				
MDG	Millennium Development Goal				
MIS	Management Information System				

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MOF	Ministry of Finance				
NAFDAC	National Agency for Food and Drugs Administration and Control				
NBA	Niger Basin Authority				
NBS	National Bureau of Statistics				
NCA	National Council on Agriculture				
NCB	National Competitive Bidding				
NCWR	National Council on Water Resources				
NEPAD	New Partnership for Africa's Development				
NEWMAP	National Erosion and Watershed Management Project				
NGO	Non-Governmental Organization				
NIC	National Irrigation Commission				
NIWRMC	Nigeria Water Resources Management Commission				
NIWRMP	National Irrigation and Water Resources Management Project				
NRBDA	Niger River Basin Development Authority				
O&M	Operations and Maintenance				
OP	Operational Policy				
PAD	Project Appraisal Document				
PAP	Project Affected Persons				
PCU	Project Coordination Unit				
PDO	Project Development Objective				
PIM	Participatory Irrigation Management				
PL	Participatory learning				
POP	Persistent Organic Pollutants				
PPE	Personal Protective Equipment				
PMP	Pest Management Plan				
PST	Project Screening Template				
PTS	Pesticides and Toxic Substances				
RAMP II	Nigeria's Rural Access and Mobility Project				
RBA	River Basin Authority				
RPF	Resettlement policy Framework				
RBDA	River Basin Development Authority				
RBMC	River Basin Management Commission				
SESA	Strategic Environmental and Social Assessment				
SDR	Special Drawing Rights				
SPRI	Small-scale Private Irrigation Schemes				
SRFP	Standard Request for Proposal				
SRRBA	Sokoto-Rima River Basin Authority				
TA	Transformation Agenda				
TAC	Technical Advisory Committee				
TRIMING	Transforming Irrigation Management in Nigeria				
TtT	Training the Trainer				
UBRBA	Upper Benue River Basin Authority				
UNDP	United Nations Development Program				
WHO	World Health Organization				
WRB	Water Resources Bill				
WUA	Water User Association				
WUAF	Water User Association Federation				

EXECUTIVE SUMMARY

Background

The World Bank is supporting the Federal Government of Nigeria to implement the Sustainable Power and Irrigation for Nigeria (SPIN) Project. The Project Development Objective is to improve the utilization and safety of existing storage and strengthen institutional arrangements for sustainable irrigation development and management and hydropower development in Nigeria. The project aims to promote sustainable development, efficient utilization of water resources, and strengthen integrated water resources management practices. Building upon the lessons learned and achievements from the Transforming Irrigation Management in Nigeria (TRIMING) Project (P123112), the project aims to promote a more holistic water and storage management by the inclusion of hydropower sector and supporting institutional strengthening, such as on dam safety regulations and guidelines.

The proposed SPIN project seeks to improve the utilization of existing storage for irrigation and hydropower generation, concurrently enhancing institutional arrangements for integrated water resources management. The project will optimize water use, enhance hydropower generation capacity, and support institutional strengthening. The project will integrate water and storage management, strengthen coordination between ministries, and use hydropower for productive purposes.

The Project Components include Component 1: Institutional strengthening and capacity building for Water Resources Management (\$US 30 million); Component 2: Irrigation Modernization (\$US 350 million); Component 3: Improvement in dam operations and enhancing dam safety (\$US 100 million) and Component 4; Project Management (\$US 20 million).

The investments will be spread nationwide across all six geo-political zones in Nigeria. However, the specific locations for the intervention have not yet been determined. The beneficiary states, River Basin Development Authority (RBDAs), and selected federal and state schemes will be determined based on a set of demonstrated technical and implementation readiness criteria agreed upon with the Federal Ministry of Water Resources and Sanitation (FMWRS), as detailed in the Project Action Document (PAD).

The activities under component 2 will support the rehabilitation and revitalization of 40,000 ha of irrigated command area across all geopolitical zones. The Federal and state schemes which will be supported by the SPIN Project will be determined based on technical and implementation readiness criteria agreed with the FMWRS. Under component 3, the project aims to increase the safety of selected dams in to strengthen the dam safety management system in the country. The scope is to improve the safety of dams and associated appurtenances of 10 to 20 prioritized dams. At the point of preparing this study , the dams and irrigation schemes that will be under the project have not been selected and prioritization of existing large dams are now

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conducted by the government. However, three dams¹ have been identified and Environmental and Social Due Diligences (ESDDs), that were conducted in March and April 2024, indicated the activities will only involve brownfield rehabilitation works of existing irrigation facilities and earth embankment dams. The project will not cover any greenfield construction works of new dams (see Annex 1 on the list of existing candidate dams for rehabilitation). The civil works to be conducted under the dam safety (Component 3) will be rehabilitation works of the dam body and/or rehabilitation of irrigation and drainage works (Component 2), which will be very similar to some of the works completed under the TRIMING project. Similarly, the irrigation intervention under component 2 will also be limited to rehabilitation of already existing irrigation fields with a focus on rehabilitation of canals, repairs of broken walls, desilting of blocked field channel for proper water management, etc.

The primary beneficiaries of the project are the communities that live in dam areas and the communities that depend on water, irrigation, and electricity services provided by the dams, which could be compromised by poor dam performance or failure. In addition to saving lives, improved dam safety will avoid potential flood damage to houses, farm areas, infrastructure (roads, bridges, other public and private infrastructure) and industrial and commercial facilities available downstream of dams. Improved dam safety will also reduce the likelihood of service interruptions due to dam failure and potentially improve dam service provision, overall efficiency and storage capacity, including during drought periods.

Purpose and Approach of the ESMF

The SPIN project, a natural progression from the TRIMING² Project, aims to build on its successes. It will improve existing facilities, rehabilitate dams, develop master plans and investment plans for hydropower investments, and expand agricultural productivity through increased irrigation agriculture. As the specific locations for the SPIN investments are not yet finalized, an Environmental and Social Management Framework³ (ESMF) is being developed. This framework will guide the process for the development of site specific ESIA / ESMP to address the environment and social risks and impacts associated with the project, including mitigation, monitoring, and institutional measures to eliminate adverse environmental and social impacts.

The objectives of this ESMF are:

- Assess the potential environmental and social impacts of the Project;
- Establish clear procedures and methodologies at the subproject level, for screening, identification of environment and social impacts and for mitigation, monitoring and institutional measures;

¹ Naka Dam in Naka Dam, located in Naka town in Gwer West Local Government Area (LGA) of Benue state. Wuro Keso dam is an earthwork dam located in Wuro Keso district in Gassol Local Government Area of Taraba State, Nigeria. Doma Dam is located at in Doma Local Government Area of Nasarawa State.

² TRIMING Project was prepared using the Safeguard Policies and a Category A Project (Category 1 for National rating)

³ This ESMF is being prepared for the SPIN, along with a Pest Management Plan, Resettlement Policy Framework, Labour Management Plan, and Environmental and Social Due Diligence reports for Naka, Doma and Wuro Keso Dams respectively.

- Develop Environmental and Social Management Framework Guidelines for the mitigation of the potential negative impacts and for monitoring compliance with the relevant Environment and Social Standards (ESSs) of the World Bank's Environmental and Social Framework (ESF);
- Assess the capacity and training of the implementing agencies at the national and local levels, to implement the developed environmental and social management framework; and;
- Establish the necessary funding requirements for the implementation of the ESMF.

The methodology used in preparing the ESMF was based on lessons learnt from implementation of the TRIMING ESMF as well as the ESF. This ESMF has been developed to serve as an instrument to guide the Implementing Agencies on undertaking necessary E&S due diligence on each sub-project.

To gain insight into the potential project environment, the government identified three irrigation dams, conducted screening, and developed dam inspection reports and project screening templates (PSTs). At present, the dam safety status of these dams are not yet known. The SPIN Project aims to strengthen the capacity and improve the management framework for dam owners, operators, and agencies overseeing dam safety to help address dam safety risks. The project will help develop comprehensive dam safety guidelines consisting of standards, operational manuals, and rules to help dam owners and operators comply with dam safety requirements. ESDDs⁴ were prepared for the three dams to assess the potential environmental and social risks associated with the proposed works outlined in the PSTs. The ESDD categorized a level of risk (High/Substantial/Moderate/Low) for each of the sub-projects and provided guidance on the E&S instrument(s) to be prepared during implementation. Once the dam safety plans are in place, the dams will be further assessed, and appropriate E&S instrument(s) will be prepared. However, large dams will require a full ESIA regardless of the scope of rehabilitation works.

Policy, Legal and Administrative Framework

Several regulations apply to the SPIN project, including local and international regulations. Local regulations are primarily those of the Federal Ministry of Environment (FMEnv), National Environmental Standards and Regulations Enforcement Agency (NESREA), FMWR&S, Federal Ministry of Agriculture and Rural Development (FMARD), etc. The international regulations include those of the World Bank and several other international conventions. A gap assessment was undertaken at the country level in 2019 to assess the environmental and social policies and guidelines visa viz the ESF. Based on this analysis, measures are adopted across bank-supported operations to ensure E&S requirements are in place. For example, the SPIN Project will, through Component 4, undertake extensive training of Project actors on the ESF. ESS 2 on Labour and Working Conditions will provide a platform for establishing a Contractor grievance redress mechanism, ESS 4 on Community Health and Safety will prioritize support of the community to access services as it relates to issues of sexual exploitation and abuse/sexual harassment (SEA/SH) caused by Project operations, improve dam safety requirement to avoid

⁴ The ESDDs are standalone documents; however, key findings and recommendations are documented in Annex 6 of this ESMF.

impacts and support the development and implementation of Security Management Plans. ESS 10 on Stakeholder engagement will advocate for continuous engagement with project beneficiaries and ensure vulnerable groups (e.g., women, Persons with Disabilities) are also engaged during project design and implementation.

Potential Environmental and Social Risks and Impacts

The findings from the three ESDD assessments conducted indicate that the potential environmental and social impact is likely to be localized within the dam areas, as most of the planned activities under Component 3 are restricted to the rehabilitation of the dam body structure. There may be water pollution during the works and dam safety concerns, especially in cases where the dam has been abandoned for a while. The irrigation works may pose social risks, particularly in locations like Naka, where there might be economic or physical displacement of burnt brick makers. However, a Resettlement Action Plan will be developed during Project implementation to assess the risk and identify appropriate measures to manage potential economic and physical displacements. There are also inherent risks that could be critical to the success of the SPIN Project, such as security risks and the farmer-herder crisis, especially in the Benue-Plateau areas. Adequate measures employed during TRMING and other operations, such as the Agro-Climatic Resilience in Semi-Arid Landscapes (ACRESAL) Project, will be implemented. Some of the sub-project locations that the Project will venture into are new terrain for bank-supported infrastructural investment. Therefore, there will be a need for extensive capacity building on the ESF and knowledge sharing across states or River Basin Development Authorities (RBDAs). Other potential impacts are listed below.

Potential environmental issues include:

- Risk of dam failure
- Emission of noxious gases from the exhaust of trucks, automated cranes, etc. that will be moved to the site for the purpose of project activities, and this may pose negative impacts on ambient air quality around the project site;
- Mobilization of equipment, materials and men to site may further increase the ambient noise levels of the project area and its immediate surroundings.
- The movement of trucks and cranes to the site may constitute obstructions to normal traffic in the project area and thus exacerbate traffic build-up in the area
- Dust raised from various construction activities will negatively affect ambient air quality;
- Loss of vegetation caused by clearing of sites, installation of works, quarries and stockpile areas, and demand for fuelwood by labour force;
- Soil erosion resulting in siltation of nearby watercourses;
- Contamination of water sources caused by run-off of petroleum produce spillages, leakages from storage areas and improper disposal of fuels;
- Impact on cultural or archaeological findings due to excavation or from dust;
- Health and safety of workers (accidents, etc);
- Exacerbation of water-borne diseases such as malaria, filariasis, etc. in areas where irrigation canals are extended to;
- Disease transmission (HIV/AIDs, STDs) to communities along route from construction workers.

• Waste generation and disposal challenges (construction wastes, pesticide materials and residues, etc.).

Potential social impacts include:

- Risk associated with labour influx (e.g., SEA/SH)
- Changes to existing land uses (legal and illegal).
- Displacement or involuntary resettlement of people due to land acquisition.
- Impact on landless and workers, including migrant workers.
- Vulnerable groups, including women Impacts on community water management practices and relationships.
- Community health and safety issues including security risks, farmer-herder crises which may be exacerbated from project activities.
- Conflicting demands on surface or groundwater supplies.
- Impact on human health from fertilizer and pesticide use.
- Risk associated with dam failure which will impact lives and properties downstream.
- Impact on water users including fishing, agriculture and domestic activities during dam repairs and irrigation works.

Overall, the E&S risk rating of the Project is rated High because the project will finance brownfield rehabilitation of <u>large</u> dams (and dam status is currently unknown for most if not all) and the preparation of feasibility study and E&S instruments for a future hydropower investment. The extent of project activities impact are currently not known and environmental and social impacts and risks will need to be assessed when projects are identified. Additionally, the capacity of implementing agencies, i.e., the River Basin Authorities, participating States, and other associated agencies towards management of E&S risks is low and necessitates significant capacity building efforts.

The proposed project are limited to rehabilitation of existing dams and irrigations, institutional strengthening of key ministries, department, and agencies in the water and power sector, and development of a master plan and investment plan for a hydropower investment. The project activities are unlikely to interface or overlap with other developments in the region. The hydrologic changes in the design of the project will improve safety while operating procedures will help smoothen dam operation. Therefore, project activities under SPIN are unlikely to cause any cumulative impacts and thus, cumulative impact assessment is not envisaged for the project. However, additional assessment would be conducted during implementation to ascertain the relevance of cumulative impacts. All high and substantial risk activities will undergo detailed ESIA / ESMP accordingly.

Application of ESMF to Sub-project development

ESMF will be applied to the overall project through a two-stage process. Throughout the lifetime of the SPIN Project, ESDD will be conducted on all sub-project dams to identify the E&S risks and impacts and to determine the risk category of the sub-project. Based on risk categorization, sub-project rated Low or Moderate will prepare ESMP. Sample ESMP Terms for Reference (ToR) is provided in Annex 5. Where the ESDD rates the sub-project as either Substantial or High, then an ESIA would be carried in line with the ToR (see Annex 4). All the ToR will be

approved by World Bank. The ESIAs, ESMPs and other instruments would be conducted by the State Project Implementation Unit (SPIU) with the help of professional Consultants.

The standards and plans proposed to address social issues including involuntary resettlement and legacy issues (people who would have lost their houses, lands, livelihood and other assets prior to the commencement of the Project will be particularly important) are contained in a stand-alone Resettlement Policy Framework (RPF) prepared for the Project. Site-specific Resettlement Action Plan(s) shall be prepared to identify and propose mitigation measures for the social impacts associated with each subproject at each site. The RPF will guide the preparation of the RAP(s).

Institutional Assessment and Framework for Environmental and Social Management

The FMWRS will set up a Federal Project Management Unit (FPMU) staffed with competent multi-disciplinary experts from both the FMWRS and FMP fully dedicated to managing the project.FPMU The FPMU will include staff from the Department of Drainage of the FMWR&S, Ministry of Power, Ministry of Agriculture and Rural Development, Ministry of Environment, staff from the TRIMING PMU, Engineers, Environmental, Social and GBV Officers, Consultants, Procurement and Financial Management Specialists. The FPMU will have a Project Coordinator and Project Engineers that will work closely with them.

Implementation will be done at the State/RBDA level for which a State Project Implementation Unit (SPIU) will be established with the similar arrangement at the national. SPIU will also have a dedicated Project Coordinator. At the SPIU level, E&S specialists may be hired from competitive open market for the project.

Although most of the institutions identified have the required knowledge base and staffing levels to undertake the successful implementation of tis ESMF, some levels of training and institutional strengthening are required in order to assure the successful and robust management of the projects in an environmentally sustainable manner.

Environmental and Social Management Process

This ESMF incorporates an overall environmental and social management process for the SPIN Project and its subprojects. The process involves distinct steps and associated activities linked to deliver a robust and veritable management framework in line with the stated objectives of the ESMF. The management process will help identify the critical social and environmental issues associated with SPIN subprojects and ensure that positive impacts are optimized, and negative impacts are minimized or mitigated. The management process will help to improve the understanding of the subprojects by the local communities, and this will increase trust between the PIUs and the local community.

The environmental and social management procedure to be followed shall include the following steps:

i) Subproject identification and screening

- ii) Preparation of appropriate E&S safeguard instruments;
- iii) Stakeholders' consultations;
- iv) Disclosure of safeguard instruments;
- v) Incorporation of the ESMP in construction bid documents;
- vi) Implementation of the ESMP;
- vii) Monitoring and evaluation of the ESMP Implementation.
- viii) Other Instruments

Stakeholder Engagement and Grievance Management

A standalone Stakeholder Engagement Plan (SEP) has been prepared for the SPIN project. Stakeholder engagement will continue throughout the project's lifecycle. Members of the communities engaged during the preparation of ESMF expressed delight in the proposed plan for the government to improve the dam and irrigation operations in the schemes, which will support agriculture development and other water usage.

A grievance redress mechanism (GRM) Manual will be developed by the SPIN FPMU, which will outline the procedure for handling grievances. The TRIMING Project prepared one, and this will be evaluated and upgraded for SPIN. Each participating SPIU and the FPMU will establish a GRM that will allow the general public in the subproject area, affected subproject communities or individuals, and project-affected persons (PAPs) to make complaints and receive responses promptly. A separate GBV-GRM shall also be established to address issues relating to GBV/SEA/SH in line with the procedures that will be articulated in the GBV Accountability Framework and Response. While the GBV GRM is designed exclusively and confidentially to handle matters of SEA/SH nature, the project GRM system will be designed to handle complaints perceived to be generated by the subprojects or the personnel. It may also include disagreements about compensation and other related matters. The SPIU will assign a specific staff member to ensure these functions correctly. In preparing the GRM Manual, an effort should be made to review any existing GRM systems (government/traditional) operative in the area and propose ways that the GRM may fit within these systems. The GRM should have second and third levels of appeal (including the court system, if appropriate, for legitimate claims that cannot be resolved at lower levels). The functioning of the GRM system, how to register complaints (written, by phone, or in person), where to go, and hours of service should all be clearly explained in the local language during initial public consultations on the subproject. Local language brochures should be provided to reiterate the functioning of the GRM.

Capacity Building and Training

In order to achieve the goal of the ESMF, there is need for capacity building and strengthening of relevant competencies on environmental and social management at Federal, States, RBDAs and community levels including contractors. To this end, capacity building should be viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. It also involves organizational development, the elaboration of management structures, processes, and procedures, not only within organizations but also

the management of relationships between the different organizations and sectors (public, private and community). The Component 4 of the Project will support Capacity building in the ESF context for the water and power sector in Nigeria.

Given the nature of the environmental and social management requirements and provisions outlined in this ESMF, competencies and capacity building will be required in the following areas:

- Environmental and Social Impact Assessment Process Screening, scoping, impact analysis, mitigation measures and monitoring, reviewing ESMP Reports;
- Environmental and Social Due Diligence Types of due diligence, screening projects for liabilities, scoping due diligence investigations and reviewing due diligence reports;
- Monitoring due diligence Understanding the importance of monitoring and reporting in the SPIN ESMF implementation, monitoring requirements for environmental and social sustainability of subprojects (ESMP implementation).
- Topical training related to dam safety, emergency preparedness and response, catchment management.

Translations into the Major Language of the Project Area

In order to ensure that communities in the project area, especially "potential project affected persons (PAPs)" understand the involved issues, the executive summary of the report should be translated into the three major language in the proposed sub-project locations (Hausa, Igbo and Yoruba).

Disclosure

The ESMF will be disclosed publicly as a separate and stand-alone document for review and comment through the Federal/State Ministries of Environment at designated locations at Federal and in the participating States, and in World Bank website. Individual ESIAs/ESMPs will be prepared for each subproject based on the guidelines and procedures highlighted in this ESMF and would be disclosed in the area affected by the subproject.

1.0 BACKGROUND AND INTRODUCTION TO THE SUSTAINABLE POWER AND IRRIGATION IN NIGRIA PROJECT

1.1 Background Information

Nigeria, the most populous country and largest economy in Sub-Saharan Africa, grapples with significant economic challenges, climate vulnerability, and socio-political complexities. In response to the pressing need for policy actions and sustained economic growth, a pivotal project has been conceptualized, aligning with the World Bank's Country Partnership Strategy (CPS, FY21 – FY25) for Nigeria. The proposed Sustainable Power and Irrigation in Nigeria (SPIN), project will address water resources management, water security, institutional strengthening, assess the hydropower potential of some dam through studies and rehabilitation of existing dams, irrigation, and drainage infrastructure to optimize delivery of services to water users.

The Project Development Objective is to improve utilization and safety of existing storage and strengthen institutional arrangements for sustainable irrigation development and management, and hydropower development in Nigeria. The project aims to promote sustainable development, efficient water resource utilization, and strengthen integrated water resources management practices.

The proposed project includes four main components:

- i. Institutional strengthening and capacity building for Water Resources Management;
- ii. Irrigation Modernization;
- iii. Improvement in Dam operations and Enhancing Dam Safety; and
- iv. Project Management.

The SPIN project intervention will target selected dams across Nigeria with Irrigation potential. The project development objective is to improve the safety of existing dams and enhance the associated climate-resilient irrigation services and strengthen hydropower planning in Nigeria. This Draft Environmental and Social Management Framework (ESMF) Report presents an overview of the ESMF, the basic findings, and recommendations.

1.2 Introduction

Nigeria is adequately blessed with an abundance of all the resources and factors required to excel in agricultural productivity and hydro power generation. Chief among these factors is Manpower, landmass, edaphic and climatic factors as well as extensive network of waterbodies. However, gross neglect of the agricultural sector over the last three decades or thereabouts, due to comprehensive focus on the petroleum sector, has led to a substantial deterioration of the agricultural sector in Nigeria, to the extent that, from being a mainstay of the Nigerian economy, agriculture has been relegated to the backwaters of irrelevance, until recently.

With regards to power, although efforts have been made to increase power generation, transmission, and distribution, these have remained largely inadequate and ineffective. With the realization that there is a need to be more coordinated about agricultural development as well as improvement in power generation and supply, various projects have been originated and implemented, to work on improving agricultural productivity as well as power generation and

distribution in Nigeria. A series of projects are currently being assisted by the World Bank and other Multilateral Development Banks (MDBs) such as the African Development Bank (AfDB), the Islamic Development Bank (IsDB), etc. in the agricultural sector and the power sector. Recent interventions by the World Bank include the various Fadama projects, and the one rounding up now, Transforming Irrigation Management in Nigeria (TRIMING) project. The World Bank is also conceptualizing the current project for which this ESMF is being prepared. The SPIN Project is aimed at building on the gains from the TRIMING project and will focus on improving optimization of existing facilities such as rehabilitating existing dams, undertaking studies to optimize hydropower sector, and generally expand agricultural productivity through increased irrigation agriculture. The SPIN project is expected to involve, among others, civil works such as rehabilitation of dam infrastructure, construction and/or rehabilitation of irrigation to optimize delivery of water resources for agricultural services.

1.3 Lessons Learnt from the TRIMING Project

Some of the lessons learnt from the TRIMING Project include the following:

- Water Users Associations (WUAs) are pivotal to the success of the TRIMING Project and must therefore be carried along, right from concept stage, and throughout project implementation.
- There is a need to incorporate informal uses into the WUA, as a lot of water is tapped illegally for irrigation, along the length of newly rehabilitated or constructed canals. Sometimes, these illegal users damage the canals, thus undermining the investment.
- Pest issues range from mild to major, and pest control can best be achieved by combining cultural methods with chemical control.

1.4 Objectives of the ESMF

The ESMF sets out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts of program and/or series of subprojects envisaged for implementation under SPIN. It presents measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, including on its capacity to manage environmental and social risks and impacts. It includes adequate information on prospective area in which subprojects are expected to be sited, including any potential environmental and social vulnerabilities of the area; and on the potential impacts that may arise and the corresponding mitigation measures to address the anticipated risks and impacts.

More specifically, the objectives of this ESMF are:

- i. To assess the potential environmental and social impacts of sub-projects, whether positive or negative, and propose mitigation measures which will effectively address the negative impacts.
- ii. To identify potential environmental policies, legal and institutional framework pertaining to the project.

- iii. To establish clear directives and methodologies for the environmental and social screening of sub-projects to be financed by the project.
- iv. Establish the necessary funding requirements for the implementation of the ESMF.
- v. To guide the development of specific Environmental and Social Impact Assessments (ESIAs) activity might be needed for specific sub-projects.
- vi. To help the Project Management Unit recruit qualified specialists to carry out screening and oversee environmental and social assessments as they are conducted.
- vii. To describe the biophysical and social context, environmental, climatic, and social issues linked to the project area.
- viii. To define the content of other Environmental and Social instruments that will be prepared such as the ESIAs, Occupational Health and Safety Management Plans (OHSMP), the Dam Safety Assessments, etc.
- ix. To provide guidance and term of reference for preparation of dam safety audits in absence of operational dam safety plans, that include a dam break analysis and an Emergency Preparedness and Response Plan, in compliance with the National Environmental Dam and Reservoirs regulations of 2014.

1.5 Purpose of ESMF

Though the details of majority of the dams and irrigation schemes that are to be taken up under the project are not fully known at the time of preparation of this ESMF, this ESMF has been developed to serve as an instrument to guide the Implementing Agencies in undertaking necessary E&S due diligence on each sub-project. Additionally, some dams were selected for an Environmental and Social Due Diligence (ESDD) study⁵. Based on the ESDD findings, the assessed dams were accorded a risk category (Low/Medium/Substantial/High) and recommendations on the appropriate Environment and Social instruments to be undertaken during Project implementation were identified. The ESMF provides an overarching framework to manage environmental, social, health and safety (ESHS) issues associated with the implementation of sub-projects, during construction and operational phases.

1.5 Study Approach and Methodology

This ESMF was prepared in accordance with standard procedures for environmental and social assessment including the applicable World Bank Environmental and Social Standards (ESS) and Nigerian environmental assessment guidelines.

1.5.1 Project Strategy

The preparation of the ESMF was for a period of 10 weeks - within which the tasks as stated in the Terms of Reference (TOR) were accomplished. The indicative work plan, desktop study, scoping activities to understand the projects field of influence, site visits, review of the existing laws and polices currently in place nationally as well as relevant World Bank policies and processes constituted activities for successful project output.

Below is a brief description of activities performed in the implementation process of the methodology.

⁵ The ESDDs are standalone documents; however, key findings and recommendations are documented in Annex 6 of this ESMF.

1.5.1.1 Literature Review

The approach was based on review of available literature and other strategic planning documents at the national and state level. Documents consulted in the process of preparing the ESMF study include:

- National environmental laws regulations, decrees, acts, policies and guidelines;
- Project Concept Note (PCN) and the Environmental and Social Review Summary (ESRS);
- World Bank Environmental and Social Standards (ESSs);
- Baseline information relating to the physical, biological and socio-cultural environment of project areas;
- Dam Panel of Experts (DPoE) Dam Safety Reports for the three dams selected as pilot for the SPIN Project
- Environmental Impact Assessment Act (Decree No. 86). 1992;
- World Bank Environmental, Health and Safety Guidelines;
- Existing published and unpublished papers and research on the project area
- o ESMF's prepared by other World Bank projects in Nigeria and other parts of the world,
- Findings from the ESDDs, etc.

1.5.1.2 Data Gathering

Data on the details of the environmental management policies and regulations were sourced from different institutions, including the Federal Ministry of Environment (FMEnv); The Federal Ministry of Water Resources and Sanitation (FMWR&S); Federal Ministry of Agriculture and Rural Development (FMARD); Relevant River Basin Development Authorities (RBDAs); the TRIMING Project etc. Information gathered was reviewed to obtain detailed descriptive, qualitative and quantitative data on the physical environmental, sociological, and economic laws, regulations, standards, and policies relating to the project.

In addition, environmental and social screening and scoping of the project's field of influence and activities were undertaken in line with the FMEnv guidelines and the World Bank.

1.5.1.3 Field Visits

This activity involved:

- Visits to the 3 dames, including Doma, Naka and Wuro Keso Dams in Nassarawa, Benue and Taraba States⁶, respectively,
- Identification of potential Environmental and Social Impacts Identification and Prediction; and;

⁶ The Project will intervene in several dams and irrigation schemes across the country. However, the dams and irrigation schemes are not yet known as at the time of the preparation of this ESMF. Nonethless, 3 dams were selected for inspection and project screening templates (PST) were prepared.

• Oral interviews, and focused group discussions.

1.5.1.4 Stakeholder consultations

Consultations were held with relevant stakeholders, including RBDAs, WUAs, Women groups, and traditional rulers. Basic issues covered were as listed above. Details of consultation activities are presented in Section 8 of this report.

1.6 Screening and Scoping of the Project

To ensure all subprojects are appropriately screened for environmental and social issues at their conception stage, a checklist tool [See Annex 2] has been developed to screen each subproject in terms of:

- i) Appropriate EIA category;
- ii) Applicable local, state, national and international regulations and standards (e.g., labour, pollution, occupational health and other standards);
- iii) Relevant World Bank ESSs ;
- iv) Level of stakeholder engagement (both sectoral and project level);
- v) Existing environmental and social impacts; and,
- vi) Location sensitivities (e.g., sensitive environments and culture)

The screening tool provides necessary information to appropriately scope environmental and social assessments for the subprojects. The studies will include environmental, social and other due diligence investigations. Mitigation measures for identified adverse impacts are often proffered to either eliminate or minimize adverse environmental and social impacts of specific actions, projects or programs, with a purpose to also enhance positive effects. The approach to mitigation has been primarily preventive principles of anticipated impacts based on well-known negative outcomes of project-environment interactions.

The overall SPIN project is classified High Risk. However, in all probability, most of the subprojects will be of Substantial or Moderate and Nigeria EIA Category II. As such, ESIAs and site-specific Environmental and Social Management Plans (ESMPs) will usually be sufficient for World Bank and national requirements.

1.7 Report Structure

The report is arranged as follows:

- Section 1 Background and Introduction
- Section 2 Policy, Legal and Administrative Framework
- Section 3 Project Description
- Section 4 Description of Project Environment
- Section 5 Project Environmental and Social Risks and Impact

Section 6 Institutional Assessment and Framework for Environmental and Social Management

- Section 7 Environmental and Social Management Process
- Section 8 Stakeholder Engagement and Grievance Mechanism
- Section 9 Disclosure Requirements
- Section 10 Conclusion

In addition to the foregoing, annexes are provided on various themes.

2.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 Introduction

This section presents an overview of relevant regulations, treaties and conventions that apply directly or remotely to the proposed project activities. This presentation includes a summary of the relevant/applicable provisions of each guideline.

2.2 Legal and Administrative Framework

2.2.1 Administrative Structure for the Water Sector at the Federal Level

2.2.1.1 Federal Ministry of Water Resources and Sanitation (FMWR&S)

The Federal Ministry of Water Resources and Sanitation (FMWR&S), initially created in 1976, is responsible for formulating and coordinating national water policies, management of water resources including allocations between states, and approving developmental projects. Specifically, the functions of the FMWR&S include:

- Establishment and operation of National Water Quality Laboratories and Monitoring Network and water quality standards.
- Maintenance of database on water supply and sanitation facilities and performance.
- Mobilization of national and international funding and technical support. Promote and coordinate other collaborative activities by other government and Nongovernmental agencies in the sector.
- Provision of technical support and assistance to State and Local Government Water Supply and Sanitation Agencies and community water supply and sanitation committees.
- Creation of an enabling environment for meaningful private sector participation in the sector.
- Provision of a framework for regulation of private sector participation in water supply and sanitation. Under Decree 101, formulate laws for private initiatives in the water supply industry.
- Assistance to individual agencies and be responsible for the maintenance of the hydrological primary network.

2.2.1.2 River Basin Development Authority

The River Basin Development Authorities (RBDA's), now 12 in total, were also created in 1976 for planning and developing water resources, irrigation work and the collection of hydrological, hydrogeological and meteorological data. Their main involvement in potable water supply has been the provision of multipurpose dams and the supply of water in bulk, some to urban water systems.

2.2.1.3 National Water Resources Institute (NWRI)

The National Water Resources Institute (NWRI) was legally established in 1985 and is responsible to the FMAWR for engineering research functions related to major water resources projects and training sector professionals and technicians.

2.2.1.4 Utilities Charges Commission (UCC)

The Utilities Charges Commission (UCC) was established in 1992 to monitor and regulate utility tariffs, including those of State Water Agencies (SWA's).

2.2.1.5 National Inland Waterways Authority (NIWA) Decree No 13, 1997

This decree, which came into force on the 12th August 1997, has the main objective of establishing the National Inland Waterways Authority (NIWA) and requires it to, among other things: improve develop and regulate Inland water ways for navigation and specify Navigable water

Highlights of the provisions of the Decree, that have environmental bearings include:

- Established NIWA, to inter alia, provide regulation for inland navigation, grant permit and licenses for sand dredging, pipeline construction, dredging of slots and crossing of waterways by utility lines, water intake, rock blasting and removal – (Ss. 8,9)
- The Authority may, subject to the approval of the minister, make regulations generally for the regulation of users of navigable water ways and such other regulations as appear to him to be expedient for giving full effect to the provisions of the Decree – (s.29(10(2))
- The rivers and their tributaries, distributaries, creeks, lakes, lagoons, and intra-coastal waterways specified in the 2nd schedule are declared Federal Navigable waterways. – (s. 10)

2.2.2 Administrative Structure for the Power Sector at the Federal Level

2.2.2.1 Electric Power Sector Reform Act 2005

The Electric Power Sector Reform Act No. 6 of 2005 provides for the licensing and the regulation of the generation, transmission, distribution and supply of electricity.

Part IV of the Act contains requirements for licensing and stipulates that no person may construct, own or undertake any of the following activities without a license, unless the generating capacity and distribution capacity is below 1 MW and 100 kilowatts (KW) respectively for electricity generation, excluding captive generation, electricity transmission, system operation, electricity distribution and trading in electricity.

2.2.2.2 Electricity Amendment Act No 28 of 1998

The Electricity Amendment Act No. 28 of 1998 was promulgated in order to deregulate the power sector in Nigeria and allows for competition in the power sector of Nigeria. The Act provides for both national and international investors interested in the sale of electricity to compete favorably in power generation, distribution and supply.

2.2.2.3 National Energy Policy 2003

The provisions of this Policy relevant to the proposed Project are:

- The Nation shall aggressively pursue the integration of solar energy into the energy mix;
- The Nation shall keep abreast with worldwide developments in solar energy technology; and
- Development of the market for solar energy technologies.

2.2.3 Administrative Structures for Environmental Management at Federal Level

With regards to management of the biophysical environment throughout Nigeria, the overall responsibility was held by the now defunct Federal Environmental Protection Agency (FEPA), which was absorbed into the Federal Ministry of Environment (FMEnv) in 1999.

2.2.3.1 Federal Ministry of Environment (FMEnv)

FMEnv's mandate includes the establishment of federal water quality standards and effluent limitations, protection of air and atmospheric quality, protection of the ozone layer, control and discharge of hazardous substances, inter alia and ensures that all major development projects in Nigeria are subject to mandatory Environmental Impact Assessment (EIA) pursuant to EIA Act. No. 86 (Decree No. 86) of 1992.

Within FMEnv, there is an Environmental Impact Assessment Division, headed by a Director, to take all responsibility for EIA related issues and within the EIA division in FMEnv is the Impact Mitigation Monitoring (IMM) branch, with a special responsibility for monitoring the implementation of Environmental Management Plans (EMP) contained in the approved EIAs.

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

- i. National Policy on the Environment 1999
- ii. National Environnemental Protection (Effluent Limitations) Régulations (S.1.8) 1991 ;
- iii. National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) (S.1.9) 2004;
- iv. National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations (S.1.15) 1991;
- v. Guidelines and Standards for Environmental Pollution Control in Nigeria 1991;
- vi. Sectoral Guidelines for EIA 1995
- vii. Harmful Wastes (Criminal Provisions) Decree No. 42, 1988;
- viii. National Policy on the Environment, 1989;
- ix. Environmental Impact Assessment Procedural Guidelines 1995;
- x. Environmental Impact Assessment (EIA) Act No. 86 of 1992; and
- xi. Environmental Impact Assessment (Amendments) Act 1999.
- xii. National Guidelines and Standards for Water Quality 1999
- xiii. National Guidelines on Environmental Management Systems (EMS) 1999
- xiv. National Guidelines on Environmental Audit in Nigeria 1999

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 antipollution equipment and adequate treatment of effluent before being discharged into the environment.

FMEnv 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 infrastructural development apply to this project. This water supply expansion project is classified as a category II project.

In addition to the guidelines for EIA, Decree No. 86 contains provisions for the screening of projects according to impact potential, including listed activities3 for which mandatory EIA preparation is required.

- a. Category I projects will require a full Environmental Impact Assessment (EIA).
- b. Category II projects may require only a partial EIA, which will focus on mitigation and environmental planning measures, unless the project is located near an "Environmentally Sensitive Area" (ESA in which case a full EIA is required.
- c. Category III projects are considered to have "essentially beneficial impacts" on the environment, for which an Environmental Impact Statement (EIS) will be prepared by the FMEH.

EIA reports are then submitted to the EIA Division of the FMEnv for approval and monitoring of the project during implementation and operation based on an Environmental Management Plan (EMP) in the EIA.

2.2.3.2 National Environmental Standards and Regulations Enforcement Agency (NESREA)

NESREA Act 27 of 2007 established the National Environmental Standards and Regulations Enforcement Agency (NESREA). The Agency, which works under the Federal Ministry of Environment. NESREA is saddled with the responsibility of the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines. The functions of the Agency include:

- enforce compliance with laws, guidelines, policies and standards on environmental matters;
- coordinate and liaise with, stakeholders, within and outside Nigeria on matters of environmental standards, regulations and enforcement;
- enforce compliance with the provisions of international agreements, protocols, conventions and treaties on the environment including climate change, biodiversity conservation, desertification, forestry, oil and gas, chemicals, hazardous wastes, ozone depletion, marine and wildlife, pollution, sanitation and such other environmental agreements as may from time to time come into force;
- enforce compliance with policies, standards, legislation and guidelines on water quality, Environmental Health and Sanitation, including pollution abatement;
- enforce compliance with guidelines, and legislation on sustainable management of the ecosystem, biodiversity conservation and the development of Nigeria's natural resources;
- enforce compliance with any legislation on sound chemical management, safe use of pesticides and disposal of spent packages thereof;

- enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste, other than in the oil and gas sector;
- enforce through compliance monitoring, the environmental regulations and standards on noise, air, land, seas, oceans and other water bodies other than in the oil and gas sector;
- ensure that environmental projects funded by donor organizations and external support agencies adhere to regulations in environmental safety and protection;
- enforce environmental control measures through registration, licensing and permitting Systems other than in the oil and gas sector;
- conduct environmental audit and establish data bank on regulatory and enforcement mechanisms of environmental standards other than in the oil and gas sector;
- create public awareness and provide environmental education on sustainable environmental management, promote private sector compliance with environmental regulations other than in the oil and gas sector and publish general scientific or other data resulting from the performance of its functions; and
- carry out such activities as are necessary or expedient for the performance of its functions.

2.2.3 Administrative Structure for Agriculture at the Federal Level

2.2.3.1 Federal Ministry of Agriculture and Rural Development

The Federal Ministry of Agriculture and Rural Development ensures that the citizenry are provided with credible and timely information on government activities, programs and initiatives in the development of agriculture and food production; while creating an enabling technological environment for socio-economic development of the nation.

Agriculture Sector Policies

Sector-specific agricultural policies were largely designed to facilitate agricultural marketing, reduce agricultural production costs and enhance agricultural product prices as incentives for increased agricultural production. Major policy instruments for this purpose included those targeted at agricultural commodity marketing and pricing, input supply and distribution, input price subsidy, land resource use, agricultural research, agricultural extension and technology transfer, agricultural mechanization, agricultural cooperatives and agricultural water resources and irrigation development. This report shall limit its review to aspects of this policy as it relates specifically to agricultural water resources and irrigation development.

The Agricultural Transformation Agenda

The Agricultural Transformation Agenda (ATA) is focused on building stronger and more inclusive growth in the non-oil sector, employment generation and poverty reduction including economic diversification. The ATA is a direct implementation response by the agricultural sector to the current administration's Transformation Agenda (2011-2015) which derives from the vision 20:2020 and the 1st National Implementation Plan (NIP). Rather than trying to drive the entire agricultural sector forward at the same time as in many past strategy documents, the ATA focuses on a few key first moves - priority food staples and traditional export crops and intends

to develop these for growth and employment creation, with the expectation that the rest of the sector will subsequently follow.

Women play a prominent role in agriculture and women farmers are identified as a key target group in the ATA. Women are particularly active in trading and processing, which implies that the ATA's emphasis on value chain development has the potential to benefit women. Also, women are key to improving nutrition outcomes in the country. Reducing women's workloads through appropriate agricultural technologies, addressing their bargaining power within households by enabling policies that put more income directly into the hands of women, are, for example, some key pathways to improving nutrition outcomes that can be enabled through the agriculture sector.

Agricultural Transformation Agenda also focuses on:

- Deregulation of seed and fertilizer sectors
- Marketing reforms to structure markets
- Innovative financing for agriculture
- New agricultural investment framework.

2.2.4 Other Relevant National Policies and Regulations

2.2.4.1 Water Resources Decree 101 of 1993

This provision vests all water and water resources in the Federal Government of Nigeria and regulates the exploitation of water resources. It also vests in the Federal Government the rights and control of water in any water course affecting more than one state for the purpose, inter alia, of ensuring the application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources.

2.2.4.2 National Water Policy

The National Water Supply and Sanitation Policy (NWSSP) was adopted in January 2000. The centre-piece of this policy is the provision of sufficient potable water and adequate sanitation to all Nigerians in an affordable and sustainable way through participatory investment by the three tiers of government, the private sector and the beneficiary.

The targets in the policy are;

- To meet the national economic target of improving service coverage from 40% to 60% by the year 2003.
- Extension of service coverage to 80% of the population by the year 2007.
- Extension of service coverage to 100% of the population in the year 2011.
- Sustain 100% full coverage of water supply and wastewater services for the growing population beyond the year 2011.

The Policy sets consumption standards for;

• Semi – urban (small towns) which represent settlements with populations between 5,000

-20,000 with a fair measure of social infrastructure and some level of economic activity with minimum supply standard of 90 litres per capita per day with reticulation and limited or full house connections.

- Urban Water supply at 120 litres per capita per day for urban areas with population greater than 20,000 inhabitants to be served by full reticulation and consumer premises connection.
- Among the policy objectives is the requirement to guarantee free access for the poor to basic human needs, the level of water supply and sanitation services.

The Policy Strategies are:

- Increase service coverage for water supply and sanitation nationwide to meet the level of the socioeconomic demand of the nation in the sector.
- Ensure good water quality standards are maintained by water supply undertakings. The WHO drinking water quality standards shall be the baseline for the national drinking water quality standard.
- Ensure affordability of water supply and sanitation services for the citizens.
- Guarantee free access for the poor to basic human need level of water supply and sanitation services.
- Enhance national capacity in the operation and management of water supply and sanitation undertaking.
- Privatize water supply and wastewater services (where feasible) with adequate protection for the poor.
- Monitor the performance of the sector for sound policy adjustment through Legislation, Regulations, Standards and laws for water supply and sanitation.
- Reform of the water supply and sanitation sector to attain and maintain internationally acceptable standards.

2.2.4.3 Natural Resources Conservation Council Act 286 of 1990

This provision is aimed at establishing the Natural Resources conservation council to be responsible for the conservation of natural resources of Nigeria and to formulate national policy for natural resources conservation.

2.2.4.4 The National Policy on the Environment 1989

The National Policy on the Environment, 1989 outlines strategies for water resources management, along with the Water Resources Decree No. 101 of the FMAWR, and together they are concerned with:

- Environmental Impact of Water Resources development at the planning stages.
- Specification of water quality criteria for different users.
- Establishment of adequate control and enforcement procedures.
- Public health implications of water resources development projects.

2.2.4.5 Nigerian Environmental Management Act

This act was drafted following the amalgamation of the Federal Environmental Protection Agency into the Ministry of Environment (see section 2.1.2) but was never ratified. It repeals the 1988 Federal Environmental Protection Agency Decree No.58 (amended No.59 and No.14) and establishes the FEPA as part of the Ministry with the Minister of Environment having primary responsibility for its implementation. It does not repeal any other environmentally related legislation. As well as the general environmental provisions, which include environmental sanitation and occupational health, it specifies the powers of authorized officers,

penalties and fines. The Act gives the Minister the authority to grant environmental permits for prescribed activities which include sand mining but not any other mining activities.

2.2.4.6 Land Use Act 1978

The legal basis for land acquisition and resettlement in Nigeria is the Land Use Act 1978 and 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 are hereby 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 (d) 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 nonurban land, which will be under the control and management of the Local Government. The Governor of each State will have the right to grant statutory rights of occupancy to any person or any purpose; and the Local Government will have the right to grant customary rights of occupancy to any person or organization for agricultural, residential and other purposes.

The Acts give the government the right to acquire land by revoking both statutory and customary rights of occupancy for the overriding public interest. In doing so, the Act specifies that the State or Local Government should pay compensation to the current holder or occupier with equal value.

2.2.4.7 Legal Provisions for Water and Sanitation Supply

At the Federal Level, there is a Decree for Water Resources, Decree No. 101 that vets rights and control of water in the Federal Government which took effect from 23rd August 1993. There are also decrees establishing the River Basin Development Authorities and the National Water Resources Institute.

At the State Level, the various State Water Authorities/ Boards and the State Rural Water Supply and Sanitation Agencies have enabling Acts setting them up to supply potable water to inhabitants of their respective states.

At the Local Government Level, the various laws setting them up define rural water supply as one of their primary functions.

2.2.4.8 Approved National Forestry Policy 2006

The extant national forest policy which is included within the document "Agricultural Policy for Nigeria" published by the Federal Ministry of Agriculture in 1988 recognized forestry as the management and utilization of forests as renewable natural resources. The policy overall objective is to achieve sustainable forest management that would ensure sustainable increases in the economic, social and environmental benefits from forests and trees for the present and future generation including the poor and the vulnerable groups.

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The Forest Policy encourages and supports an aggressive establishment of plantations of economic trees of both exotic and indigenous species. It provides for the preservation of forests and the setting up of forest reserves, and also provides goals, targets and implementation strategies for the management, development and use of forests and their resources and products. Nigeria is at present a wood deficit nation. The policy on forest resources management and sustainable use is aimed at achieving self-sufficiency in all aspects of forest products through sound forest management techniques and the mobilization of human and material resources. The objectives of forest policy are to prevent further deforestation and to recreate forest cover, either for productive or for protective purposes, on already deforested fragile land.

The national biodiversity conservation strategy continues to be based on a system of Protected Areas, including Forest Reserves, National Parks and Game Reserves. In recognition of the fact that the local communities must share from the benefits of these Protected Areas, there must be a meaningful participation of these communities in their management. Efforts to safeguard biodiversity in private forests and to improve agricultural biodiversity through farm forestry initiatives must be supported.

The government has signed a number of international agreements and conservators that are relevant to forestry development. It is obligatory that the Government should honor these agreements and instruments through domestic legislation and action. Intergovernmental, bilateral and multilateral cooperation will be upheld to promote sustainable development of forest resources.

2.2.4.9 Criminal Code

The Nigerian Criminal Code makes it an offence punishable with up to 6 months imprisonment for any person who:

• Violates the atmosphere in any place to make it noxious to the health of persons in general dwelling or carry on business in the neighborhoods, or passing along a public way; or

• Does any act which is, and which he knows or has reason to believe to be likely to spread the infection of any disease dangerous to life, whether human or animal.

2.2.4.10 Other Applicable E&S Legal Provisions

A summary of other relevant existing Nigerian laws and regulations is provided in Table 2.1 below.

Laws and Regulations	Summary of Provisions		
Forestry Law CAP 51 LFN 1994	The Forestry Law prohibits any act that may lead to the destruction of or cause injury to		
	forest products, forest growth or forestry property in Nigeria. The law prescribes the		
	administrative framework for the management, utilization and protection of forestry		
	resources in Nigeria.		
Endanger Species (Control of	The Act provides for the conservation and management of Nigeria's wildlife and prohibits		
International Trade and Traffic)	the hunting, capture and trade of endangered species.		
Act CAP E9 LFN 2004			
Harmful Wastes (Special	An Act to prohibit the carrying, depositing and dumping of harmful waste on any land,		
Criminal Provisions etc.) Act	territorial waters and matters relating thereto including penalty for offences for individuals		
CAP HI LFN 2004	and corporate bodies. The Act prohibits all activities relating to the purchase, importation,		
	transit, transportation, deposit, storage or, sale of harmful wastes.		
National Environmental (Ozone	These provisions seek to prohibit the import, manufacture, sale and the use of		
Layer Protection) Regulations,	ozone-depleting substances as well as materials that contain these substances.		
2009			

Table 2.1: Other Relevant Nigerian E&S Laws and Regulations

Laws and Regulations	Summary of Provisions
National Environmental (Soil Erosion and Flood Control) Regulations 2011	The overall objective of these Regulations is to control erosion and flooding by checking all earth-disturbing activities, practices or developments for non-agricultural, commercial, industrial and residential purposes.
Factories Act (CAP F1), 2004	The Act establishes a legal framework for the registration of factories and to make adequate provisions regarding the safety of workers against occupational hazards and to impose penalties for any breach of its provisions. All workplaces are covered by this Act.
Employee Compensation Act, 2010	The Act provides compensation to employees who suffer from occupational diseases or sustain injuries arising from accidents at the workplace or in the course of employment. Payment of compensation (to the worker or his dependents in case of death) by the employer is as enshrined in the accepted principle that the employer has a duty of care to protect the health, welfare and safety of workers at work.
Nigerian Urban and Regional Planning Act CAP 138 LFN 2004	The Act is aimed at overseeing realistic, purposeful planning of the country to avoid overcrowding and poor environmental conditions. The Act establishes that an application for land development would be rejected if such development would harm the environment or constitute a nuisance to the community.
EIA Procedural Guidelines, 1995	Provides Procedural context and guidance for the conduct of EIA in Nigeria
Natural Resources Conservation Act CAP 268 LFN 1990	The Natural Resources Conservation Act CAP 268 LFN 1990 is the most direct existing piece of legislation on natural resources conservation. The Act establishes the Natural Resources Conservation Council, which is empowered to address soil, water, forestry, fisheries and wildlife conservation by formulating and implementing policies, programmes and projects on conservation of the country's natural resources.

2.2.5 Nigerian Gender-Related Policies

Gender-based violence (GBV) refers to any harmful act that is perpetrated against a person's will and that is based on socially ascribed differences between males and females. In Nigeria, several laws have been put in place to address gender-based violence and protect the rights of women and other vulnerable groups.

The 1945 Universal Declaration on Human Rights served as the basis for subsequent declarations on the rights of peoples geared towards the protection of the rights of women such as the Convention on the Elimination of All Forms of Discrimination against Women 1979 to which Nigeria is a party. (42)

Some of the international treaties applicable to women and ratified by Nigeria include:

- International Covenant on Civil and Political Rights (ICCPR) 29 July 1993,
- International Covenant on Economic, Social and Cultural Rights (ICESCR) 29 July 1993,
- Optional Protocol on ICCPR concerning individual petition,
- Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) 28 June, 2001,
- International Convention on the Elimination of all Forms of Racial Discrimination (CERD) 16 October 1967,
- Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) 23 April, 1984,
- Optional Protocol on the Elimination of all Forms of Discrimination against Women 22 November, 2004.

Further, the Violence Against Persons (Prohibition) Act (VAPP) was passed into law in May 2015. The Act was necessitated due to agitations for the protection of persons against different

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forms of violence, strengthened advocacy against rape, female genital mutilation, partner battery, stalking, harmful widowhood practices while prohibiting all forms of violence, including physical, sexual, psychological, domestic, harmful traditional practices and discrimination against persons. It also provides maximum protection and effective remedies for victims and punishment of offenders. The Act is a key instrument for addressing GBV in Nigeria.

Furthermore, in 2020, the Nigerian government launched a National Sexual Offenders Register to help track and prevent sexual crimes. The register is designed to provide a database of sexual offenders, which can be used by law enforcement agencies and the public to identify and track offenders.

2.2.5.1 The Gender Policy Framework in Nigeria

The 1999 Constitution the Federal Republic of Nigeria prohibits discrimination based on places of origin, sex, religion, status, ethnic or linguistic association. Successive governments have always demonstrated commitment to upholding this and to promote gender equality and women's empowerment in varying degrees. To facilitate gender equality and women's empowerment, the FGN created favourable national legal and policy frameworks and put in place institutional mechanisms in this regard.

Moreover, Nigeria, as a member of the United Nations, signed and ratified the various relevant international instruments, treaties and conventions without reservation. These instruments have always emphasized that member nations put in place the necessary mechanisms needed to eliminate gender discriminations, ensure equality and human dignity to all men and women.

The government of Nigeria in 2000 adopted a National Policy on Women; it was reviewed and upgraded in 2006 to become the National Gender Policy. Other key government policies with gender equality and empowerment of women frameworks include the National Economic Empowerment and Development Strategies (NEEDS) in May 2004; and the Transformation Agenda of the immediate past administration who in developing the Vision 2020, had a 'Special Interest Group on Women' to oversee –the development of policy statements that engender 'sustainable human and national development built on the equitable contribution of the Nigerian women, men and children'.

2.2.5.2 National Gender Policy, 2006

The overall goal of the National Gender Policy of Nigeria is to promote the welfare and rights of Nigerian women and children in all aspects of life: political, social and economic. The policy seeks to plan, coordinate, implement, monitor and evaluate the development of women in the county. In concrete terms, the National Gender Policy in Nigeria focuses on:

- Contribution towards women's empowerment and the eradication of unequal gender power relations in the workplace and economy, in trade unions and broader society;
- Encouragement of the participation, support and co-operation of men in taking shared responsibility for the elimination of sexism and redefining of oppressive gender roles;
- Increase the participation of women in leadership and decision-making;

Ensure that through labour legislation and collective bargaining, the circumstances of women are considered and that measures are promoted to eliminate discrimination based on gender.

2.2.6 Relevant International Regulations

2.2.6.1 World Bank Regulations

• Applicable World Bank Environmental and Social Standards (ESS)

The Environment and Social Framework (ESF) of the World Bank provides methods and tools for the Borrower to carry out the Environment and Social Assessment (ESA) of programs and projects. Among the methods and tools that could be used by the Borrower, is the Environment and Social Management Framework (ESMF). At this stage, specific locations for interventions are unknown, therefore the ESMF has been used as the appropriate instrument to meet the requirements of the World Bank's ESF hence potential impacts were identified through initial generic screening of the anticipated projects in the light of the socio-environmental conditions.

The ESF sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards (ESS) that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity.

The ESF comprises:

- 1. A Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability.
- 2. The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and
- 3. The Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the Borrower and projects.

The World Bank Environmental and Social Policy for Investment Project Financing (IPF) sets out the requirements that the Bank must follow regarding projects it supports through IPF. It also sets out the policy of the Bank to support borrowers to develop and implement environmentally and socially sustainable projects as well as build capacity in the assessment and management of environmental and social impacts and risks associated with the implementation and operation of projects. The World Bank, as part of the ESF also has environmental and social standards that borrowers must comply with for projects to be sustainable, non-discriminatory, transparent, participatory, environmentally, and socially accountable as well as conform to good international practices.

There are ten (10) Environmental and Social Standards (ESS) that establishes the standards that the Borrower and the project will meet throughout the project life cycle. Based on the scope of the SPIN and the proposed subprojects construction and rehabilitation activities, Table 2.2 (Relevant Environmental and Social Standards for SPIN) summarizes the World Bank ESSs considered to be relevant to the projects. Eight of the 10 WB ESSs are considered relevant to the project.

There are no Indigenous People in Nigeria hence ESS 7 does not apply to the proposed project.

WB Environmental and	Relev SP	ant to IN?	Relevant To SPIN Due To	
Social Standard	YES	NO		Requirements
ESS1: Assessment and	[X]	[]	Proposed project activities under	This standard requires
Management of			components 2 and 3 will include	environmental and social

Table 2.2: Relevant Environmental and Social Standards for SPIN

WB Environmental and	Relevant to		Polovant To SPIN Due Te	How Project Addresses ESS
Social Standard	YES	NO	Relevant to SPIN Due 10	Requirements
Environmental and Social Risks and Impacts			civil works and activities with environmental and social risks and impacts Environmental concerns associated with such construction works include dam safety risks, waste generation, debris from rehabilitation activities, community health and safety, occupational health and safety of workers, noise, dust emissions etc. The project also poses some social risks including impact of downstream water users during rehabilitation works, risks associated with labor influx such as Sexual Exploitation, etc. There is need to assess, manage and monitor environmental and social risks and impacts associated with each stage of the project	assessment of projects/investments proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. Given that the exact project locations are not fully known at this stage, this ESMF, and Environmental and Social Commitment Plan (ESCP) outlining Government's commitment, will be prepared prior to board appraisal. A GBV Action Plan and Accountability Framework will be developed, which will outline measures the participating states will adopt to mitigate and address SEA/SH issues under the Project. Site-specific ESMPs/ESIAs with mitigation measures is required for any proposed subprojects.
ESS2: Labor and Working Conditions	[x]	[]	The project will make use of various categories of workers, direct and indirect workers who may face unfavorable terms and conditions of employment, discrimination, child labor, forced labor, grievances and unsafe working conditions.	LMP has also been prepared to meet the requirements of the ESS. A generic OHS plan is also presented in LMP, while specific OHS Plans will be prepared as part of the site-specific ESMPs/ESIAs.
ESS3: Resource Efficiency and Pollution Prevention and Management	[x]	[]	Proposed project activity may generate pollution to air, water, and land, and consume resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels	This ESMF is prepared for SPIN & specific mitigation measures developed. A PMP has also been prepared to meet the requirements of the ESS. Site-specific ESMP/ESIA with mitigation measures is required for any subprojects
ESS4: Community Health and Safety	[×]		Project activities, equipment, and infrastructure may increase community exposure to health and safety risks and impacts including SEA/SH/STD. Also, communities may be subjected to climate change impacts' acceleration or intensification due to project activities. The Project may also undertake the provision of security personnel to safeguard personnel and property therefore there is peed	This ESMF is prepared for SPIN & specific mitigation measures developed. Site-specific ESMP/ESIA with mitigation measures is required for any subprojects. Dam Panel of Expert Report was prepared for the 3 first representative sites. Dam Safety reports will be prepared as part of the ESIAs/ESMP. Security Management Plans

WB Environmental and Social Standard	Relevant to SPIN?		Relevant To SPIN Due To	How Project Addresses ESS	
	YES	NO		Requirements	
			to assess risks posed by these security arrangements. Additionally, ESS4 also emphasis on Safety of Dam and Use of Security which is relevant to this Project.	will be prepared by each implementing entity of the SPIN Project.	
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	[x]	[]	Project-related land acquisition and restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both.	These activities are likely to result in land acquisition / displacement. Given that the locations of subprojects are not yet fully known at this stage of the project preparation, the project will build on the specific RPF prepared for this project, drawing from the experience of implementing resettlement for TRIMING. Site-specific RAPs shall be required for any subprojects	
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	[x]	[]	Protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development.	This ESMF is prepared for SPIN & specific mitigation measures developed. Site-specific ESMP/ESIA with mitigation measures is required for any subprojects. Biodiversity Management Plan will be prepared as part of ESMPs/ESIAs if conservation reserve/ other applicable sensitive facilities are in vicinity or has an interface.	
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	[]	[x]	Applies to a distinct social and cultural group identified in accordance with the provisions for indigenous people and does not apply to Nigeria. Standard is therefore not relevant to SPIN	Not Relevant	
ESS8: Cultural Heritage	[x]	[]	Scope of civil works and activities may result in impacts to the traditions and cultural heritage of the people - an important economic and social asset for development	A framework for chance find procedures has been included in section 6.8 of this ESMF, while ESMPs will contain specific chance find procedures where required.	
ESS9: Financial Intermediaries	[]	[x]	Involvement of FIs is not defined at this point. However, where they occur, they will need to conform with the WB standards.	Not relevant	
ESS10: Stakeholder Engagement and Information Disclosure	[x]	[]	There are different categories of stakeholders associated with the project with varying degrees of influence. These stakeholders will need to be identified and engaged effectively to improve the project's environmental and social sustainability, enhance acceptance, and make significant contributions to	A Stakeholder Engagement Plan (SEP) has been prepared as a stand-alone document which will be disclosed in line with national laws and on the World Bank external website prior to project implementation alongside the ESMF and RPF. Subsequently, the site specific ESIAs/EESMPs/RAPs will	
WB Environmental and	Relevant to SPIN?		Relevant To SPIN Due To	How Project Addresses ESS	
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Social Standard YES NO			Requirements		
			successful project design and implementation.	also be disclosed publicly and on the World Bank external website.	

The Eight ESSs that are considered relevant to the SPIN Project are summarized below;

ESS1: Assessment and Management of Environmental and Social Risks and Impacts

ESS1 sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs)

Under the ESS1 the borrower will ensure that the environmental and social assessment takes into account in an appropriate manner all issues relevant to the project, such that;

The environmental and social assessment will apply a mitigation hierarchy, which will:

- Anticipate and avoid risks and impacts;
- Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
- Once risks and impacts have been minimized or reduced, mitigate; and
- Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

ESS 1 is relevant because sub-project activities under the project are expected to cause some impacts on the environment and these impacts will be mitigated accordingly. This ESMF is prepared for the SPIN project & specific mitigation measures developed to meet the requirements of ESS 1. Site-specific ESMPs/ESIAs will be prepared as applicable to each subproject during implementation.

ESS2: Labor and Working Conditions

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

ESS2 in the project is relevant to direct workers employed or engaged by the project implementing agencies, contracted workers, and primary supply workers for the various project components. These will include PIU's of the implementing institutions. Therefore, as a requirement of ESS2, Labor Management Procedures (LMP) has been prepared, including clear information on the terms and conditions of employment, principles regarding non-discrimination and equitable opportunity, the establishment of workers' organizations, rules regarding child labor and forced labor, and occupational health and safety measures. The grievance mechanism for labor issues has also been reflected, drawing on national law and procedures.

The LMP is enshrined within the context of applicable Nigerian laws, notably the Labour Act 1974, Occupational Safety and Health Act 2005, the World Bank Environmental and Social Standards (ESS) 2: Labour and Working Conditions, International Labour Organization (ILO) and ISO 45001 requirements.

ESS 3 – Resource Efficiency and Pollution Prevention and Management. ESS 3 sets out the requirements to address resource efficiency and pollution prevention (air, water and land pollution and management arising out of economic activities and urbanization) throughout the project life-cycle consistent with Good International Industry Practice (GIIP). The specific objectives of this ESS are:

- To promote the sustainable use of resources, including energy, water, and raw materials;
- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities;
- To avoid or minimize project-related emissions of short and long-lived climate pollutants;
- To avoid or minimize generation of hazardous and non-hazardous waste; and,
- To minimize and manage the risks and impacts associated with pesticide use.

ESS3 enjoins the borrower to consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures in accordance with the mitigation hierarchy. The measures are expected to be proportionate to the risks and impacts associated with the project and consistent with GIIP, in the first instance the Environment, Health and Safety Guidelines of the Bank.

ESS3 is relevant for the project regarding energy and water use, agriculture, pesticide use, air pollution and noise impacts during construction phases, construction waste, handling and disposal of hazardous chemicals and waste, and the disposal of end-of-life batteries containing hazardous materials during construction and operation phase (see Annex II for a waste management plan template). SPIN will promote renewable energy related usage, which will contribute to a net GHG emissions reduction. The ESMF includes mitigation and management measures to avoid and/minimize risks and impacts due to oil and chemical spills and improper disposal and management of hazardous materials. Assessment of ESS3 related risks and impacts will be undertaken according to WBG General and sector specific ESH Guidelines and GIIP.

ESS 4 – Community Health and Safety. ESS4 addresses the potential health, safety, and security risks and impacts of Bank financed projects (resulting from project activities, equipment, and infrastructure) on project-affected communities. It places a responsibility on the Borrower to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable. This ESS addresses potential risks and impacts on communities that may be affected by project activities. Occupational health and safety (OHS) requirements for project workers are set out in ESS2. The Borrower will evaluate the risks and impacts of the project on the health and safety of the affected communities during the project life cycle, including those who, because of their circumstances, may be vulnerable. The Borrower will identify risks and impacts and propose mitigation measures in accordance with the mitigation hierarchy.

ESS 4 is relevant to the rehabilitation and expansion of irrigation zones, as well as construction of hydro power systems, including transmission and distribution facilities, could potentially pose

risks to communities (including SEA/SH/STD). Therefore, all works and operations will be planned, designed and implemented to comply with the WBG EHS guidelines. This ESMF has provided a template for assessing community health issues, but in addition, project specific documents will assess exposure of communities to construction stage related traffic, accidents, and health and safety issues. Site-specific ESIAs/ESMPs with mitigation measures are required for any proposed subprojects before construction or operation.

ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement: ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term "involuntary resettlement" refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

The applicability of ESS5 is established during the environmental and social assessment described in ESS1.

The WB standard on involuntary resettlement addresses situations where people will lose property, means of livelihood or experience a change in their standard of living as a result of the implementation of a Bank financed project. This policy provides the guidance for the mode and schedule for payment of all compensations and recommends that due consultations be made with all stakeholders of the project before, during and after project implementation with special attention to disadvantaged groups (women, children and the disabled) within the population.

The Project may require the acquisition of land for irrigation command areas, establishment of power transmission and/or distribution facilities, etc. Since the specific investment locations and land acquisition needs are not known at this point, the framework approach is also used to establish the procedures for compliance with ESS5. While the project is not expected to entail major land acquisition and displacement, its activities that will cause physical and/or economic displacement, if any, will not commence until such specific plans have been finalized, approved by the Bank and, prompt compensation and resettlement assistance payments are made to Project Affected Persons (PAPs). The Resettlement Policy Framework (RPF) for this project has been prepared as a separate document.

ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. ESS6 recognizes that Bank funded projects could negatively impact on biodiversity and that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development.

The Project will not finance activities that will adversely affect biodiversity conservation or sustainable management of living resources. This project will not lead to significant land conversion. However, for precautionary reasons, exclusion criteria relating to biodiversity / natural habitats will be developed on a project-by-project basis, to exclude impacts on critical habitats and avoid / minimize impacts on natural habitats. This ESMF will be used to screen out subproject sites deemed to cause risks/impacts to areas of high biodiversity values, critical or sensitive natural habitats within project areas, protected areas, and endemic flora and fauna including protected animal or plant species. The screening process shall include identification of the types of habitats which will be affected and make consideration of potential risks and

impacts on ecological function of the habitats at which PV Solar panels will be installed on specific within remote or rural areas. The ESMF (with embedded screening procedures) and Subproject environmental and social risk management instruments included provisions for biodiversity assessment (including bird collusion and electrocutions from the grid network rehabilitations), management and conservation measures to manage risks and impacts to any natural habitats consistent with the requirements of ESS6.

ESS 8: Cultural Heritage. ESS 8 recognizes the importance of cultural heritage (natural areas with cultural and/or spiritual value such as sacred groves, sacred bodies of water and waterways, sacred mountains, sacred trees, sacred rocks, burial grounds, and sites) as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. It provides continuity in tangible and intangible forms between the past, present and future and reflects constantly evolving values, beliefs, knowledge, and traditions. The specific objectives of this ESS are to:

- protect cultural heritage from the adverse impacts of project activities and support its preservation; address cultural heritage as an integral aspect of sustainable development;
- promote meaningful consultation with stakeholders regarding cultural heritage; and
- promote the equitable sharing of benefits from the use of cultural heritage.

The requirements of this ESS 8 will apply to all projects that are likely to have risks or impacts on cultural heritage, regardless of whether it has been legally protected or previously identified or disturbed. This will include a project which:

- Involves excavations, demolition, movement of earth, flooding, or other changes in the physical environment;
- Is located within a legally protected area or a legally defined buffer zone;
- Is located in, or in the vicinity of, a recognized cultural heritage site; or
- Is specifically designed to support the conservation, management, and use of cultural heritage.

This standard is relevant to the project associated with chance finds of tangible and intangible cultural resources. The project will not finance project activities that will affect cultural heritage resources sites. The borrower shall avoid impacts on cultural heritage. When avoidance of impacts is not possible, the Borrower will identify and implement measures to address impacts on culture heritage in accordance with mitigation hierarchy (where appropriate, the client shall develop a cultural heritage management plan. An environmental and social screening procedure has been developed in this ESMF which includes provision for identification of cultural heritage and assessment of tangible and intangible heritage in consultation with affected stakeholders. A chance-find procedure, in line with national laws and regulations, has also been articulated in the ESMF, in the event, contractors stumble on such chance finds during project implementation.

ESS 10: Stakeholder Engagement and Information Disclosure. This ESS places premium on open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. The specific objectives ESS 10 are to: establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, especially project affected parties; assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance; promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life-cycle on issues that could potentially affect them; ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format; and, provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

ESS 10 is relevant to the project because the project will engage diverse stakeholders at the project design, planning and implementation stages. The Project will be guided by this standard in undertaking all project-related consultations and engagements given that this enhances the environmental and social sustainability of the Project. In line with this, a standalone Stakeholder Engagement Plan (SEP) has been prepared. Engagements will be held in languages suitable for the beneficiaries to understand and explain the opportunities for public consultation, provide a deadline for comment and feedback. The proposed project will leverage on the existing TRIMING Grievance mechanism to address the concerns and needs of beneficiaries.

• Other World Bank Standards including Health Safety & Environment

The World Bank Group's Environmental, Health and Safety Guidelines are applicable to this project. They include general guidelines applicable to all projects and sector-specific guidelines for electricity. The relevant guidelines are General EHS Guidelines and EHS Guidelines for Electric Power Transmission and Distribution⁷.

World Bank Disclosure of Information

Disclosure of this ESMF, like other Safeguard Instruments that would be prepared under this project (such as ESIA/ESMP/RAP/ARAP) would be done in line with the country's EIA Laws and the World Banks Policies. Disclosure would involve publications in national and state newspapers and under the guidance of the Federal Ministry of Environment. The newspaper publications will inform the public on strategic locations where the ESMF will be displayed for the public to make comments and contributions such as State Ministries of Environment, Federal Ministry of Environment and project locations. The ESMF will be displayed for the public to make comments within 21 working days after which comments received shall be incorporated in the ESMF. The evidence of Newspaper Publications will be used to disclose the ESMF at the World Bank External Website.

2.6.1.2 International Waterways (OP 7.50)

The Bank attaches great importance to riparian because it recognizes the cooperation and goodwill of riparian as essential criteria for the efficient use and of protection of the waterway. The riparian must have made appropriate arrangements for these purposes for the entire waterway or any part thereof. It ensures that the international aspects of projects on an international waterway are dealt with at the earliest possible time. Since Nigeria is a member of the Niger Basin Authority and Lake Chad Basin Commission, riparian notifications were sent to Niger Basin Authority and Lake Chad Basin Commission.

2.6.2 Other International Conventions

In her responsiveness and responsibility in regional and global efforts towards sustainable development particularly in the safeguard of the environment and natural resources, Nigeria has

entered into several international treaties and conventions. Being signatory to the conventions, Nigeria pledges to uphold the principles of such conventions. Some of the conventions considered in this project are as follows:

African Convention on the Conservation of Nature and Natural Resources, Algiers, 1968

This convention came into force in Nigeria 7th May, 1974. The objective of the convention is to encourage individual and joint action for the conservation, utilization and development of soil, water flora and fauna for the present and future welfare of mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.

Convention on Wetland of International Importance, especially as Waterfowl Habitat, Ramsar, Iran 1971

This provision came into force in Nigeria on 2nd February, 2001 with the objective to stem the progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.

Convention on Biological Diversity, Rio de Janerio, 1992

This convention came into force in Nigeria on 27th November, 1994. The objectives are to conserve biological diversity, promote the sustainable use of its components and encourage equitable sharing of the benefit arising out of the utilization of genetic resources. Such equitable sharing includes appropriate access to genetic resources and appropriate transfer of technology, considering existing rights over such resources.

Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora, Washington, D.C., on 3 March 1973; Amended at Bonn, on 22 June 1979

This convention identifies floral and/or faunal species that are threatened with extinction and in which trade and exportation may play a part in accelerating their extinction. It also places restrictions on trade in such species and stipulates measures to be taken by parties to the convention, which include penalties for trade in listed species and options for confiscation and/or return to original place the species were taken from.

Disability Inclusion Laws in Nigeria

Discrimination Against Persons with Disabilities (Prohibitions) Act, 2018. This Act provides for the full integration of persons with disabilities into the society and establishes the National Commission for Persons with Disabilities and vests the Commission with the responsibilities for their education, health care, social economic and civil rights.

Nigerian Electricity Health and Safety Standard Manual

The Nigerian Electricity Health and Safety Standard Manual is a set of guidelines and standards developed by the Nigerian Electricity Management Services Agency (NEMSA) to promote health and safety in the electricity sector in Nigeria. The manual was developed to address the high incidence of accidents and fatalities that occur in the electricity sector due to non-compliance with health and safety standards.

The key provisions of the Nigerian Electricity Health and Safety Standard Manual include:

• Safety management system: The manual requires electricity distribution companies to develop and implement a safety management system to identify, assess, and manage risks in the workplace.

- Electrical installations and equipment: The manual provides guidelines for the installation and maintenance of electrical installations and equipment, including transformers, switchgear, and overhead lines.
- Personal protective equipment: The manual requires electricity workers to wear appropriate personal protective equipment, including helmets, gloves, and safety boots.
- Work procedures: The manual provides guidelines for safe work procedures, including the isolation and tagging of equipment, the testing of circuits, and the use of ladders and scaffolding.
- Emergency response: The manual requires electricity companies to develop emergency response plans and procedures to deal with accidents and incidents in the workplace.
- Training and supervision: The manual requires electricity companies to provide training and supervision to employees to ensure their competence in carrying out their work safely.
- Health and hygiene: The manual provides guidelines for maintaining a safe and healthy workplace, including measures to prevent the spread of infectious diseases.

The Nigerian Electricity Health and Safety Standard Manual applies to all electricity companies and workers in Nigeria, including those in the generation, transmission, and distribution sectors. The manual is designed to promote compliance with health and safety standards in the electricity sector and reduce the incidence of accidents and fatalities.

2.7 Comparison between the Nigeria EIA Guidelines and the World Bank ESF

The Environmental Impact Assessment Act CAP E12 LFN 2004 requires that development projects be screened for their potential impact. Based on the screening, a full, partial, or no Environmental impact assessment may be required. The World Bank ESF though similar in certain aspects, gaps still exist. Some of the gaps include emerging issues on climate change, labour and working conditions, early consultation with stakeholders, Community Health and Safety etc.

ESS	Nigerian Legislation	World Bank ESS	Gaps Between the Policies
ESS1 Environmenta I Assessment	National EIA Act 1992, Clause 2 provides that public or private sector of the economy shall not undertake or embark on or authorize projects or activities without prior consideration of the effects on the environment. The act makes an EIA mandatory for any development project and prescribes the procedures for conducting and reporting EIA studies. As part of the effective utilization of the EIA tool, the ministry has produced sectoral guidelines. Responsibility for monitoring of EIA activities lies with the NESREA and State ministries of environment but these agencies lack the logistic capability to carry out the tasks assigned to it by the law	An EA is conducted to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision- making is improved through appropriate analysis of actions and of their likely environmental impacts. Any World Bank project that is likely to have potential adverse environmental risks and impacts in its area of influence requires an EA indicating the potential risks, mitigation measures and environmental management framework or plan.	Nigeria currently has a comprehensive framework for assessing and managing the environmental impacts of development projects. However, in comparison with the World Bank ESS1, it would appear that the Nigeria framework lacks the provision of clear requirements or guidance in the assessment of the impact of an activity on public health. In this case the policy of the bank prevails.
ESS2 Labor and Working Conditions	The EIA Act in consonance with the NESREA Act recognizes the need for compliance enforcement of the provisions of international agreements, conventions and	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management	Essentially, there is no difference between the main framework of both policies.

Table 2.3: Gaps between Nigeria's Regulations/ Policies and World Bank Environmental and Social Standards

ESS	Nigerian Legislation	World Bank ESS	Gaps Between the Policies	
	treaties on the environment and labor matters. These provisions bring the Nigerian EIA Act to par with the World Bank ESS2.	relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.		
ESS3 Resource Efficiency and Pollution Prevention and Management	The policies, standards, legislation and guidelines under the EIA Act in consonance with the NESREA Act set out compliance requirements to address water quality, environmental health and sanitation, including pollution abatement. The legislations provide enforce compliance with guidelines and legislations on sustainable management of the ecosystem, biodiversity conservation and the development of Nigeria's natural resources; The regulations seek to use the most appropriate means to prevent and combat various atmospheric pollution; and to address standards applicable to emission from any new mobile or stationary source which causes or contributes to air pollution and may reasonably be anticipated to endanger public health or welfare using appropriate means to reduce emission to permissible levels.	ESS3 recognizes that economic activity and urbanization often generate pollution of air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with GIIP.	Essentially, there is no difference between the main framework of both policies.	
ESS4 Community Health and Safety	In consonance with the NESREA Act, Section 20(1), the EIA Act provides the specifications and standards to protect and enhance the quality of Nigeria's air resources, so as to promote the public health, welfare and the natural development and productive capacity of the nations' human, animal, marine or plant life including, in particular, minimum essential air quality standards for human, animal, marine or plant health; and the control of concentration of substances in the air which separately or in combination are likely to result in damage or deterioration of the environmental and human health ;	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable.	Essentially, there is no difference between the main framework of both policies.	
ESS5 Involuntary Resettlement	The basic legal framework for the acquisition of land in Nigeria is the Land Use Act 1978 as amended under the Amended Land Use Act of 2004, Chapter L5 under the laws of the Federation of Nigeria. The Part 1 of the amended Act 2004 vests all land within the urban areas of any Nigerian State in the Executive Governor of that state. Land within the rural areas of the state is vested in the Local Government. Part VI, Section 29 of the law provides for compensation to the holder of any land title when such land is to be acquired for public purposes. For	Key objectives of the World Bank's policy on involuntary land acquisition are to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; assist displaced persons in improving their former living standards, income earning capacity and production level, or at least in restoring them; encourage community participation in planning and implementing resettlement; and provide assistance to affected people regardless of the legality of land tenure. The policy covers not only physical relocation, but any loss of	Essentially, there is no difference between the main framework of both policies. Land that would be acquired for this project shall be fully compensated for in accordance with the World Bank policy and principles. The Nigerian regulations while also lacking clear responsibility for monitoring of activities associated with compensations further lack the logistic capability for any	

ESS	Nigerian Legislation	World Bank ESS	Gaps Between the Policies
	developed land, the Governor (in the case of urban areas) or Local Government (in the case of rural areas) may, in lieu of compensation, offer resettlement in any other place as a reasonable alternative accommodation and in acceptance of resettlement, the holder's right to compensation shall be deemed to have been duly satisfied. Although the Land Use Act is not strictly an Act for environmental protection, protection of the environment is one of the considerations which a holder of a certificate of occupancy must observe.	land or other assets resulting in relocation, or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood whether the affected people must move to another location. When the policy is triggered, a Resettlement Action Plan (RAP), must be prepared. An abbreviated plan may be developed when less than 200 people are affected by the project. In situations where all the precise impacts cannot be assessed during project preparation, provisions are made for preparing a Resettlement Policy Framework (RPF). The RAP/RPF must ensure that all Bank's policy provisions detailed in ESS5 are addressed particularly the payment of compensation for affected assets at their replacement cost	agency to carry out the tasks assigned to it by the law. In this case the policy of the bank prevails.
ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources	The provisions under the Nigerian EIA Act seek for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general. To the extent of the compliance enforcement provisions, the Nigerian EIA Act and the World Bank ESS3 are similar.	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity is defined as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems. Biodiversity often underpins ecosystem services valued by humans. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. Requirements related to ecosystem services are set out in ESS1. ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the nonliving environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance. This ESS also addresses sustainable management of primary production and harvesting of living natural resources.	Essentially, there is no difference between the main framework of both policies.
ESS8 Physical Cultural Resources	The National Commission for Museums and Monuments Act of 1990, Chapter 242 seeks to protect and preserve any objects of archaeological interest wherever they may be found. Anyone who	The Bank seeks to assist countries to manage their physical cultural resources and avoid or mitigate adverse impact of development projects on these resources. This	No difference in framework. Responsibility for monitoring of activities and enforcement under this Nigerian Regulations is effectively lacking.

ESS	Nigerian Legislation	World Bank ESS	Gaps Between the Policies
	discovers an object of archaeological interest in operations permitted under section 19 of this Act shall notify the Commission.	policy is triggered for any project that requires an EA.	In this case the policy of the bank prevails.
ESS10 Stakeholders Engagement and Information Disclosure	The EIA Act in consonance with the NESREA Act recognize the need to create public awareness and provide environmental education on sustainable environmental management, promote private sector compliance with environmental regulations. It also indicates the need for public disclosure of EA documents, including a mandatory 21 working day disclosure of ESIAs and associated documents	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process, and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts	Essentially, there is no difference between the main framework of both policies. However, disclosure requirements at National levels are much shorter than that of the World Bank the tasks assigned to it by the law. In this case the policy of the bank prevails.

3.0 PROJECT DESCRIPTION

3.1 Introduction

The SPIN Project aims to secure and maximize the socio-economic value of water resources, to develop the untapped potential of irrigation (thus agriculture production) downstream from existing dams, improve dam management to protect people from floods and droughts in face of climate change (thus mitigating loss and damage), and contribute to energy security through hydropower development and planning (thus creating utility revenue streams). The project components and activities are not compartmentalized into sub-sectors but cross-cutting synergies to achieve the water-energy-food nexus, as shown in Figure 1.



Figure 1 SPIN Project Vision

The objective of this project is to improve the safety of existing dams and enhance the associated climate-resilient irrigation services and strengthen hydropower planning in Nigeria. The main Project beneficiaries of the projects are farmer households which directly benefit from more reliable, climate resilient and efficient irrigation water supply and increased agricultural productivity through improved irrigation water management. This includes farmer numbers in 40,000 ha of irrigated area across states under Component 2. Another group of beneficiaries are downstream households protected by improvement of dam safety under Component 3.

By mobilizing water for productive purposes, optimizing the use of existing storage facilities, and enhancing hydropower generation planning, the project aims to promote sustainable development, efficient water resource utilization, and strengthen integrated water resources management practices. The proposed project includes four main components, the US\$ amounts for each component are indicative at this stage and may vary during preparation, particularly between components 2 and 3.

Building upon the lessons learned and achievements of past projects such as TRIMING, the project will aim to promote a more holistic water usage and storage management by the inclusion of hydropower sector and supporting institutional strengthening, such as on dam

safety regulations and guidelines. The project components and related interventions would be selected through economic, technical, and geographical criteria, to act synergistically and promote an integrated water and storage management. It would also strengthen institutional coordination on storage and water management between the related ministries and departments.

The Project will prepare a hydropower master plan to support the Government for a future hydropower investment planning. A Strategic Environmental and Social Assessment (SESA) will be prepared in line with the hydorpower master plan and Environmental and Social Impact Asessment (ESIA) that assesses the risks and impacts of the sub-project.

The proposed project components are presented below:

3.2 **Project Components**

Component 1: Institutional strengthening and capacity building for Water Resources Management (US\$ 30 million) - The objective of this component is to promote an enabling policy environment, strengthen the organizational as well as human resource capacities of institutions in charge of water resources management at the federal, river basin and state levels. The component will, on a priority basis, institutionalize and scale up the implementation structure, processes, and design standards successfully showcased by the TRIMING project.

The component will be implemented through three sub- components:

Sub-component 1.1: Institutional Strengthening and Capacity Building for dam safety;

Sub-component 1.2: Institutional Strengthening and Capacity Building for Irrigation Management; and;

Sub-component 1.3: Institutional Strengthening and Capacity Building for Hydropower.

Sub-Component 1.1: Institutional Strengthening and Capacity Building for Dam Safety (US\$ 7 million) - The objective of the sub-component is to strengthen the capacities and improve the management framework for dam owners, operators, agencies overseeing dam safety to help address dam safety risks. The main activities for the component include: (i) setting up a digital dam asset management system; (ii) strengthening the dam safety institutional structure and developing improved dam safety technical guidelines and manuals to complement NESREA's checklist; and (iii) institutionalizing capacity assessment and delivering capacity building for the personnel involved in dam safety. Complying with National Environmental (Dams and Reservoirs) Regulations (2014) the legislation for dam safety requirements, the component will help FMWRS in the deployment of multi-disciplinary specialists, purchasing necessary equipment and facility to perform dam safety mandates both at the federal and RBDA level.

The component will also implement dam safety capacity building for policy makers, owners, operators, and dam safety organizations at federal, RBDA and dam levels, including the Department of Dams and Reservoir Operations (DDRO) and IWRM Commission under FMWRS, RBDAs, state agencies and NESREA. It will disseminate the dam safety guidelines

and have a particular focus on emergency action planning for all disaster management agencies, rescue agencies including awareness raising of the general public.

Sub-Component 1.2: Institutional Strengthening and Capacity Building for Irrigation and Drainage Management (US\$ 7 million) -This subcomponent broadly covers transformational co-management aspects of public irrigation management and is complementary to the modernizing irrigation component 2. The objective of the sub-component is to establish and operationalize a system whereby all critical stakeholders, e.g., State Governments and RBDAs co-manage public irrigation systems in their respective service/administrative areas. To strengthen coordination of various stakeholders in irrigation management, Field Level Leadership (FLL) program will be implemented throughout the sub-component.

Sub-Component 1.2.1 - Devolution of OMM of Secondary level Irrigation and drainage systems of Federal Scheme to WUAs supported by State Governments (Devolution Model-I): SPIN will support a major reform agenda to get State Governments to co-manage public irrigation assets. The State Governments will anchor, enable, and nurture WUAs and Apex WUAs to become caretaking scheme-level institutions to optimize benefits from public irrigation systems. Labelled as public irrigation devolution Model-I, the project aims at creating an emulation for states to provide the best support to the WUAs in areas where the SPIN will be funding irrigation interventions.

Sub-Component 1.2.2 Development and Strengthening of State Level Public Irrigation Schemes (Devolution Model-II): The Devolution Model-II is about developing the organizational, human resource and financial capability of state governments to sustainably manage the state-owned public irrigation systems. The scope of SPIN activities under model-II will broadly cover the modernization of state public irrigation project including institutionalization of participatory irrigation management at scheme level. The project will support the state governments in rehabilitating and developing irrigation dams situated within the state boundaries and downstream development of the potential irrigated areas. This will include rehabilitation of dams wherever necessary, strengthening the conveyance system, practicing participatory irrigation management leading to co-management of operation, maintenance, and cost recovery. The regulatory and technical support role of RBDAs will be extended to the state government.

Sun-Component 1.2.3 Transformation and strengthening of River Basin Development Authorities (RBDAs): SPIN Project proposes to reposition the RBDAs by refocusing their efforts on bulk water management and enabling partnerships with WUAs and States for operation, maintenance and management of secondary level irrigation and drainage facilities in irrigation schemes. The project will support RBDAs in consolidating their mandate on development, utilization, and management of water resources as the extended technical arm of FMWRS. The main aims of the support are two-fold: (i) ensure sustainable operation and maintenance of water resources infrastructural assets and (ii) enhance cost recovery for operation and maintenance of the assets through supply of bulk water for various socio-economic sectors with focus on irrigation sub sector through WUAs/Apex WUAs/state

governments, Enhancement of the existing RBDA Act might be necessary to achieve full repositioning of the RBDAs especially around legal recognition for WUA and State roles as critical stakeholders. The Project will actively explore and support efforts to amend the RBDA Act. Specifically, the project will support: (i) upgrading IT infrastructure including software licensing for Geographic Information System (GIS) and Computer Aided Designing (CAD); (ii) development and rolling out of a Comprehensive Irrigation Management System (CIMS) including specific modules for bulk water supply planning, irrigation scheduling at the scheme level etc. (iii) building capacity of states, WUAs and Apex WUA in managing scheme level operations: and (iv) capacity building of RBDA technical staff on modern trends and tools in planning, developing and managing reservoirs and distribution system. The implementation of activities in support of RBDAs will be in close collaboration with Department of River Basin Operations and Inspectorate (DRBOI) of FMWRS. A technical working group will be established within DRBOI for supporting RBDA activities by involving relevant technical persons from RBDAs to help centralized activities. The RBDAs will increase stakeholder participation in planning and complaint redress through stakeholder forums consisting of commissioners from the states and representatives of Apex WUAs.

Sub-Component 1.3 Institutional Strengthening and Capacity Building for Hydropower (US\$ 16 million) -The sub-component will focus on three key activities as part of the Hydropower Masterplan: i) Preparation of a hydropower master plan and climate smart hydropower investment planning. ii) PPP options for large transformative project for Nigeria; (iii)Capacity Building of and Support to Federal Institutions and Agencies in Hydropower Planning and Management. The component contributes to both climate change adaptation (through water storage) and mitigation (through renewable energy).

Sub-Component 1.3.1 - Preparation of Hydropower master plan and climate smart hydropower investment plans - Consistent with the mandated accountabilities of FMWRS. FMP, and its agencies coordinating large investments in hydropower projects and tasks of flood control, navigation, water supply and providing power across Nigeria, this component will provide strategic support to select optimized hydropower projects and realize the coordination required. The main support under SPIN include: (i) preparation of a hydropower development masterplan, which would synergize with water resources management planning and other storage needs; and serve as an input to Nigeria's Integrated Energy Resource Plan (IRP) and broader least cost power development plan taking into consideration the role of hydropower in integrating other renewable energy sources, (ii) establishing a screening criteria agreed by both FMWRS and FMP and developed through a stakeholder process for selection of transformative and climate resilient projects from the Master Plan. The selection criteria can then be applied to candidate projects proposed by the ministries. For this, SPIN will finance a qualified international transaction advisor assisted by local consultants. Key activities for the consultant will include stakeholder engagement, Characterize water resource, environmental, and social conditions in the watersheds being considered for development, Identify a portfolio of hydropower projects including multi-purpose projects with irrigation, water supply, and flood control potential, Analysis of hydropower capacity and energy capabilities for a series of development scenarios and include the potential for hybrid operation of solar energy resources

with hydropower that can increase the total dispatchable energy yield of the combined systems, Strategic decision making to rank hydropower and multipurpose projects in the sub-basins of the Niger River. The decision analysis shall provide an optimal sequence for development. Feasibility study, SESA and ESIA for the selected project will also be conducted and assist in development planning to identify a program for PPP procurement, project design, construction tendering, construction, and operation. This would include development of a project development agreement (PDA) etc.

Sub-Component 1.3.2 PPP options for large transformative projects for Nigeria. The support will cover inter-alia the following: (i) review of an investment program; ii) defining the PPP procurement process; iii) gain clarity on the legislative processes; iv) defining the role of the implementing agency; v) inclusion of states and vi) updating the ICRC Swiss challenge.

Sub-Component 1.3.3 Capacity Building of and Support to Federal Institutions and Agencies in Hydropower Development. This sub-component aims at building human resources and institutional capacity for hydropower development in the federal institutions and its agencies. This includes developing studies, strategies, and plans for improving hydropower planning and management. Activities under this sub-component are: (i) studies and policies for benefit sharing among stakeholders for hydropower development; (ii) studies and action plans for asset development, ownership, and operation (including potential inter-provincial assets, public-private partnerships, etc); (iii) building trusted entitlement and benefit sharing regimes (national/provincial/local); and (iv) strategy for integrating Variable Renewable Energy (VRE) including solar hydro hybridization into the national grid.

Component 2: Irrigation Modernization (US\$ 350 million)

Modernizing irrigation development and transforming the management of it is part of the national goal of scaling up irrigation and drainage services to 500,000 hectares by 2030. Component 2 will support the rehabilitation and revitalization of 40,000 hectares of irrigated command area. The component aims to design and implement a comprehensive modernization program for improving the physical infrastructure of irrigation and drainage which will complement the policy, institutional, and regulatory reforms. Irrigation services are key to adapt to climate change, especially to build resilience against precipitation variability, including water extremes such as floods and droughts. The focus will be on rehabilitation, modernization, promoting climate resilient irrigation management strategies to reduce climate vulnerabilities and transitioning the irrigation and drainage services to more accountable and reliable service provisioning.

The spread of the investments will be nationwide across all geo-political zones; however, the beneficiary States, RBDAs and selected federal and state schemes will be determined based on a set of demonstrated, technical and implementation readiness criteria agreed with the FMWRS as detailed in PAD.

The component consists of three sub-components:

Sub-component 2.1: Mobilization and Development of Water User Associations (WUAs) (US\$ 20 million)

The subcomponent will focus on mobilizing Water User Groups (WUG) of farmers around secondary irrigation and drainage canals as building blocks for establishing WUAs as legally registered entities. These WUAs will fully take over scheme level operation and maintenance of systems built and/or rehabilitated under the project. The main activities to be carried out and to be financed under the project will include: (i) sensitizing, mobilizing, and establishing the organizational structure, processes, and functions of WUAs through the provision of technical assistance including adapting, updating and/or customizing model bye laws, rules of business and Standard Operating Procedures (SOP) to guide management of WUAs; (ii) awareness building and developing a shared understanding among members of the WUA on key principles and rules of participatory irrigation model including member's rights and duties; (iii) building the skills and competencies of WUA leadership and committee members including staff of the WUAs to plan O&M, continued management and operation of irrigation services, transparent fiduciary management including fixing of service charges, recovery of O&M expenses, transparent accounting and reporting, accountable decision making etc.; (iv) facilitating cross learning from well-performing WUAs and organizing peer-to-peer learning and sharing from implementation champions-both farmer members and WUA staff; (v) installing simple user friendly software systems for billing and collection of user fees and other payments from member, including easy to use member database to help crop planning and irrigation scheduling including training of user farmers/staff; (vi) implementing a performance tracking and grading mechanism as a tool to implement organization development activities to address performance challenges and ensuring sustainability of WUAs; (vii) providing support to establish offices, computers and operating systems and such other initial investments required for smoother functioning of the WUAs; (viii) transitional contribution to O&M costs of irrigation schemes on a declining basis as block grants⁸; (ix) formalizing the devolved co-management arrangement for the operation and maintenance of the irrigation scheme through the signing of a tripartite MoU among WUAs/Apex WUAs with state governments and RBDAs detailing the roles and accountabilities of each of the parties including the consensus on assured bulk water supply, bulk water pricing, major periodic maintenance of the system, basis of measurement etc.; (x) facilitating link-up and collaboration with agriculture production enhancing and marketing/processing initiatives and agencies both public and private sector; and (xi) establishing Apex WUAs and supporting setting up of their office and minimum administrative and technical staff.

Sub-component 2.2: Irrigation and Drainage Infrastructure Investments (US\$ 320 million) - This subcomponent will support rehabilitation and upgrading of water distribution and conveyance systems aimed at increasing irrigation command area, strengthening resilience to climate hazards such as droughts (through delivery of stored water), and floods (through

⁸ WUAs are expected to prepare a business plan covering four years of activities and the project will support block grants to the tune of 80 percent in year-1, 60 percent in year-2, and tapering to 20 percent in year-4. The steps and formats for preparing the business plans will be elaborated in the knowledge package for WUAs and Project Operational Manual (POM).

drainage) minimizing conveyance losses and to improve the reliability and timely delivery of irrigation and drainage services. The major activities include: (i) assessments of water resources and schemes performance, including potential changes due to climate change; (ii) engineering surveys, investigations, and detailed designs; (iii) rehabilitating poorly operating and underutilized irrigation schemes; and (iv) expanding the irrigable area within the existing schemes to include: (a) new areas, and (b) finalize part of incomplete infrastructures; retrofitting canal infrastructure to reduce seepage losses; (v) upgrading outlets by installing regulators and gates; and (vi) installation of canal monitoring system where critical. Water resources for majority of schemes to be rehabilitated would be supplied by existing dams upstream. Rehabilitation of these existing dams are covered under Component 3.

Sub-component 2.3: Irrigation Management Modernization (US\$10 million) -The aim of the subcomponent is to operationalize management tools, ICT equipment and management information systems to make the irrigation infrastructure deliver reliable, accountable, and sustainable irrigation and drainage services. The sub-component will finance: (i) developing an asset management system for tracking condition of canal assets for optimising maintenance and investment planning; (ii) establishing water accounting systems, incorporating enhanced use of climate related data to monitor water availability, formulation of service delivery standards and establishment of service regulations; (iii) establishing a comprehensive irrigation management information system to help irrigation managers optimize water use, make data driven decisions, problem solving etc.; and (iv) establishing benchmarking systems of service delivery, performance assessment of the participating irrigation systems. These activities will be implemented in parallel and in correspondence with the construction works (rehabilitation or expansion) financed under the Subcomponent 2.2 so that the rehabilitated or newly constructed infrastructure is handed over to the WUAs and scheme operator from the contractor in a progressive manner.

Component 3: Improvements in Dam operations and Enhancing Dam Safety (US\$

100 million): The objective of this component is to increase the safety of selected dams in Nigeria with a view to strengthen the dam safety management system in the country. The scope is to improve the safety of dams and associated appurtenances of 10 to 20 prioritized dams. The project will not finance any new dam construction but focused only on the rehabilitation of existing dams and their associated structures. Planned activities are neither intended to alter the original schemes, change their nature, nor expand dam extents as to make them appear as new or different schemes. Priority will be to select dams providing downstream irrigation services to schemes to be identified under Component 2. The safety of dams is key to climate adaptation, such as through water delivery for irrigation to mitigate droughts, and to protect from dam break flooding, store excess water to mitigate floods following high precipitation.

The main activities under the component are: (i) Dam Safety Portfolio Risk Assessment Exercise including establishing and implementing risk indexing screening method for dams in Nigeria, selecting dams for rehabilitation works; (ii) Preparing an Emergency Action Plan (EAP), an Operation and Maintenance manual (O&M) including operational protocols and dam health monitoring and reporting protocols and an instrumentation plan for dam safety. The project will promote inclusion of safety protocols that address safety concerns specific to women and persons with disabilities in EAPs.

(iii) Rehabilitation works including measures for seepage reduction, hydrological and structural safety measures, strengthening main dam body and foundation, and improving basic dam facilities and dam safety instruments; (iv) preparing and implementing of sediment management plans, through bathymetric surveys feasibility studies, piloting of institutional models and plans for treatment of upstream drainage catchments with construction of sediment retaining check-dams and river bank protection structures and (v) application of nature based solutions to dam/reservoir operation and management.

Component 4: Project Management (US\$ 20 million)

The main objective of this component is to effectively implement, monitor, and evaluate project activities. It involves establishing the National Project Management Unit (FPMU) and Technical Units (TUs) at the federal level, and lean State Project Implementing Units for (Model II states) to oversee and coordinate project implementation, as well as setting up a monitoring and evaluation (M&E) system. It will also support the National Steering Committee for the Project. An external M&E agency may be contracted to support the in-house M&E team of the FMWRS to assess project activities and their impact. The component includes financing for consultancies, training, materials, office equipment, and operating costs. It also provides investment and technical support for a robust management information system (MIS) and ICT system. An overarching requirement for smoother project management is setting up of an Inter-Ministerial Conclave for Convergence (IMCC) with ministerial representations from FMWRS, FMP and Federal Ministry of Environment.

3.3 ESMF Implementation Arrangement

World Bank (WB)

The World Bank will function in the capacity of *"Project Donor*". The Bank will therefore set out the benchmarks for all environmental and social safeguard standards and issues concerned with the development and implementation of SPIN activities. It will provide overall supervision, facilitation and coordination of the SPIN Project. All subprojects under SPIN must fully comply with the Bank's Environmental and Social Standards (ESSs). The Bank shall monitor funds and allocations and the overall project performance indicators.

Federal Ministry of Water Resources and Sanitation (FMWR&S)

The ministry is the lead implementing ministry for the SPIN Project, in collaboration with the Federal Ministry of Power (FMP) and the participating State Governments. The ministry will function in the capacity of the Federal Government of Nigeria *(The Project Sponsor).* It will be the responsible institution for implementing the SPIN Project in Nigeria. The ministry will also facilitate liaisons with all MDAs involved in the SPIN Project and ensure that every effort is made to enhance the project's positive impacts and reduce/mitigate negative project impacts. The ministry will set up a National Project Management Unit (FPMU) staffed with competent multi-disciplinary experts.

SPIN-PMU (National) - FPMU

The FPMU will coordinate all SPIN Project administrative and technical activities at the national level. It will be responsible for organizing and implementing capacity building programs, procurement of commodities, consultants, and project management. The FPMU will establish a communication system between the federal and the state SPIN-PMUs and be responsible for project success on behalf of the Federal Government. The overall oversight, at the country level, of the E&S safeguards preparation and implementation rests with the FPMU. Based on the involvement of the FPMU specialist personnel in the preparation and implementation of the TRIMING project under the WB Safeguard Policies, it is envisaged that significant institutional knowledge and experience relating to the Bank's ESSs have been gained by the FPMU. Nonetheless, the FPMU officers will be exposed to other ESF trainings to strengthen the existing E&S capacities for the responsible officers.

SPIN-PIU (State) – SPIU

The SPIN-PIU will manage day-to-day implementation of the SPIN Project activities at the state level. It will be responsible for all administrative, technical implementation and project management activities in the state. It will also facilitate liaise with MDAs, CBOs, NGOs and project affected communities. The direct preparations and supervision of the E&S safeguards instruments for the subprojects at the state level are the responsibilities of the various SPIUs. It is therefore necessary that the safeguards officers in the state are thoroughly knowledgeable of the Bank's ESSs as well as the national E&S regulations and requirements. It is however noted that most of the SPIUs for the potential SPIN states are yet to be established. It is therefore necessary that E&S Officers are deployed to the SPIU from relevant MDAs and training be conducted for the SPIUs to build and/or strengthen the existing E&S capacities for the responsible officers.

Relevant Institutions

These are ministries, departments, agencies, civil societies etc., that are directly or indirectly involved with the implementation of the SPIN Project. Implementation of the SPIN Project will involve multi-sectoral participation. These institutions will aid in broader activities under the project.

4.0 DESCRIPTION OF THE PROJECT ENVIRONMENT

4.1 General overview of Nigeria

Nigeria is situated in West Africa lying between latitudes 4°00 N and 14°00N and longitudes 2°500 W and 14°45 E, bordered to its south by the Gulf of Guinea for about 850km, by the Republic of Benin to the West for 773km, Republic of Niger to its North for 1497km, Chad at its North Eastern Boundary (water boundary) for 87km and Cameroon to its East for 1,690km (see Figure 4.1).



4.1: Administrative Map of Nigeria Showing State boundaries

Figure

Nigeria has a total area of 923,768km² of which the total land area is 913, 768km² and 10,000km² is water. Nigeria is blessed with abundant water resources estimated at 226 billion m^3 of surface water and about 40 billion m^3 of ground water.

4.2 Physical Environment

Climate

Nigeria's climate varies from arid in the north, tropical in the centre and equatorial in the south. The climate is 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 1000mm and 3600mm (NIMET, 2020).

Temperature

Nigeria's climate is characterized by relatively high temperatures throughout the year. The average annual maximum varies from 35oC in the north to 31oC in the south; the average annual minimum from 23oC in the south to 18oC in the north. On the Jos plateau and the eastern highlands altitude makes for relatively lower temperatures, with the maximum no more than 28oC and the minimum sometimes as low as 14°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 15m/s. Values of up to 25 m/s are sometimes experienced due to inducement by convective rainfall activities and relative diffusion.

Ambient Air Quality

Generally, air quality in the area complies with regulatory standards, although, slight variations are noticed in major industrial cities like Lagos, Ibadan, Aba, Kano, Port Harcourt and Kaduna. The Federal Ministry of Environment (FMEnv) has developed standards for ambient air quality.

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 nutrients.

Topography

Nigeria has varying landforms and much of the country is dominated by plains, generally less than 610m (about 2001.31 ft) 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 (about 1.5 mi) 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 (about 1999.67 ft) in the Hausa Plains to an average level of some 1,219m (about 3999.34 ft) but reaches 1,781.6m (about 1.11 mi) 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 (about 3218.5 ft) 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 color 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 few 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, and the Hadeija rivers 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/I. 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/I and a total phosphorous content of 0.1 mg/I. The data indicate water of high quality according

to FMEnv limits.

4.3 Biological Environment *Fauna*

Animals found in both forest and savannas include leopards, golden cats, monkeys, gorillas, and wild pigs. However, persistent hunting and destruction of habitats due to agricultural activities and other human development efforts have decimated wildlife populations, to the extent that many of them are threatened and/or outrightly endangered. Today, many of these animals can be found only in protected places such 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, and are fairly ubiquitous around Nigeria. The northern savannah abounds in guinea fowl and francolins (bush fowls). Other common birds include quail, vultures, kites, bustards, and gray parrots. The rivers contain crocodiles, hippopotamuses, and many marines.

life.

In the rain forest, a 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 directly 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 Savannah, a region of tall grasses and trees. The southern margin of the Guinea Savannah has been so altered by humans that it is also called the derived savannah. Beyond the Guinea savannah lies the Sudan Savannah, 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 Savannah persists.

4.4 Social Environment

Nigeria is a diverse federation of 36 states and the Federal Capital Territory, with three major ethnic groups: the Hausa-Fulani, the Yoruba, and the Igbo. The Hausa and the Fulani are integrated, with the majority being Muslims. The Yoruba are politically dominant, and the Igbo live in small, decentralized settlements. Other ethnic groups include the Ibibio, the Edo, the Tiv, and the Nupe. In Nigeria, traditional religions declined as Islam and Christianity grew. Religious freedom is guaranteed, but there is ongoing conflict between Muslims, Christians, and traditional religion followers. The northern states have the highest concentration of Muslims, while Christians make up the majority in the eastern states. There is also a growing number of breakaway Christian churches embracing indigenous traditions, and the practice of polygamy is a point of contention between Islam and Christianity.

Economic Statistics

Nigeria's economy grew significantly between 2000 and 2014. After a change in administration in May 2023, reforms were implemented to stabilize and grow the economy. These reforms included eliminating the petrol fiscal subsidy and unifying the FX markets. It is crucial to sustain the reform momentum for long-term benefits. However, risks to Nigeria's outlook include weak monetary policy tightening and rising insecurity.

Development Challenges

Despite having the largest economy and population in Africa, Nigeria offers limited opportunities to most of its citizens. Nigeria faces challenges with limited opportunities, low productivity, weak job creation, and widespread poverty. Recent reforms aim to restore economic growth and create more quality jobs for Nigerians. Weak job creation and entrepreneurial prospects stifle the absorption of the 3.5 million Nigerians entering the labor force every year, and many workers choose to emigrate in search of better opportunities. The poverty rate is estimated to have reached 38.9% in 2023, with an estimated 87 million Nigerians living below the poverty line — the world's second-largest poor population after India. Spatial inequality continues to be large, with the best-performing regions of Nigeria comparing favorably to upper middle-income countries, while the worst performing states fare below the average for low-income. In most areas of Nigeria, state capacity is low, service delivery is limited, and insecurity and violence are widespread. Infrastructure gaps constrain access to electricity and hinder the domestic economic integration that would allow the country to leverage its large market size, which is aggravated by trade protectionism. Emerging problems such as the increased severity and frequency of extreme weather events, especially in the northern parts of the country, add to these long-standing development challenges.

Agriculture, Forestry and Fishing

Nigeria has abundant arable land, but there is a severe shortage of farmland in densely settled areas. Between one-fifth to one-half of all Nigerians rely on agriculture, with most being small-scale subsistence farmers. Root crops are the main food crops in the south, while grains and legumes are staple crops in the drier north. The government disbanded produce marketing boards in 1982 to halt the decline in industrial crop production. Livestock raising was underdeveloped at the beginning of the 21st century, and Nigeria's permanent forest reserves cover less than one-tenth of the total land area. Fishing has become more important as a food source due to recurring drought.

Energy demands

Nigeria has abundant but underutilized resources, including solar energy. The most economically valuable minerals are crude oil, natural gas, coal, tin, and columbite. Nigeria also has significant reserves of natural gas, coal, iron ore, and uranium, as well as hydroelectric power. However, demand for power exceeds supply.

Land

The land tenure system in Nigeria gives an individual a legal right to own a parcel of land and the resources on or in the land. The system defines who uses the land and its resources for a particular length of time, and under certain conditions. Every society varies with their system of property rights, these rules changes over time. The land tenure system differs in ethnicity, gender, and political affiliation which includes communal land tenure system, Freehold tenure system, leasehold tenure system, gift Tenure System, and inheritance Tenure system. In the states land acquisition for any developmental project is administered by the Ministry of Land and Survey and the state geographical information system who provide details of land boundaries and ownership, though this is not very effective in most states.

Public Health

Some of the major health issues in Nigeria include poor sanitation and hygiene, Malaria, Tuberculosis infectious diseases including COVID 19, Monkey Pox, cholera etc. which poses public health threats responsible for significant morbidity and mortality in the country. In girl schools some prevalent health issues include urinary tract infections, candidiasis, stomach pain etc and in extreme cases Cholera outbreaks, because of the poor sanitary conditions and inadequate WASH facilities. Floods have triggered a cholera outbreak in some of the northern states (specifically Borno, Adamawa and Yobe). Over 7,700 cases, including 324 deaths, were reported across these three states.⁹

4.5 Description of the Potential Project States

The SPIN Project will be implemented nationwide. However, the specific locations for the intervention have not yet been determined. To gain insight into the potential project environment, the government has identified three irrigation schemes with dams. For these schemes, dam safety panel of expert reports (DPOE Reports) and project screening templates (PST) have been prepared. Additionally, Environmental and Social Due Diligence reports (ESDDs) have been prepared for the sites to understand the likely environmental and social risks. These reports will categorize the level of risk and advise on the appropriate instruments to be prepared during implementation. The following section provides an environmental and social baseline understanding of the three sites.

4.5.1 Site-Specific Baseline Environmental and Social Characteristics of three Dams

The three dams are: Doma Dam in Nassarawa State, Naka Dam in Benue State and Wuro Keso retention pond¹⁰ (also known as Gassol) in Taraba State. A Location Map of the three Dams is shown in Figure 4.2.



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Figure 4.2: Map Depicting the Locations of the Three Dams

Administrative Maps of Nassarawa, Benue and Taraba States, showing the project locations in each case, and the Local Government Areas (LGAs) in the States are presented in Figures 4.3a-c.



Figure 4.3a: Administrative Map of Taraba State showing Location of Wuro Keso Dam



Figure 4.3b: Administrative Map of Nassarawa State showing Location of Doma Dam



Figure 4.3c: Administrative Map of Benue State showing Location of Naka Dam

An overview of the environmental conditions around these locations is presented below.

4.2.1 Physical Environment

4.2.1.1 Climate

Rainfall characteristics

Annual Rainfall Pattern

Rainfall is the principal climatic element in the project areas as it is in every other part of the country and the tropical region in general. The rainfall regime is principally controlled by the two major air-masses: the moist tropical maritime (TM) with its associated westerlies and the dry tropical continental air mass (TC) with its associated easterlies.

In Doma dam project area, annual rainfall amount ranges from 1,138mm (about 3.73 ft) to 1,617mm (about 5.31 ft) with a mean of 1,338.02 mm (about 4.39 ft). Of the fifteen years (15) under consideration (2008 -2022), it was noted from the analyzed weather records that the driest year in Doma dam area was 2017 while the wettest year was 2008. As shown in Figure 4.4, the annual rainfall amount in the area has been haphazard over the years and this is not unexpected as the entire world is experiencing climate change and variability. However, a rainfall amount of over 1,000 mm (about 3.28 ft) in a year could be relatively high and adequate to recharge and sustain the dam water for continuous efficiency either for municipal water supply or irrigation practices.



Figure 4.4. Annual Rainfall characteristics in Doma dam area in Nassarawa State

As shown in Fig. 4.5, annual rainfall amount in Naka dam project environment ranges 761.5 mm to 1,617.0 mm with an overall mean of 1,189.11 mm. The direst year of the study period was 2012 where rainfall of 761.5 mm while the wettest year was 2008 when rainfall amount of over 1,600 mm was recorded. Of the fifteen years records, it was only in 2012, 2014, and 2017 that annual rainfall amount in Naka dam project area was less than 1,000 mm. it could therefore be noted that based on the global variability, annual rainfall amount in the Naka dam area could over or less than 1,000 mm. however, as dam located within Benue River trough, continuous

surface water recharge from Benue river and its tributaries that will sustain the dam is guaranteed.



Figure 4.5. Annual Rainfall characteristics in Naka dam area in Benue State

In Wuro Keso dam project area, total annual rainfall amount is between 718.5 mm to 1,339.50 mm with an average of 1,042 mm. As shown in Fig. 4.6, of the fifteen years records analysed, it was only seven (7) that annual rainfall amount that is over 1,000 mm were recorded. This shows that, in most cases, rainfall in Taraba State is usually less than 1,000 per year. Nevertheless, as a dam is located within the major rivers, continuous recharge of the dam for efficiency is guaranteed both through surface and groundwater inflow.



Figure 4.6. Annual Rainfall characteristics in Wuro Keso dam area in Taraba State

Generally, annual rainfall amount in the north central area of Nigeria ranges between 962.67 mm to 1441.933 (Table 4.1) with an overall average of 1,171.85 mm.

	Annual Rainfall			
Year	Nassarawa	Benue	Taraba	Regional Mean (mm)
2008	1617.1	1617.1	1091.6	1441.93
2009	1173.4	1173.4	922.7	1089.33
2010	1414.1	1076	1021.8	1170.63
2011	1192.7	1282.2	1339.5	1271.47
2012	1406.8	761.5	718.5	962.67
2013	1233	956.9	833.5	1007.8
2014	1290.7	871.3	852.4	1004.8
2015	1319.9	1343	923.6	1195.5
2016	1529.6	1339.9	952.4	1273.97
2017	1138	961.8	1183.4	1094.4
2018	1595.7	1407.5	1569.1	1254.1
2019	1322	1146.1	1203.9	1224
2020	1253.6	1138	896.1	1095.9
2021	1324.7	1466.7	1207.4	1332.93
2022	1259	1295.2	920.9	1158.37
	1338	1189	1042	1,171.85

Table 4.1: Annual rainfa	all pattern	in the stud	y area
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Source: Computed from NiMET Data (2008-2022)

Temperature Characteristics

Temperature indicates an index of sensible heat from the atmosphere; it also indicates the relative degree of molecular activity of a substance (Howard, 2010). It is expected that the ambient air temperature of the project area would be high all year round as a result of its location within the tropical environment. The tropical world (Latitude 00 to 230 north and south of the equator) is considered high temperature due to its short angle of inclination to the sun. Temperature characteristics in the study area (north central region of Nigeria) is typical of a tropical area which is high and relatively stable throughout the year with an indication of seasonal fluctuations.

Mean Monthly Maximum Temperature

Pattern of the long-term maximum temperature characteristics in the study area is shown in Fig. 4.7 and Table 4.2. As shown, ambient temperature is high almost all through the year. In Doma dam project area, computed long term mean maximum temperature ranges between 30.15°C to 39.08°C; in the project area, temperature is at its peak in March when a single day maximum temperature could be as high as 42°C. March is therefore the hottest month in Doma project area and environ.



Figure 4.7: Long term mean maximum temperature pattern in the north central area of Nigeria

Month	Mean_Max			Mean_Min		
	Lafia	Makurdi	lbi	Lafia	Makurdi	lbi
January	36.17	34.89	34.97	19.53	18.64	19.36
February	38.1	36.74	37.78	23.42	23.18	23.46
March	39.08	37.89	38.96	26.06	25.19	25.12
April	36.29	35.39	36.54	25.81	24.13	25.16

Table 4.2: Mean temperature maximum and minimum in the project area

Month	Ν	lean_Max		Mean_Min		
	Lafia	Makurdi	lbi	Lafia	Makurdi	lbi
Мау	33.64	32.81	33.93	24.37	22.9	24.01
June	31.54	31.15	31.68	23.55	21.98	22.87
July	30.77	30.35	29.11	23.45	22.34	22.9
August	30.15	29.83	30.27	23.4	22.51	22.76
September	31.29	30.61	30.74	23.2	22.88	22.5
October	32.85	31.33	31.52	23.19	22.14	22.73
November	35.45	33.86	34.4	20.97	20.88	20.21
December	36.3	34.8	34.83	18.01	16.09	17.66

Source: Computed from NiMET Data (2008 - 2022)

Mean maximum temperature in Naka project environment shows similar characteristics as Doma area. Mean maximum temperature in this area is between 29.83°C and 37.89°C. In this area, records show that a day temperature, particularly in March could rise above 40 °C. This always shows that ambient air temperature value is at its peak in March.

In the Wuro Keso dam project area, computed mean maximum ambient air temperature ranges from 29.11 ^oC in July to 38.96 ^oC in March. It was also observed from the daily temperature data of the study area (Taraba State) that a single day temperature of 41.6 ^oC characterizes the months of February and March. It can therefore be noted that the peak of dry season or hottest month (high temperature month) in the study area (north central zone of Nigeria) is March.

Minimum temperature depicts the lowest ambient heat observed or experienced in a day (within 24 hours' time). At Doma project area, mean minimum temperature range 18 °C in December to 26.06 °C in March. It could be observed that temperature is at its lowest in the area between December and January where a day minimum temperature could be as low as 10.6 °C.

At Naka and Wuro Keso mean minimum temperature computed ranges from 16.09 °C to 25.19 °C and from 17.77 °C to 25.16 °C, respectively. At Wuro Keso area, the lowest single temperature observed from the long-term records was 12.6 °C while the lowest daily minium temperature value observed at Naka project area is 11.5 °C. These months (December/January) are the hamarthan season where visibility is low and dust particles in the atmosphere reduce the solar radiation incidents or intensity of the sun energy on the earth surface.



Figure 4.8: Long term mean minimum temperature pattern in the north central area of Nigeria

Generally, the ambient air temperature depicts double peaks in a year. The first peak of the heat is March while the second peak is December. The high temperature during the core of dry season's period has implications on surface water resources. Excessive temperature or heat brings about high evapotranspiration and eventual low in dam water reservoir capacity. In other words, the design water storage capacity of the study dams may be significantly affected during the dry season period of the year, particularly in March.

Relative Humidity

Humidity is a general term used to describe the amount of water vapor in the air. It is the ratio of the amount of water vapor in a volume occupied by air to the amount the space could contain at saturation. It reaches its diurnal maximum in the early morning hours when temperatures are low and then decreases to a minimum in the early afternoon (Howard, 2010). Relative humidity (RH) within the tropics is generally high and this is expected of areas influenced by the maritime air mass. It was noted that diurnal range which is largely high with maximum values recorded in the early hours of the day while the lowest values are recorded during the noon. Also detected is the seasonal influence; such that the highest values are recorded during the wet season compared to what is recorded during the dry season.

Characteristics of the project area RH is shown in Fig. 4.9. As shown, yearly mean RH at Doma project area range from 64.6 % to 70.1% @ 0900 hour and 43.8% to 50.70% @ 1500 hour. At Naka dam area, mean annual RH ranges from 65.9% to 69.2% @ 0900 hour and from 50.2% to 51.4% @ 1500 hour. Similarly, at Wuro Keso dam area, RH yearly mean ranges from 61.0% to 64.3% @ 0900 hour and from 47.1% to 50.3% @ 1500 hour of the day.

The computed values are general for the region, however, there could be slight variations to the RH values at the immediate project sites because of local (micro) weather conditions occasion by the influence of the dam water and other natural features such as vegetation and relief/topography. Expectedly, RH across the study area will be high during the core of wet season period (between May and October) and will be very low (most times, below 40 %) in the dry season period (from November to March).



Figure 4.9: Long term mean yearly relative humidity in the study area

4.2.1.2 Ambient Air Quality

Air is the single most important requirement for survival. It is medically accepted that a man can survive for 40days without food, 8days without water, but not more than 1hour without air. Thus, it is important that air is available, not only in the required quantities, but also in good enough quality, to engender healthy living.

Baseline information on pertinent air quality parameters around the project area is presented below:

The total suspended particulate (TSP) level recorded around the project area usually varies very widely with season. In the rainy season, particulates in ambient air are usually very low, with the scrubbing effect of rainfall. In the dry season however, particularly during the peak of harmattan (November to January), the dust laden harmattan winds contrive to increase particulates in the ambient air. Overall, particulates range between $18.3\mu g/m^3$ and $49.3\mu g/m^3$ in the rainy season, and between $125.6\mu g/m^3$ and $269.0\mu g/m^3$ in the dry season.

The level of CO in the ambient air is usually very low, ranging between a low of 0.1ppm in the rainy season and a high of 3.5ppm in the dry season. The spike in the dry season is attributable

to inputs from routine bush burning, which occurs around most of the sites covered by this report.

Within the project environment, all other gases, including SO₂, H_2S , THC and NH_3 are hardly detectable, as they are mostly below 0.01ppm. This is hardly unexpected, given the fact that human activity in the general area is currently very low.

The noise levels around the project areas usually range from a low of 35dB(A) to around 78dB(A). The high noise levels usually occur in areas of high human presence and include contributions from vehicles and equipment such as power generators. In addition, noise from music stores advertising their wares as well as muezzins calling Muslim Faithfuls to worship and Christians during church programs make some contribution to ambient noise levels. Overall, however, occupational exposure noise levels are not breached around the locations.

4.2.1.3 Geology and Hydrogeology

The project locations fall within the Niger-Benue Basins. The formation of the Niger/Benue basins is intricately linked with the events that led to the break-up of Gondwana which brought about the reparation of the African-South American continents and the subsequent opening of the South Atlantic Ocean during the Mesozoic period. Structurally, the basin is a down-warped basin filled with sediments of the cretaceous age. Sedimentation and stratigraphy are characterised by transgressive and regressive phases that began in the pre-Albian period with the deposition of the Asu River Group sediments which lie unconformably on the Pre-Cambrian Basement Complex, and is overlain by subsequent Cretaceous, Tertiary and Quaternary sediments.

Geological History

* Pre-Mesozoic

The oldest rocks occurring in the project area belong to the undifferentiated Basement Complex, which form the basis upon which all subsequent rocks were deposited. Within the project area, rocks of the Basement Complex, comprising of granites, granite-gneisses, metamorphites, meta-sediments and quartzites, are found outcropping south of Lokoja, from Kuroko to Ajaokuta, and are very well exposed along the valley of the River Niger and Benue.

Though these rocks are believed to have been subjected to a series of thermo-tectonic episodes (Oyawoye, 1964 and McCurry, 1976), only the Eburuian (1900 my) and Pan-African (659 my) events are still recognisable, as these represent the dominant structural trends observed in the area. There is no evidence of Paleozoic sedimentation in Nigeria.

* The Mesozoic

A period of erosion, peneplanation and non-deposition set in after the pre-Cambrian events and lasted up to the start of the Cretaceous. The Santonian epeirogeny activities (folding faulting, igneous activities) led to the formation of the Bida Basin and the lower part of the Benue (Anambra-Imo basins) into which subsequent deposition of the Cretaceous and younger sediments took place. Cretaceous sediments are unconformably deposited in these basins

from the onset of the Cretaceous in the Albian period. At the close of the Campno-Mastrichtian deposition a new period of erosion and peneplanation was ushered in that continues to date.

The oldest Mesozoic rock outcrops in the project area belong to the Campano-Maastrichtian age and are found between Patigi and Lokoja. This is the Lokoja sandstone Formation (Fm), a pinkish-brownish conglomeratic mixture of gravel, coarse sand and clay. It seems exposed at Lokoja. Its lateral equivalent, the Nkporo Shale of the Anambra Basin is not exposed in the project area. Within the project area, the Lokoja sandstone Fm which is seen well exposed on the Gidda Hill at Baro and has also been found in boreholes at Agbaja (Kehinde, 1989). It is a ferruginised sandstone that is weakly consolidated.

The works of the Upper Coal Measures (Upper Mamu Fm) and the underlying false-bedded Silt are found at Idah and Agenebode where the River Niger has cut very impressive cliffs into these rocks. They consist essentially of fine-medium, ferrigenous sandstones that are quite friable.

* The Cenozoic

The youngest Holocene sediments found in the project area are recent alluvial deposits along the course of the River Niger and some of its major tributaries. The alluvial deposits are variable in composition, ranging in size from clay, silt, fine-coarse sand, and even to gravel.

* Tectonics

The primary tectonic event that influenced the formation of the Niger-Benue valley systems is the break-up of Gondwana with the subsequent opening of the South Atlantic Ocean in early Mesozoic. Various hypotheses have been developed as to the structural configuration. The most consistent of such is the rift theory (Kennedy, 1965; Kogbe et al 1983; Whiteman, 1982). According to Kennedy (1965) the trio of Benue-Abakaliki through Bida Basin and the Gao-trench constitute a part of a rift that is similar to that of the Gulf of Aden and Red Sea, whereby the Niger/Benue system is a failed rift. In addition, it is generally agreed that the Santonan ectogenesis produced those basins which resulted from subsidence due to down warping. Subsequently, materials were transported into these basins from the surrounding crystalline basement areas.

Hydrogeology

The project area traverses several groundwater provinces, which are briefly described below:

* Benue Basin Groundwater Province:

Within the project area sediments of the Asata-Nkporo Shale consisting of shales and mudstones underlain by the shales and limestones of the Awgu Formation are the target aquifers. The areas of exposure of these rocks are quite limited and groundwater usage has been limited to shallow dry wells in the weathered regolith and the river alluvium in the area. Groundwater is mostly unconfined and obtainable at shallow depth.

* Bida basin Groundwater Province:
From Baro through Koton-Kafi to Jamata and Makurdi, groundwater supply for domestic and sundry purposes is obtained from the aquifers of the Bida basin. Aquiferous layers are found in all the sedimentary formations that make up the basin.

* Basement Complex Groundwater Province:

Here groundwater is essentially obtained in weathered regolith and fractured rock materials. Groundwater is usually under unconfined conditions and is obtainable at shallow depths. On average aquifers in crystalline rocks do not meet requirements for large public demands but are quite sufficient to meet rural needs. Depth of weathering is observed to be less than 10m in most cases encountered in the project area. The weathered material is a poor mixture of sandy clays and silts of low permeability.

4.2.1.4 Soils Characteristics

Soils within and around the proposed project locations can be grouped into two main types based on the local geomorphology and soils' morphological, physical and chemical characteristics.

Based on results of recent studies around the project locations, a summary of soil characteristics around the area is presented below:

рΗ

Soil pH in the project area is generally in the acid range, ranging from 5.91 to 6.78. Based on the findings of Ojo-Afere *et al.,* (1990), most of the soil samples fall in the range of pH optimal limit set for plant growth as shown in Table 4.3 and as such, in terms of pH, the soils within the study area favour agriculture.

Range	Class	
4.5 – 5.5	Very Acidic	
5.5 - 6.0	Distinctly Acidic	
6.0 - 7.0	Acidic	
7.0	Neutral	
7.0 – 7.5	Faintly Alkaline	
7.5 – 8.0	Alkaline	
8.0 - 8.5	Strongly Alkaline	
8.5 - 9.0	Extremely Alkaline	

Table 4.3:Soil Reaction (pH) Classes

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	Class	
pH Range		
<4.8	Low	
4.8 - 9.5	Optimum	
>9.5	High	

Source: Ojo-Afere et al., 1990

Total organic carbon

Organic matter plays a major role in the dynamics of soils as it stores water, provides a living environment for soil organisms, promotes structural stability, supplies and stores nutrients (particularly nitrogen, phosphorus, and sulfur), which are slowly released in usable form as it decomposes. Organic matter in soils is formed from decayed remains of roots, plant residues and soil organisms.

The value for soil organic matter in the project area ranges between 0.13 and 2.20%. In terms of organic carbon, most of the soil falls in the low range (Table 4.5). This is hardly surprising, given that most of the soil samples had preponderance of fine sands.

Organic Matter (%)	Class	
<1.50	Low	
1.50 – 2.50	Medium	
>2.50	High	

Source: Adapted from Udo, 1986

Soil Total Nitrogen

Nitrogen is a very important plant macronutrient involved in plant growth and photosynthesis. Most of the nitrogen in the soil is in the organic form. The total nitrogen content of the soil gives an indication of the organic nitrogen present in the soil, which under suitable and adequate conditions can undergo mineralization and therefore available for plant use. The soils within the study area had mean total nitrogen of 2.06% and ranged from 1.2 to 2.85%. Using the classification system of Sobulo and Adepetu (1987), shown in Table 4.6, one can conclude that the soil within the project area is characterized by high total nitrogen content.

 Table 4.6: Classification of Soil Total Nitrogen

Total N (%)	Class
<0.10	Low
0.10 – 0.20	Medium
>0.20	High

Source: Sobulo and Adepetu (1987)

Available Phosphorus

Phosphorus is one of the three major plant nutrients or macronutrients. The tie-up of phosphorus is greatly affected by the pH level, with phosphorus being readily available to plants at a pH range of about 6.0 to 7.0. As the pH falls below 6.0, increasing amounts of phosphorus get tied up in insoluble compounds with iron, aluminum and manganese while above pH 7.0, it starts forming insoluble compounds with calcium and magnesium, in which case the phosphorous becomes unavailable as a plant nutrient. Inadequate phosphorus supply can be detrimental to plant growth.

Values of available phosphorus range from 0.13g/g to 1.89g/g with a mean value 1.11g/g. Using the classification system provided in Table 4.7 (Sobulo and Adepetu, 1987), these mean values indicate low available phosphorus content of the soils in the study area.

Table 4.7. Available Phosphorous Classes		
Available P	Class	
<8.0	Low	
8.0 - 20.0	Medium	
>20.0	High	

Table 4.7: Available Phosphorous Classes	s
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Source: Sobulo and Adepetu (1987)

Soil Texture

Texture refers to the size and proportion of mineral particles (sand, silt, and clay) of which soil horizons are composed but does not refer to its organic matter or humus content. Soil texture dictates soil soil's water-retention capacity and drainage properties, soil erosion and ability to retain and absorb nutrients, which is a determinant of soil fertility and a key influence in soil productivity and management. Soil texture generally varies with depth, with the texture becoming more compact and less friable.

The particle size analysis (expressed as fractions of sand, silt and clay) showed that sandy soils dominate the soils of the study area. These are soils containing much sand but have enough silt and clay to make them somewhat coherent (Udo, 1986).

Soil Exchangeable Cations and Heavy Metal Concentrations

The exchangeable bases (Ca²⁺, K⁺, Na⁺ and Mg²⁺) are important components of the nutrient elements in soil and hence a strong determinant of soil fertility. Results obtained from recent analysis and the application of the soil exchangeable classification suggested by Sobulo and Adepetu (1987) in Table 4.8 leads to the conclusion that the soils in the study area have high concentrations of cations, especially sodium. K⁺ ions (with a mean of 437.5g/g), Na⁺ (mean: 486.00g/g), Mg²⁺(mean: 199.2g/g) and Ca²⁺ (mean: 183.4g/g).

Class	Potassium (K)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)
Low	<0.15	<2.0	<0.5	<0.3
Medium	0.2 - 0.3	2.0 - 5.0	0.5 - 3.0	0.3 – 0.7
High	>0.3	>5.0	>3.0	>0.7

Table 4.8: Classes of Exchangeable Cations

Source: Sobulo and Adepetu (1987)

Heavy metal pollution is detrimental to soil fertility and other economic uses of land. Heavy metal pollution may occur when heavy metal laden waste is discharged into the soil environment. When this occurs, plants and animals may absorb these toxic elements (Cd, Ni, Cu, Zn, Fe, Pb and Cr), which can impair proper growth and development. From results of previous studies in the area, soils of the area are relatively free of heavy metal pollution, falling within the range of naturally occurring concentrations (Table 4.9) as recorded by Alloway (1991)

		Table 4.9. Naturally Occurring neavy	Inclai	Concentrations
	Metal	Countries of the World		Normal range in uppolluted Soils
Î				normal range in anpenatea cono

	Netherlands	UK (Former GLC) ¹	FRG (NOEL) ²	
Fe	-	-	-	-
Cr	100	0 – 100	100	5 – 1500
Ni	50	0 – 20*	50	2 – 750
Pb	50	0 – 500	100	2 - 300
Zn	200	0 – 250*	300	1 – 900
Cu	50	0 – 100*	100	2 – 250
Cd	1	0 – 1	3	0.01 – 2.0
V	-	-	-	3 - 500

¹GLC = Greater London Council; ²FRG/NOEL = Federal republic of Germany; No Effect Limit. Source: Alloway (1991).

4.2.1.5 Surface and Ground Water Hydrology

The entire project area falls within the two major rivers of Nigeria and are covered by the Niger River Basin (Doma) and the Lower Benue River Basin (Naka and Wuro Keso). 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.

4.2.2 Biological Environment

4.2.2.1 Vegetation and Flora

The entire project area falls within the Savannah grassland of Nigeria. This region is characterized by forests with open canopies and sparsely distributed trees. Plants recorded within the study area include *Chrysobalanus orbiculare, Daniellia oliveri, Syzygium guineense var litorale, Uapaca sp, Spondias mombin,* and *Hallea ciliata. Alchornea cordifolia, Nephrolepis biserrata, Alstonia boonei, Costus afer, Palisota hirsuta, Elaeis guineensis, Aframomum spp., Newbouldia laevis* and *Anthocleista vogelii.* Oil palm trees were also very common in the area.

Plates 4.1 to 4.4 show some of the plants observed in the area, in the course of fieldwork.





Plates 4.1- 4.2: Grassland and Sparse shrubs around Doma Dam

Plates 4.3- 4.4: Sparse Savannah Vegetation around Wuro Keso Dam

The entire area is extensively used for Agriculture, and crops grown include Cereals like rice, maize guinea corn, millet, etc. Legumes like beans, groundnuts, soybeans, etc. A lot of tuber crops are also grown in the area, including yams, cassava and sweet potatoes. The crops were found to be doing well and were generally luxuriant.

	Scientific Name	Common English Name	
1.	Aframomum sp.	Grain of paradise	
2.	Alchornea cordifolia	Christmas tree	
3.	Alstonia boonei	Stool wood	
4.	Anthocleista vogelii	Cabbage tree	
5.	Anthostema aubryanum		
6.	Asystasia gagentica		
7.	Calamus decratus	Rattan palm	
8.	Calapogonium mucunioides	Calapo	
9.	Canavalia rosea	Seaside bean	
10.	Carapa procera		
11.	Cassia obtusifolia	Cassia	
12.	Cassytha filiformis		
13.	Casuarina equisetifolia	Whistling pine	
14.	Chrysobalanus icaco		
15. Commelina benghalensis		Wandering Jew	

Fable 4.10: Plant Sp	pecies Identified in	the Project Area
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	Scientific Name	Common English Name
16.	Cyperus spp	
17.	Dalbergia ecastophyllum	
18.	Daniella oliveria	Shrub
19.	Dissotis erecta	
20.	Dissotis rotundifolia	
21.	Elaeis guineensis	Oil palm
22.	Ipomoea stolonifera	
23.	Kylingia peruviana	
24.	Kylingia peruviana	
25.	Paspalum vaginatum	Couchgrass
26.	Scleria sp	Razor grass
27.	Sesuvium portulacastrum	
28.	Syzygium guineensis	
29.	Terminalia cattapa	Indian almond
30.	Tetracera alnifolia	
31.	Uapaca heudelotii	

4.2.2.2 Wildlife and Endangered species

Mammals known to be present in the area (Table 4.11) include Bosman's Potto, *Perodicticus potto*, Dwarf Galago, *Galagoides demidovii*, Mona Monkey, *Cercopithecus mona*, Bushpig, *Potamochoerus porcus*, Sitatunga, *Tragelaphus spekei*, Bushbuck, *Tragelaphus scriptus*, Maxwell's Duiker, *Cephalophus maxwelli*, Tree Pangolin, *Manis tricuspis*, Long-tailed Pangolin, *M. tetradactyla*, Brush-tailed Porcupine, *Atherurus africanus*, Grasscutter, *Thryonomys swinderianus*, Gambian Giant Rat, *Cricetomys gambianus*, and Crawshay's Hare, Lepus crawshayi. Others included the African Civet, *Viverra civetta*, Palm Civet, *Nandinia binotata*, Cusimanse Mongoose, *Crossarchus obscurus*, the Gambian Mongoose, *Mungos gambianus*, and genets, presumably the Large-spotted Forest Genet, *Genetta poensis*.

COMMON NAME	SPECIES		CONSERVATION STATUS		
		IUCN	DECREE NO. 11	PROJECT AREA & ENVIRONS	
Primates					
Bosman's Potto	Perodicticus potto	1	2	Endangered	
Demidov's Galago	Galago demidovii	1	2	Common	
Mona Monkey	Cercopethicus mona	2	2	Vulnerable	
Pholidota (Pangolins)					
Tree Pangolin	Manis tricuspis		1	Vulnerable	
Long-tailed Pangolin	Manis tetradactyla		1	Vulnerable	
Lagomorpha (Hares and Rabbits)					
Crawshay's Hare	Lepus crawshayi			Common	
Rodentia (Rodents)					
Giant Forest Squirrel	Protoxerus stangeri			Vulnerable	
Red-legged Sun-squirrel	Heliosciurus rufobrachium			Common	
Fraser's Flying Squirrel	Anomalurus derbianus			Endangered	
Giant Rat ("Rabbit")	Cricetomys gambianus			Common	
Cane Rat or Grasscutter	Thryonomys swinderianus			Common	
Brush-tailed Porcupine	Atherurus africanus		1	Common	
Carnivora (Carnivores)					
African Civet	Viverra civetta		2	Vulnerable	
Two-spotted Palm Civet	Nandinia binotata		2	Uncommon	
Large-spotted Forest Genet	Genetta poensis		2	Vulnerable	

Table 4.11 The Mammals in the vicinity of the proposed Project Area

COMMON NAME	SPECIES	CONSERVATION STATUS		PECIES CONSERVATION STATUS	STATUS
		IUCN	DECREE NO.	PROJECT AREA	
			11	& ENVIRONS	
Cusimanse Mongoose	Crossarchus obscurus		2	Common	
Gambian Mongoose	Mungos gambianus		2	Vulnerable	
Marsh Mongoose ('Fox')	Atilax paludinosus		2	Endangered	
Hyracoidea (Hyraxes)					
Tree Hyrax ("Bush dog")	Dendrohyrax dorsalis		2	Common	
Artiodactyla					
Bushpig	Potamochoerus porcus			Very rare	
Maxwell's Duiker	Cephalophus maxwelli		2	Common	
Bushbuck	Tragelaphus scriptus		2	Uncommon	
Sitatunga ("Water Deer")	Tragelaphus spekei	1	1	Endangered	

Birds

As seen in Table 4.12, the study area contains quite a few birds of the waterside and an abundance of species commonly associated with gardens, farmlands, fallows with scattered trees, and dense secondary growth. These include the Grey Heron, *Ardea cinerea,* Village Weaver, *Ploceus cuculatus,* Cattle Egret, *Bulbulcus ibis,* Black-shouldered Kite, *Elanus caeruleus,* Black Kite, *Milvus migrans,* Grey Kestrel, *Falco ardosiaceus,* Senegal Thick-knee, *Burhinus senegalensis,* African Green Pigeon, *Treron calva,* Red-billed Wood Dove, *Turtur afer,* Senegal Coucal, *Centropus senegalensis,* Pied Kingfisher, *Ceryl rudis,* and the African Pied Hornbill, *Tockus fasciatus.*

COMMON NAME	SPECIES		CONSERVATION STATUS		
		IUCN	DECREE NO. 11	PROJECT AREA & ENVIRONS	
Ardeidae (Herons and Egrets)					
Cattle Egret	Bubulcus ibis		2	common	
Grey Heron	Ardea cinerea		2	Common	
Accipitridae (Vultures, Hawks, Kites, Eagles, etc.)					
Black-shouldered Kite	Elanus caeruleus		1	Common	
Shikra	Accipiter badius		1	Common	
Lizard Buzzard	Kaupifalco monogrammicus		1	Common	
Black Kite	Milvus migrans		1	Abundant	
Falconidae (Kestrels, falcons)					
Common Kestrel	Falco tinnunculus		1	Common	
Grey Kestrel	Falco ardosiaceus		1	Common	
Phasianidae (Francolins & Guinea Fowls)					
Double-spurred Francolin	Francolinus bicalcaratus		2	Common	
Burhinidae (Thick-knees or Stone Curlews)					
Senegal Thick-knee	Burhinus senegalensis			Uncommon	
Columbidae (Pigeons and Doves)					
Red-eyed Dove	Streptopelia semitorquata			Common	
Laughing Dove	Streptopelia senegalensis			Common	
Vinaceous Dove	Streptopelia vinacea			common	
Red-billed Wood Dove	Turtur afer			Common	

Table 4.12: Birds seen or heard in the vicinity of the pilot dams Area

COMMON NAME	SPECIES	CONSERVATION STATUS		TION STATUS
		IUCN	DECREE NO. 11	PROJECT AREA & ENVIRONS
Tambourine Dove	Turtur tympanistria			Common
African Green Pigeon	Treron calva			Uncommon
Cuculidae (Cuckoos and Coucals)				
Senegal Coucal	Centropus senegalensis			Common
Alcedinidae (Kingfishers)				
Woodland Kingfisher	Halcyon senegalensis			Common
Grey-headed Kingfisher	Halcyon leucocephala			Uncommon
Shining-blue Kingfisher	Alcedo quadribrachys			Uncommon
Malachite Kingfisher	Corythornis cristata			Common
Pied Kingfisher	Ceryl rudis			Unommon
Meropidae (Bee-eaters)				
White-throated Bee-eater	Merops albicollis			Uncommon
Little Bee-eater	Merops pusillus			Rare
Bucerotidae (Hornbills)				
African Pied Hornbill	Tockus fasciatus			Common
Capitonidae (Barbets)				
Speckled Tinkerbird	Pogoniulus scolopaceus			Common
Hirundinidae (Swallows)				
Ethiopian Swallow	Hirundo aethiopicus			Common
Motacillidae (Wagtails, Pipits, Longclaws)				
African Pied Wagtail	Motacilla aquimp			Rare
Pycnonotidae (Bulbuls)				
Common Garden Bulbul	Pycnonotus barbetus			Common
Sylviidae (Warblers)				
Grey-backed Camaroptera	Camaroptera brevicaudata			Common
Nectariniidae (Sunbirds)				
Olive-bellied Sunbird	Nectarinia chloropygia			Common
Collared Sunbird	Anthreptis collaris			Common
Corvidae (Crows, Magpies, etc)				
Pied Crow	Corvus alba			Common
Passeridae (Sparrows)				
Grey-headed Sparrow	Passer griseus			Common
Ploceidae (Weavers)				
Village Weaver	Ploceus cucullatus			Common
Estrildidae (Finches, Waxbills, Mannikins)				
Bronze Mannikin	Lonchura cucullata			Abundant
Red-billed Fire-Finch	Lagonosticta senegala			Uncommon
Viduidae (Whydahs, Indigo Birds)				
Pin-tailed Whydah	Vidua macroura			Uncommon

Reptiles

The reptilian fauna is made up of crocodiles, tortoises, snakes and lizards (Table 4.13). The Monitor Lizard, *Varanus niloticus*, the Nile Crocodile, *Crocodylus niloticus*, and the Dwarf Crocodile ("Alligator"), *Osteolaemus tetraspis* are hunted for food. Several species of snakes are said to occur in the area including the Black Cobra, *Naja melanoleuca*, Spitting Cobra, *Naja nigicollis*, Night Adder, *Causus maculatus*, African Beauty Snake *Psammorphis sibilans*, Royal Python, *Python regius*, and the Rock Python, *Python sebae*.

Amphibians

Species recorded in the area include: *Bufo regularis* (common toad), ranid frogs: *Dicroglossus occipitalis* (Bullfrog), *Ptychadena oxyrhinchus*, *P. aequplicata*, *P. taenioscelis*, *Aubria subsigilata*, and *Phrynobatrachs albolabris*; treefrogs: *Afrixalus dorsalis*, *Hyperolius fusciventris*, *H. guttulatus*, and *H. concolor*, and a Clawed toad, *Xenopus tropicalis*, (Table 4.14).

COMMON NAME	SPECIES	CONSERVATION STATUS		
		IUCN	DECREE NO. 11	PROJECT AREA & ENVIRONS
Crocodylidae (Crocodiles)				
Nile Crocodile	Crocodylus niloticus		1	Common
Short-snouted Crocodile ("Alligator")	Osteolaemus tetraspis	Endangered	1	Common
Pelomedusidae (Swamp terrapins)				
Testudinidae (Tortoises)				
Serrate Hinge-backed Tortoise	Kininxys erosa			Common
Home's Hinge-backed Tortoise	Kinixys homeana			Uncommon
Bell's Hinged Tortoise	Kinixys belliana			Common
Varanidae (Monitor Lizards)				
Nile Monitor Lizard	Varanus niloticus		1	Common
Boidae (Pythons)				
Royal Python	Python regius		1	Uncommon
African Python	Python sebae		1	Uncommon
Elapidae (Cobras and Mambas)				
Spitting Cobra	Naja nigricollis			Common
Black Cobra	Naja melanoleuca			Common
Viperidae (Vipers)				
Night Adder	Causus maculatus			Common

Table 4.13: Reptiles reported to occur in the vicinity of the proposed project Area.

Table 4.14: Amphibians recorded in the vicinity of the proposed Project Area.

COMMON NAME	SPECIES	CONSERVATION STATUS		
		IUCN	DECREE NO. 11	PROJECT AREA & ENVIRONS
Hyperolidae (Treefrogs)				
	Afrixalus dorsalis			Common
	Hyperolius fusciventris			Common
	Hyperolius guttulatus			Common
	Hyperolius concolor			Common
Ranidae (Frogs)				
	Ptychadena taenioscelis			Common
	Ptychadena oxyrhinchus			Common
	Ptychadena aequiplicata			Common
	Aubria subsigilata			Common
	Phrynobactrachus albolabris			Common
Bullfrog	Dicroglossus occipitalis			Common
Bufonidae (Toads)				
Common Toad	Bufo regularis			Common
Forest Toad	Bufo maculatus			Common
Pipidae (Clawed Toads)				
	Xenopus tropicalis			Common

NB. Decree No. 11 refers to the Endangered Species (Control of International Trade and Traffic) Decree of 1985. By virtue of this decree, the hunting, capture of, or international trade in animals listed in Schedule 1 is absolutely forbidden, while trade in animals listed in Schedule 2 may only be conducted under license from the Federal Ministry of Agriculture and Natural Resources.

Species of Conservation Concern

It is important to point out that some of the animals found in the study area, e.g., the Bushpig, Sitatunga, Bushbuck, and all primates are locally endangered. The African Elephant, African Buffalo, Lion, Gazelle are listed in the IUCN Red List of Endangered Species of 1996, while others, like pangolins, the Brush-tailed Porcupine, river otters, civets, genets, mongooses, crocodiles, Nile Monitor Lizard, all kites, the francolin (bushfowl), etc., are protected by the Endangered Species (Control of International Trade and Traffic) Decree No. 11 of 1985, which is Nigeria's version of the Convention on International Trade and Traffic in Endangered Species (CITES). The hunting, capture of, or trade in those species listed in Schedule I of this Decree is prohibited.

Unfortunately, these laws and international conventions, to which Nigeria is a signatory, including the African Convention on Conservation of Nature and Natural Resources, Ramsar Convention on Wetlands of International Importance and the Berne Convention on Conservation of Migratory Species, are observed more in the breach. These animals' long-term survival has been threatened by indiscriminate hunting, land clearance for farming and new settlements, and uncontrolled timber/fuel wood extraction. Today much of the original rainforest has been converted into farmlands and dense secondary tangles with scattered trees, and derived savanna has extended into the general area, obviously aided by human activity.

4.2.3 Socio-Economic Environment

<u>Doma Dam</u>

Doma dam is located in Doma Local Government Area (LGA) of Nasarawa State, and the sub-project colony is located approximately 8 km away from the dam area. Downstream plains of the dam are sparsely populated. There is a population living in close proximity to the dam downstream (<1 km), this ethnic group is known as Jukun. The people of this settlement are predominantly fishermen. They currently face an enormous challenge in their craft as they have consistently experienced scarcity of fishes which they normally harvest from the Doma dam. This challenge has forcefully made some of the fishermen at the settlement (known as Man Camp) migrate into crop farming. The population is currently distressed financially/economically and have high expectations that the Doma dam management will assist them e.g., in areas such as stocking of fingerlings and delivery of capacity building programs to support their livelihood. The sub-project is not located in any reserved forest. Below is a brief demographic characteristic of Doma.

Total Population of Man Camp	Eighty 80 persons
No. of Families	Six (6)
Male	45%
Female	55%
Primary Occupation	Fishing

Table 4.15: Brief demographic characteristics of Doma

Secondary Occupation	Crop Farming
Level of Education	Low
Religion	Christianity
Source: Field Data	

Land Use/Land Cover: The project surrounding area's land use and environmental sensitivity was analyzed using GIS techniques. Land use/ land cover map within 5 km radius of dam is presented in Figure 4.10.



Figure 4.10: Land Use and Land Cover Map of 5 km Radius around Dam Site

The land use is mainly evergreen/semi-evergreen forest, grass land and forest plantation followed by shrub forest, shrubland, a small settlement and 2 proximate settlement and water bodies comprising of the main dam and saddle dam. Agricultural activities dominate, with irrigation schemes supporting crops like rice, guinea corn, millet, melon, and cassava. Charcoal production is also prevalent around the dam area with some of the inhabitants of Doma community engaged in this activity.

Cultural Environment: List of National Monuments in Nasarawa and list of State Protected monuments in Doma have been reviewed along with the local knowledge available with the dam management. There are no protected monuments within or around the sub-project. Similarly, no tangible or intangible heritages have been identified to be impacted by the rehabilitation work.

Stakeholders: Stakeholders around this dam include Fishermen, rice farmers, women fishers and fish sellers, water users. The dam is the source of water supply for the community.

Some of the challenges of the community members include:

- Overfishing
- Illegal farming
- Fishers net destruction by cows
- Drying water source
- Water pollution through fishing chemicals
- Non restocking of fish
- Herders graze their rice farms.
- Farmers abandoning farm because of herder attacks,
- Potential risk to downstream farmers in case of dyke construction

There are several associations registered with the project manager's office. Individuals using the RBDA land pay an annual subscription of N3000. Youth among the farmers maintain security within the command areas. Serious issues are reported to village heads, the army (with formation located around the dam) or the civil defense or rangers.

Association Leaderships: There are various associations at the dam level. Positions are filled by election, but position are sometimes zoned. Group leaders are the rallying point for all stakeholders. Communication is sustained by regular sensitization, WhatsApp groups, and word of mouth. Information travels fast among them because of combination of methods.

Women in Doma: Women constitute about 50% of the stakeholders. They are mostly in the fishing value chain. They have their own association. Women are however not hindered from owning or operating farmlands. Decision making is however dominated by male.

Persons with Disabilities: The project management on ground has not been relating with the physically challenged as a separate group but some of them are among the farmers using the project land. It is therefore critical that the Project engages with this important group during Project implementation.

Grievance Resolution Methods: Issues are resolved from the Bottom-Up with the involvement of Village Heads, ward heads.

NAKA DAM

This is a rather moribund dam built across River Ana in the 1980s with a capacity of 2 million cubic meters. It was built primarily for water supply to the town with ten hectares of irrigation farming capacity. The dam is not currently operational due to its silting up. The irrigation infrastructure is not functional. Farmers use direct pumping to irrigate 100 hectares. There is a desilting activity currently being carried out by the RBDA. Dry season farming used to be done on the 100 hectares, with the RBDA plowing for the farmers and sometimes supplying inputs. This was discontinued a long time ago. The government has a certificate of ownership over the 100 hectares but there is a high incidence of encroachment. This encroachment was said to be caused by migration into Naka by dwellers of surrounding villages who have been displaced by banditry and insecurity. Some surrounding whole villages like Saav and Kiavs have been abandoned. Fishing is allowed at the dam area only between January and March of any year.

Challenges

• New settlers on the bank of the reservoir

- Encroachment on the dam area by mud brick producers
- Water sellers have built shallow wells around the dam
- Living houses springing up within the command area

Leadership: Leadership roles are through selection and acclamation of the whole association based on the experience and good standing of the candidate as well as past commitment and performance.

Women in Naka: Women are allowed to do all kinds of work in Naka and are also allowed to possess land via purchase. They are, however, under the Tiv laws forbidden to own land by inheritance. They can participate in decision making also if they are advanced in age.

Disability Inclusion: Naka has no known culture against disabled people. There are no Person with Disabilities currently in command area.

Grievance Management: There is an existing tussle over the allocation of what is left of the 100 ha of land. The land used to be allocated by the RBDA but because of the situation, the farmers' association now administers the distribution of land. Generally, all the farmers and fishers and the traditional leadership are happy that the dam is currently being desilted and show optimism at the fact that a bigger project is being planned for the area. Meanwhile there are concerns about what to do with all the encroachers, the brick makers on the bank of the river and shallow well owners who sell water around the dam.

Security: Security situation in Nigeria, as well as Benue State can be said to be tense. The level of insecurity is a major inhibitor to development and stability in various states within Nigeria. The insecurity in Benue State has been largely tied to communal and tribal conflicts, farmer-herders clashes, and bandit attacks especially in rural areas and ungoverned spaces. Most reported is the farmers-herders crisis. The nomadic and migratory herders are greatly impacted by changing seasons, affecting agricultural activities in Benue State. Consequently, this has led to intense conflicts over land between local farmers and herders, resulting in the loss of lives, livelihoods, and properties for both parties involved. According to action aid report of 2024, this incessant crisis has led to the loss of lives and internal displacement of about 1.4 million people from their ancestral homes in Benue State. This has also affected Gwer West LGA which has Naka has its headquarters. This development has led to increase in the population of displaced persons in Gwer West Local Government due to influx of displaced persons from the surrounding areas thus putting pressure on already scarce resources and increasing the risk of insecurity in the area including Naka.

The socioeconomic description of the project area is presented in Table 4.16 below.

SN	ITEM	DESCRIPTION
1.	Ethnicity and	The state has seven main ethnic groups they are; Tiv, Idoma, Igede, Etulo, Utono, Akpa
	Language	and Igala. The Tiv constitute the majority population in the State. The project area is
		also majorly constituted by the Tivs. Other ethnic groups in the locality include Idoma,
		Igala, Igbo, Yoruba, etc.

Table 4.16: Socioeconomic characteristics of project area

SN	TTEM	DESCRIPTION
2.	Population	The state has a total population estimate of 5,571,815 as at 2016. Male: 2,928,326, Female: 2,813,489 with population density of 124.9 persons/km ² . Gwer West LGA has an area of 1094km ² and population of 122,145 at the 2006 census. (NPC Estimates). The population of Naka is about 45,000 but this has increased in recent times due to insecurities in the villages around it making them to relocate to Naka. This has added pressure on water available in the dam.
3.	Occupation and Livelihood	Agriculture is the mainstay of the economy in Naka as it is practiced by over 75% of the people. The popularly grown crops includes sweet potatoes, cassava, soya beans, guinea corn, yams, rice, groundnut etc. The state also boasts of long stretch of river systems with great potential for viable fishing industry. The project area also is mainly agrarian with minor fishing activities around the dam reservoir. The locals are also into brick making and rice milling. (See Plates 4.5 C and D).
4.	Religion	The major religion in the state is Christianity being practice by over 90% of the people. The other religion is Islam practice by about 6% of the people of the state. Same applies to Naka area which has so many churches and just two mosques within the town.
5.	Education	Literacy rate in the state is about 45% according to UNESCO. Majority of the people of the state have completed at least primary or secondary school and being able to read and write. The literacy rate among the youth is about 80%.
6.	Sources of Drinking Water	The main water source in Naka community is the dam reservoir. Hand dug wells are made close to the dam area in order to obtain clean water. (See Plate 4.5 - A and B)
7.	Amenities and Infrastructure	Naka as a Local Government Headquarters is a town with social amenities and infrastructure including roads, educational institutional including two tertiary institutions (Federal College of Education and Polytechnic), markets, telecommunication infrastructure, electricity amongst others.
8.	Source of Fuel for Cooking	The predominant source of energy for domestic use (cooking) is charcoal and firewood in the project area. The use of liquified natural gas (LNG) is low as there is no refilling centre in Naka. Residents responded that LNG is only filled in Makurdi which is about 2 hours away.
10.	Waste Management	In Makurdi city, contractors of BSESA engaged for municipal waste management collect waste from household for disposal at city dumpsites. However, residents of Naka practice indiscriminate dumping of wastes and burning them in the dry periods.
11.	Transportation	Means of transportation in Naka is mainly via automobiles. The main one being motorcycles. Goods are moved using cars, buses and trucks.
12.	Gender Relations and Involvement	Women are not restricted by cultural or religious laws from ownership of assets including acquisition of land and participation in farming and trading activities.
13.	Health	Malaria, Typhoid and sometimes Cholera are the most common sickness re-occurring in most of the households. The locals visit public/private hospitals and clinics for medical need while some resort to traditional health attendants for health care needs.



Plate 4.5: (A) Hand dug well by the dam to obtain potable water; (B) Residents obtaining water for domestic uses in the upstream area of the dam. (C) Burnt Brick being made near the command area of the Dam; (D) Rice Millers around the Dam area (Not within the Dam Premises)

WURO KESO RETENTION POND¹¹

The Wuro Keso retention pond is a project of dikes built to retain River Taraba from the Tella Barrage in Gasol, a settlement in Taraba State. The command area is about 38000 ha but only 33,000 has been cleared by the UBRBDA. The Gasol community is predominantly a fishing community. Between 2000 and 3000 ha are allocated to farmers who grow rice mainly. There is no electricity in the community and there is no hydro power installation in the barrage or anywhere around the pond. A major water user stakeholder is the Gassol Integrated Farms Ltd which uses tubewell to cultivate and process rice. They have been allocated by the RBDA 5000

ha and they have developed 580 of it. During the rainy season, farms around the pond are often flooded.

Challenges: Overflow of water and flooding frustrates rainy season farming in the command's areas.

Gasol Women: Land is allocated to both women and men. There is no culture hindering the women from participating in farming. There is clear understanding and clear demarcation of land between the community and the RBDA.

Leadership: Leadership roles in the community among members of trade associations is by acclamation.

Conflict Management: They resolve their conflict through the traditional methods, proceeding from the group leaders to the village heads, to the district head to the Emir. There is no discrimination between male and female.

Disability Inclusion: There was an association of people with disabilities which voluntarily disbanded because of incidence of elite capture of shared benefits within it.

Summary

The intervention in 1980 cleared about 3000Ha of land out of which 250Ha (200Ha through Gravity and 50Ha sprinkler system) was developed. The total land mass of the proposed irrigation farm is 40,000Ha

Currently, Wuro Keso Irrigation Project is a home to about 1500 farmers during the Wet Farming (Rainy Season) and 400 Farmers during Dry Farming (Dry Season). The reservoir serves as a fishing basin for more than 300 farmers.

The farmers cultivate about 3000Ha of farmland through Rain fed and about 500Ha during the Dry Farming. During dry farming season, the farmers make use of tube wells to siphon water from the River Taraba to their farmlands. The farmers are charged 5,000 naira for each Hectare by the UBRBDA.

The crops that the farmers grow within the irrigable farmland at Wuro Keso includes Rice, Maize, Melon, Soya beans, etc. They quantity of crops gotten from 1 Ha can be measured at 30-40 bags of paddy rice during rainy season and 80-100 bags of paddy rice during dry season farming. The low crop output during the rainy season can be attributed to flooding which ravages the area because of its high proximity to the River Taraba.

The price of a bag of rice ranges from 38,000Naira to 40,000 Naira for 100kg of paddy rice.

Description	Category	Nos of	Percentage	Findings
		Respondents		
Age Profile	10-20	-	-	The most predominant age group is between 31
	21-30	11.00	13.50	-59 which is 86.50% of the total age profile.
	31-60	38.00	86.50	Also, 13.50% of the respondents disclosed that their ages are within 18-30 respectively. The
	61-70	-	-	vound age bracket is very essential and will
	/1+	-	-	prove advantageous at all phases of the project.
Gender	Male	28.00	86.50	86.50% of the total respondents are male while
Characteristics	Female	11.00	13.50	only 13.50% are female. The disparity in the
				figures was due to the recognition of men as the
				head of the household leading to the
				unwillingness of the women to be interviewed
		10.00		when the men are available.
Length of Stay	From Birth	49.00	100	100% of the respondents were born in the
In Community	Above 15 years	-	-	project community implying that they will have
	10-14 years	-	-	knowledge of the area and will be able to share
	5-9 years	-	-	this knowledge and perspective where required.
	below 5 years	-	-	The already available unskilled work force will
				be of great benefit to the project because they
				are already conversant with the culture of the
				place and it will control the labour inflow into the
_				community.
Religion	Islam	-	-	The residents of the project communities
	Christianity	49.00	100	Interviewed are mostly Unristians.
Marital Status	Others	-	-	The survey shows that 72.76% of the
Marital Status	Single	38.00	80.50 12.50	respondents are married and 27.24% are
	Single	12.00	13.30	single
	Divorced/	-	_	Single.
	Separated	-	-	The greater population is married and require
	ooparatoa			Livelihood support activities to cope with
				economic challenges of feeding their
				households.
Main	Public sector	9.00	13.5	73.56% of the respondents admitted that
occupation	Fishermen	14.00	13.5	farming is their primary source of income.
	Farmers	20.00	62.50	
	traders	11.00	12.5	
Monthly	Below 1000	-	-	The majority of the respondents corresponding
Income in	1.000 - 5.000	-	-	to about 86.50% earn monthly income above
Naira	5.000 - 9.000	11.00	12.50	the national minimum wage of N50, 000,
	10.000-29.000	-	-	however with the improvement of the irrigation
	30,000 - 49,000	-	-	scheme status the rural economy will be
	50,000 above	38.00	87.50	boasted through various farming activities that
Family nattorn	Nuclear	49.00	100.00	Most of the households operate within its own
r anny pattern	Extended	-	-	nuclear setting Interview with the participants
				reveals that 100% live with their immediate
				families.
Educational	FSLC	-	-	WASC/SSCE is the most popular highest level
Level	WASC/SSCE	38.00	86.50	of education amongst those interviewed. One
	OND/NCE	8.00	12.50	person has however obtained NCE Certificate.
	HND/BSc	-	-	
	MSc/PGD	-	-	

Table 4.17: Socio-economic Characteristics of Wuro Keso Project influenced People

Description	Category	Nos of Respondents	Percentage	Findings
		Kopondonto		The literacy level is low and they should be engaged as unskilled laborers during the project implementation.
Condition of	Very Good	-	-	There is no pipe borne water in the project
Potable Water	Good	-	-	communities. Access to water is majorly
within the	Fair	-	-	through water vendors who obtain water from
community	Poor	49.00	100	the retention pond area. Generally, the respondents claimed the access and condition of portable water is poor.
Major source	River	-	-	Water being obtained from the retention pond
of water	Water Vendor	-	-	was found to be the only source of water
available for	Pond	49.00	100	available to the households near the retention
your household	Public Pipe-borne Water	-	-	pond.
Primary source	Hurricane Lamp	-	39.04	Results indicated the primary source of
of electricity	Generators	-	-	electricity in households around the study area
	Generators	-	-	is from Jos Disco.
	Electricity Distribution Company and other sources	49.00	100	
Secondary	Hurricane Lamp	-	-	Private generators were disclosed as the other
source of electricity	Private Generators	12.00	37.5	means of electricity by 37.5% of persons interviewed.
	PHCN	-	-	
	Solar	-	-	
	Others	-	-	
Common	Malaria	49.00	100	100% of the respondents affirmed that the
diseases in	Typhoid	-	-	predominant health issues in their household is
your area	Diarrhoea	-	-	malaria while 62.5% also affirmed that they
	Cholera	20.00	62.5	experienced cholera in their homes.
	Others	-	-	
Are you aware	Yes	49.00	100	All participants are aware of the proposed
of the project	No	-	-	project as a result of the previous consultation by Stakeholder's Engagement Plan.
What is your	Good	49.00	100	The project is embraced by all the participants.
opinion about	Bad	-	-	
the project	l don't know	-	-	



Plate 4.6: Fishing activity in the retention pond

Upper Benue River Basin Development Authority is the agency in charge of the Wuro Keso irrigation scheme. The Retention Pond was constructed to provide water for irrigation by gravity for about 250Ha of land within the 3,000Ha of irrigable land being operated by Upper Benue River Basin Development Authority. The Reservoir is surrounded by a mixture of light forest and woodlands within a rural setting all around its perimeter.

5.0 PROJECT ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

5.1 Introduction

This Section documents the methodology and basis for assessing project risks and impacts, as well as preliminary identification of possible environmental and social issues associated with the proposed Sustainable Power and Irrigation in Nigeria (SPIN) project. At this stage, only high-level impact and risk identification and assessment is possible, because further details on specific sub-projects under SPIN are yet to be clearly defined. The potential for occurrence of risks and impacts in each subproject shall be ascertained during further stages of project design and implementation.

Any subproject under the SPIN Project will be bound to have some level of impact on the environment and socioeconomics. The environmental and social impacts may be beneficial or adverse, but the main objective of impact identification is to identify and prioritize areas that are likely to be adversely affected by the implementation of subprojects and proffer suitable mitigation measures. Environmental and social impacts imply alteration of environmental and human conditions or creation of new sets of adverse or beneficial environmental and social consequences caused by the action under consideration.

5.2 Type of Impacts Envisaged Under SPIN

For this ESMF, preliminary impact identification has been done based on project phases. At this stage, 3 project phases have been identified as follows:

- i) Preconstruction phase and construction phase
- ii) Operation and Maintenance phase
- iii) Decommissioning and Closure phase.

5.3 Potential Positive and Adverse Impacts of the Project

A summary of preliminary impacts identified, based on the limited project information available, is presented in this section. The presentation groups the impacts into positive and adverse. Because positive impacts are desirable, no effort is made to segregate them into project phases and/or severity. Adverse effects, on the other hand, however, are segregated.

5.3.1 Potential Positive Impacts

The SPIN project is envisaged to have a range of positive environmental and social impacts. Some of these are a function of the objectives of the subprojects, while others are a function of the way in which the project is designed to meet its objectives. Some of the beneficial impacts associated with the project include those listed in Table 5.1 below.

S/N	PROJECT PHASE	PROJECT ACTIVITIES	ASSOCIATED/POTENTIAL POSITIVE IMPACT
1.	Pre-Construction and	 Preparation of master plans, investment 	Identification of hydropower options for future
	construction phase	plan and E&S studies for the	investment will increase power generation in Nigeria.
		hydropower component of the Project.	Employment opportunities for skilled. Semi-skilled and
		 Engineering Design of sub-projects 	unskilled labor
	 Land clearing/preparation 		Increased cash flow due to injections arising from

S/N	PROJECT PHASE	PROJECT ACTIVITIES	ASSOCIATED/POTENTIAL POSITIVE IMPACT
		 Mobilization of materials, equipment and men to site Stakeholder engagement/consultations Rehabilitation of Dams 	payments for land acquisition, rent of accommodation by itinerant project workers, and patronage of routine wares sellers by project workers, including food vendors, toiletries, etc.
		 Construction of irrigation canals and rehabilitation of existing ones Construction and installation of ancillary facilities such as administrative structures, maintenance yards, warehouses, agricultural products storage facilities etc 	Possible cash injections into the economy through rental/lease of commercial vehicles and patronage of local transport vehicles by project workers Improvement in the safety of dam
2.	Operations and Maintenance Phase	 Irrigation of farmlands and crop production Treatment and supply of potable water to downstream consumers Development and operation of value-added services such as maintenance facilities, financial 	One of the most significant positive impacts of proposed projects is improved access to water for irrigation, expanded irrigated lands, and the resultant increase in agricultural productivity and income for government and the people.
		institutions, agro-allied industries, etc.	Another associated positive impact of the proposed projects is the fact that they will enhance agricultural productivity of the area, by providing the option for dry season farming, since irrigation water will be more readily available, as well as value-chain development through the development of agro-allied industries. Also, fisheries will be enhanced, since dams can be regularly cropped and harvested for fast growing fish species. During operations, several positives will emanate from proposed projects. Among others, adequate intake water will be readily available to the water works located downstream, agricultural productivity will be boosted, and by extension, income will be boosted. With the availability of potable water associated with treatment facilities associated with water works, there will be increased availability of potable water to downstream communities. By extension, the availability of potable water works downstream to availability of potable water of waterborne diseases such as cholera and typhoid fever. Generally, the introduction of improved technology will enhance energy-efficient use of water resources and general conservation of water resources in the area. Reduction in seasonal flooding due to increased reservoir capacity in rehabilitated dams, leading to improved quality of life for riverbank communities
3.	Decommissioning and Closure Phase	 Mobilization of materials and men Restoration of dam areas and irrigation canals Remediation of contaminated areas Removal or abandonment of ancillary facilities like warehouses, etc. 	Employment opportunities for skilled. Semi-skilled and unskilled labor Increased cash flow due to injections arising from payments for land acquisition, rent of accommodation by itinerant project workers, and patronage of routine wares sellers by project workers, including food vendors, toiletries, etc. Cash injections into the economy through rental/lease of commercial vehicles and patronage of local transport
			vehicles by project workers

Overall, the SPIN project will create jobs and provide skills that would meaningfully engage the youths within and outside the project influence areas. This will result in a boost to the economy

of the communities and indeed, the national economy, in addition to the general boost in livelihoods, particularly the poor.

5.3.2 Potential Adverse Impacts

The SPIN Project could have adverse effects/impacts on the biophysical and socio-economic environments of the project locations. Eight (8) of the ten (10) ESSs are relevant to the SPIN project, as described in Section 2.2.6.1. These standards set out the requirements for identifying and assessing the environmental and social risks and impacts associated with this project.

The application of these standards, through the identification and management of environmental and social risks, will support the goal of reducing poverty and increasing prosperity in a sustainable manner for the benefit of Nigeria, generally, but particularly for the host communities of the SPIN project. The standards will further: (a) support achieving good international practice relating to environmental and social sustainability; (b) assist in fulfilling national and international environmental and social obligations; (c) enhance nondiscrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

Project Phase	Potential Impact Source	Potential Impact	
Pre-construction and Construction phase for Components 2 and 3	Land acquisition Mobilization of materials and men to site Site clearing and preparation	 Negative perception and discontent expressions by members of the community. Loss of people's properties and farmlands, resulting in decreased income Hostile and unfriendly community attitudes. Unresolved issues with land acquisition extending into the construction phase. Alteration of normal traffic in the areas due to mobilization of heavy-duty vehicles and machinery 	
	Excavation, grading, compaction, filling and other civil works.	 Excavation and compaction activities through construction works could alter the soil properties including loss of valuable topsoil, Flora and fauna: stream pollution by sediments from rehabilitation and construction activities by suspended and settable solid particles that may coat, bury, suffocate or abrade living organisms. Many aquatic invertebrates and fish may undergo changes in population density and community composition if high concentrations of suspended solids occur. Aquatic vegetation may be adversely affected by a reduction in photosynthesis due to high turbidity. 	
	Construction and Rehabilitation of irrigation canals	Economic disturbance to farmers during construction period, leading to income loss	
	Rehabilitation of Dams body works	 Activities that require contact with body of the dam may result in direct pollution of the dam thereby killing aquatic life and impacting human health e.g., activities such as rehabilitation of 	

Table 5.2: Potential Environmental and Social Impacts and Sources

Project Phase	Potential Impact Source	Potential Impact	
		 auxiliary spillway at the saddle dam and modification of the morning glory spillway inside the main dam. Contamination of local waterways causing harm to plants, fish and wildlife, and degrading water quality; Dams, weirs and other water regulation infrastructures to be rehabilitated/constructed can interfere negatively with the water and sediment flow required for the health of the ecosystem downstream the developments. Water retention and all the management measures to be adopted can also interfere negatively with other social activities downstream the developments. Reduction in magnitude of fish migration due to weir/intake rehabilitation or expansion. Increase in cost of treating drinking water and can result in odor and taste problems. Alteration of water flow and reduction of water depth, making navigation and recreational use more difficult. Complaints from members of the community. Alteration of aquatic life. Water Quality changes resulting from construction works, seepage of fuel from powered machineries into the watershed, discharge of untreated effluent into water hodies. 	
	Noise and Vibration from rehabilitation activities	 Earth moving equipment noise and vibration could disrupt the natural balance of soil microorganisms, leading to changes in nutrient cycling and plant growth. It can also disrupt water quality by interfering with the behavior of aquatic organisms that rely on sound, such as fish and amphibians. Impacts of noise pollution on biotic habitat could interfere with animal communication, making it difficult for animals to find mates, locate food, and avoidance of predators. It can also lead to changes in behavior, such as increased stress levels, decreased reproductive success, and changes in migration patterns. Impairment in the health of community residents, especially cases of respiratory infection and symptoms. Incidence of ocular disease symptoms. The presence of suspended particulates exceeds acceptable limits. Complaints from members of the community. Nuisance to residents and other sensitive receptors Increased sedimentation and runoff during the construction activities, including dam reconstruction and rehabilitation. Water quality changes result from grading, dredging, and filling of the roads etc. Complaints of disturbance from members of the community. 	

Project Phase	Potential Impact Source	Potential Impact	
	Influx of Project Workers	 Damages of structures overtime due to the vibration caused by heavy machinery. Complaints of violations from members of the community. 	
		 Risks associated with Labor Influx such as Increase in potential spread of STIs/STDs, HIV/AIDs due to workers on site, increase in SEA/SH; 	
		 Potential for forced labor and under-aged children (below 18 years) may be used by contractors as cheap labor; 	
		Potential for sexual harassment of female employees for all categories of workers;	
Wastes Generation and Management		Diminished Aesthetic levels due to improper handling of wastes	
Operation & Maintenance Phase under Project Components 2 and 3	• Agricultural activities, including pesticide use.	 Water pollution due to pesticide use Effect of pesticides on non-target organisms, resulting in disruption of natural ecological balance Increased traffic due to influx of vehicles associated with various project operations activities Possibility of increased outbreak of water borne diseases amongst the workforce and the local population. 	
Decommissioning and closure phase	Mobilization of materials and men to site	Generation of wastes (including hazardous wastes) Disruption of routine traffic in the area	
	Removal of irrigation canals and other ancillary facilities	Air quality impacts (particulates and noxious gases) due to perturbation of soil, as well as emission from heavy duty machinery and equipment to be used for such activities Accidents and health and safety issues	

5.4 Mitigation Options

To avoid or minimize impacts associated with activities to be funded under the Projects, mitigation measures must be implemented as part of the subproject construction and operations to ensure compliance with local and international environmental and social guidelines and standards. A summary of standard associated impacts, as listed above, and appropriate mitigation measures are presented in Table 5.3.

Project Phase	Potential Impact Source	Potential Impact	Mitigation measures
Pre-construction and Construction phase for Components 2 and 3	Land acquisition Mobilization of materials and men to site Site clearing and preparation Excavation, grading, compaction, filling,	 Negative perception and discontent expressions by members of the community. Loss of people's properties and farmlands, resulting in decreased income Hostile and unfriendly community attitudes. Unresolved issues with land acquisition extending into the construction phase. Alteration of normal traffic in the areas due to mobilization of heavy-duty vehicles and machinery Excavation and compaction activities through construction 	 Conduct adequate stakeholder engagement and consultation prior to mobilization Ensure that project is planned to avoid or minimize disruption of properties Provide for adequate compensation, wher4e avoidance is not feasible Plan project transportation activities to minimize interference with routine transport, including focusing project transport for off-peak periods As much as possible, ensure project transportation
	and other civil works.	works could alter the soil properties including loss of valuable topsoil,	tollows existing access. Plan for restoration of compacted areas at the end of project
	Construction of Imgation canals	period, leading to income loss	farmers for economic disturbance and loss of livelihood
	Rehabilitation of Dams	 Contamination of local waterways causing harm to plants, fish and wildlife, and degrading water quality; Increase in cost of treating drinking water and can result in odor and taste problems Complaints from members of the community. 	 Minimize impacts to waterbodies by ensuring that project activities are limited to existing areas, as much as possible Arrange for periodic cropping of dams with fast growing native fish species Provide adequate Grievance Redress Mechanisms (GRM) to handle complaints from communities,
	Noise and Vibration from construction activities	 t in the health of community residents, especially cases of respiratory infection and symptoms. Incidence of ocular disease symptoms. The presence of suspended particulates exceeds acceptable limits. Complaints from members of the community. Nuisance to residents and other sensitive receptors Increased sedimentation and runoff during the construction activities, including dam reconstruction and rehabilitation. Water quality changes result from grading, dredging, and filling of the roads etc. 	 Provide noise attenuation, to minimize noise impacts Provide hearing protection for workers in high noise areas Provide GRM for community complaints Manage runoff from site by providing sedimentation ponds to minimize sediment inflow to waterbodies

Table 5.3: Mitigation Measures for Identified Adverse Impacts

Project Phase	Potential Impact Source	Potential Impact	Mitigation measures
		 Complaints of disturbance from members of the community. Damages of structures overtime due to the vibration caused by heavy machinery. 	 Institute a project level GRM to handle complaints Make provisions for compensation for damages
	Influx of Project Workers	 Complaints of violations from members of the community. Degraded physical and emotional health of those who have experienced it. Acute injuries and chronic pain, Risks associated with Labor Influx such as Increase in potential spread of STIs/STDs, HIV/AIDs due to workers on site, increase in SEA/SH; Potential for forced labor and under-aged children (below 18 years) may be used by contractors as cheap labor; Potential for sexual harassment of female employees for all categories of workers; Increased cases of disease, illnesses (especially waterborne diseases) Odor Alteration of aquatic life Water Quality changes resulting from construction works, seepage of fuel from powered machineries into the watershed, discharge of untreated effluent into water bodies or effluent from workers in the campsites. 	 Institute a project level GRM to handle complaints Provide comprehensive OHS/CHS Management plan, including medical facilities Provide specific GBV/SEAH Management GRM
	Wastes Generation and Management	Diminished Aesthetic levels due to improper handling of wastes	Provide adequate waste management, including hazardous wastes
Operation & Maintenance Phase under Project Components 2 and 3	• Agricultural activities, including pesticide use.	 Water pollution due to pesticide use Effect of pesticides on non-target organisms, resulting in disruption of natural ecological balance Increased traffic due to influx of vehicles associated with various project operations activities Possibility of increased outbreak of water borne diseases amongst the workforce and the local population. 	Provide comprehensive Pest Management Plan Provide for vector control in stagnant waters

Project Phase	Potential Impact Source	Potential Impact	Mitigation measures
Decommissioning and closure phase	Mobilization of materials and men to site Removal of transmission lines, irrigation canals and other ancillary facilities	Generation of wastes (including hazardous wastes) Disruption of routine traffic in the area Disruption of acquired ecological balance due to restoration activities Air quality impacts (particulates and noxious gases) due to perturbation of soil during excavations as well as emission from heavy duty machinery and equipment to be used for such activities Possible accidents and health and safety issues	Provide adequate waste management, including hazardous wastes Plan project transportation activities to minimize interference with routine transport, including focusing project transport for off-peak periods

Social Impact and Management Plan

Beyond the general social impacts presented above, some specific social issues are anticipated, and Table 5.4 below highlights some of these issues and the planned management plans for them. This social impact management plan as outlined below will ensure that the project and its implementing agencies will incorporate lessons learned and the recommendations identified in the report of the Global Gender-Based Violence Task Force Report and in the SEA/SH Good Practice Note in assessing Gender-Based Violence and Sexual Exploitations and Abuse risks and defining mitigation measures.

	Potential Mitigation Measures			
Francisco de Antonio a		SPIU/FP		
Expected Adverse Impact	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
All Disputes	Follow GRM provision	 Establishment and operation of an effective GRM accessible to community members—ideally with involvement of the community and LGA level committee and Community Based Organizations to facilitate early identification of problems and targeted mitigating interventions by SPIU; Establishment and operation of an effective GBV GRM accessible to community members and project contractors—ideally with involvement of the Ministry of Women Affairs, Children and Social Protection to facilitate the discrete Provision of information to communities on how to use the two types of GRM to report issues; Monitoring and taking appropriate actions to ensure CESMP provisions in the ESMP; Inclusion of relevant provisions in the SPMU contract. 	• Supportive	 Inclusion of relevant provisions in the ESMP and Legal Agreement; Provision of advice on expected or likely issues based on Bank experience; Implementation support to verify compliance with the ESMP and CESMP; Monitoring of GRM resolution rates and identification of recurring issues to discuss with FPMU/SIMU.
Land acquisition for the project	Fair compensation for affected structures and crops at current market value	• Ensure consultation with PAPs, obtain permit, transfer title and documentation	Supportive Government to provide adequate fund for the navment of PAP	Ensure compliance

• Table 5.4: Potential Mitigation Measures of Social Impacts

	Potential Mitigation Measures			
Expected Adverse Impact		SPIU/FPMU		
	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
	 Provision of compensation and assistance to vulnerable groups Provision of differentiated treatment for vulnerable people Signing of agreements with local authorities and communities. Ensure the ownership of land is effectively established to mitigate the possibilities of taking land owned by women for public interest without ensuring the affected women are provided with land for land replacement option 		and livelihood restoration	
Risk of social conflict	 Awareness of historical and cultural nature of the project area when dealing with affected communities, Ensure that communication tools portray correct and concise information Provision of information regarding Worker Code of Conduct Provision of cultural sensitization training for workers regarding engagement with local community. Provision of a one paragraph Sexual Exploitation and Abuse and Harassment Policy, as an addendum to the Contractor workers' contract, to be signed as a commitment to adhere to Worker Code of Conduct and GBV prevention with accompanying training. Commitment to prioritizing the hiring of competent locals including women to the maximum extent to avoid inter or intra-community tension with migrant workers 	 Consultations with and involvement of local communities in project planning and implementation processes; Awareness-raising among local community and workers. Ensure the Contractor adheres to Worker's code of conduct and local tradition, 		

	Potential Mitigation Measures			
		SPIU/FPMU		
Expected Adverse Impact	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
Increased risk of illicit behavior and crime (including prostitution, theft and substance abuse)	 Paying adequate salaries for workers to reduce incentive for theft; Hiring of local workforce; Creation of supervised recreation areas in workers' camp as well as temporary rest areas at work sites; Cooperation with local law enforcement; Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities; Provision of substance (drug and alcohol) abuse prevention and management programs for workers involved in the project site Hiring of young women in the project areas to mitigate the risk of prostitution and sexual transactions. pay wage equal to men and women based on equal job performed and merit. 	 Ensure assignment of adequate enforcement staff; Enforcement of laws on drug abuse and traffic; Police monitoring to prevent drugs trafficking; Sensitization campaigns for both workers and local communities. 		
Adverse impacts on community dynamics	 Provision of services in the workers' camp to reduce the need for workers to use local community facilities; Provision of entertainment and events for workers within camp to reduce incentives for mixing with local community (Satellite Television, diner, bar). Restriction of public access to camps and construction areas to be managed by o assigning security personnel to manage access, o fencing of camps, o installation of appropriate signage 	 Liaison with civil society organizations to create integrative action plans; Provision of upfront information on potentially detrimental impacts on local communities. 	 Investment in community participation and engagement programs. 	
Impact on Community Cultural Traditions	Contractor is to ensure the strict implementation of Labor Management Plan including Workers Code of	 Provision of upfront information on potentially detrimental cultural 		

	Potential Mitigation Measures			
		SPIU/FPMU		
Expected Adverse Impact	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
	Conduct to minimize engagement with the locals and to ensure workers are educated on the local traditions and proper interactions. Actions disapproved by the communities or by their traditions must be corrected, improved and proper consultation must be held with the leaders to ensure satisfaction of redress mechanism.	impacts on local communities • Liaise with community-based organizations to create integrative action plans.		
Influx of Additional Population ("Followers")	 Contractor to hire workers through a systematic process managed by the HR office and avoid hiring "at the gate" to discourage spontaneous influx of job seekers and migrant workers. Development of a detailed and site-specific labor influx management plan. Prioritize the hiring of the locals for qualified skilled and unskilled work Train women in variety of skilled and non-skilled jobs such as operating construction equipment, involving them in supervisory jobs, inform communities of all hiring opportunities in construction areas. 	 Communications campaign to manage expectations and discourage spontaneous influx of job seekers; Coordinate with Local government to address this additional influx of the "followers" to ensure that no illegal and unsafe settlements develop; Review and ensure adherence to labor influx management plan. 		
Increased burden on public service Provision	 Workers' camp to include wastewater disposal and septic systems; Identification of authorized water supply source and prohibition of use from other community sources; Identification of separate nonhazardous solid and liquid waste disposal sites Identification of separate service providers for community and workers' camp/construction site: 	Contingency plans for temporary rise in demand for utilities and public service provision.	Investment in and capacity building of local public service providers.	

	Potential Mitigation Measures			
		SPIU/FPMU		
Expected Adverse Impact	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
	 Worker Code of Conduct on water and electricity consumption. 			
Increased communicable diseases (Including STDs and HIV/AIDS)	 Vaccinating workers against common and locally prevalent diseases; In association with the National AIDs Control Program - contract a HIV service provider to be available on-site; Implementation of HIV/AIDS education program; Information campaigns on STDs among the workers and local community in collaboration NACA.SACA, Provision of condoms. 	Upgrade of health centers at camp and construction sites. This should be included in the contractor's contract. The clinic should be approved by MoH; o Free testing facilities; o Provision of condoms; o Monitoring of local population health data, for transmissible diseases.	 Awareness raising about public health impacts from labor influx. 	
Gender-based violence, including sexual harassment, child abuse and exploitation	 All workers will be required to sign Codes of Conduct that prohibit Sexual Abuse and Exploitation and Sexual Harassment; Mandatory and regular training for workers on SEA/SH, required lawful conduct in the project site and legal consequences for failure to comply with SEA/SH laws and policies in accordance with the Codes of Conduct; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence; Creation of partnership with local offices of the Ministry of Women Affairs, Children and Social Protection, NGOs and community women groups to report workers' misconduct and complaints/reports on gender-based violence or harassment through the GBV GRM; Provision of opportunities for workers to regularly return to their families; 	 Capacity building for the FPMU/SPMU to act on GBV complaints (local law enforcement is to be involved only if the survivors permit); Information and awareness raising campaigns for community members, specifically women and girls; Sensitization of men and boys in the community SEA/SH issues. Provision of information to the project site about the contractor's policies and Worker Code of Conduct (where applicable). Risk assessment including focus group and in-depth interviews with women and girls in the community to better understand types of GBV prevalent, help seeking behavior, appropriate GRM reporting channels etc. Regular consultations with women and girls 	 Increased security presence in nearby communities; Reinforcement of police force where needed; Deployment of female police officers with GBV awareness in project area; Application of long-term community-based approaches to address the issue; Enforcement of laws on sexual violence and human trafficking. 	 Provide data collection tools, shared database and training for the organization conducting the service provider mapping Provide support and review for the ESMP, GBV Action Plan, Codes of Conduct and other relevant documents

	Potential Mitigation Measures			
Expected Adverse Impact		SPIU/FPMU		
	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
	 Provision of opportunities for workers to take advantage of entertainment opportunities away from rural host communities. Commitment to providing alternative work schedules or shifts to accommodate the hiring of more local female workers. This ensures they can carry out their domestic duties and avoid potential domestic abuse for reasons justified in the ESIA. Provide signage on the project site that prohibits GBV, and posted Codes of Conduct Separate toilet facilities in separate areas for men and women and other worksite mitigation measures 	 in the community throughout the project Mapping and quality assessment of GBV service providers in the project area to ensure that survivors have access to quality care (medical, psychosocial, legal, security, shelter, livelihood) GBV GRM with operators trained in a survivor-centered approach and the Accountability and Response Framework 		
Child labor and school drop out	 Ensuring that children and minors are not employed directly or indirectly on the project. 	 Communication on hiring criteria, minimum age, and applicable laws. 	 Enforcement of legislation on child labor. 	
Local inflation of prices and crowding out of local consumers	Appropriate mix of locally and nonlocally procured goods to allow local project benefits while reducing risk of crowding out of and price hikes for local consumers.		 Monitoring of local prices and security of supply. 	
Increased pressure on accommodation and rents	When the local community supply of accommodation is limited, the project should establish workers' camp facilities with sufficient capacity for workers— including sub-contractors—and associated support staff.	Inclusion in contract of funding for establishment of workers' camp.		
Increased traffic and rise in accidents	 Preparation and implementation of a traffic management plan to be approved by monitoring/ supervision consultant; Building additional/separate roads to project and workers' 	 Coordinate with local government, contractor, and communities to identify accident hotspots and formulation of solutions. 	 Upgrading and Maintaining roads affected by project (unless designated as contractor responsibility) 	

	Potential Mitigation Measures			
Expected Adverse Impact		SPIU/FPMU		
	Contractor	Project-specific – With World Bank Support of the Monitoring/ Supervision Consultant	Broader Enabling Environment	World Bank
Risk of marginalizing Vulnerable Groups	camp sites, where necessary; • Organization of commute from camp to project to reduce traffic; • Road safety training and defensive driving training for staff; • Sanctions for reckless driving. • To mitigate impact associated with age vulnerably, the SPMU when conducting the assessment under Safeguards policies/ESMF shall identify disadvantaged or vulnerable individuals or groups that will be directly or indirectly affected in the project area, and a process whereby differentiated measures will be developed to address circumstances or needs of such individuals			

A set of monitoring indicators will be used to verify compliance with local and international standards and to identify correction actions for subprojects failing to meet these standards. These indicators will be applied when undertaking annual monitoring reports.

To cope with these adverse impacts, the environmental and social screening process proposed in the ESMF will be done to ensure that potential negative impacts are comprehensively identified and mitigated appropriately. It is recommended that Environmental Guidelines for Contractors are used to ensure that the construction and rehabilitation activities are carried out in compliance with the mitigation measures proposed in the ESMF. These guidelines can be written into contractual agreements and form the basis for monitoring compliance. Bidders for various project components will be required to prepare and submit, as part of their bids, Management Strategies, and Implementation Plans (MSIPs) for Environmental, Social, Health and Safety (ESHS) Management. In addition, selected contractors will be required to prepare and get approved, prior to project commencement a Contractor Environmental and Social Management Plan (C-ESMP), which will clearly iterate and espouse plans to manage environmental and social issues that may arise during project implementation.

5.4.1 Labor Influx

The project may face an influx of non-local labor and working conditions issues as skilled laborers might not be available in some of the project sites. The project will take concrete measures to mitigate potential labor influx-related risks such as workers' sexual relations with minors and resulting pregnancies, presence of sex workers in the community, the spread of HIV/AIDS, forced marriage, human trafficking, sexual harassment of female employees and community members, sexual abuse and exploitation, child labor and abuse, increased dropout rates from school, inadequate resettlement practices, and fear of retaliation, failure to ensure community participation, poor labor practice, and lack of road safety.

These risks require careful consideration to improve social and environmental sustainability, resilience and social cohesion. Therefore, the project will include mitigation measures such as:

(a) assessing living conditions of workers' camps and ensuring appropriate living conditions;

(b) establishing and enforcing a mandatory Code of Conduct for the company, managers and workers, and a Gender-Based Violence Action Plan for implementation;

(c) ensuring appropriate location for these camps;

(d) taking countermeasures - indicated in the Social Management Plan - to reduce the impact of the labor influx on the public services; and,

(e) devising and implementing a strategy for maximizing employment opportunities for local population, including women.

The following guidelines lay out the principles that are key to properly assessing and managing the risks of adverse impacts on project area communities that may result from temporary SPIN induced labor influx.

- i) The SPIU will have to hire, to the maximum extent, skilled and unskilled workers from affected communities in the project area. The SPMU will adopt or implement all possible measures to avoid, if not minimize labor influx into the project area.
- ii) The SPIU will assess and manage labor influx risk based on appropriate instruments such as those based on risks identified in the E&S assessment and the Bank's sector-specific experience in the country.
- Depending on the risk factors and their level, appropriate mitigation instruments need to be developed including the ESMP, Site-specific Labor Influx Management Plan and/or a Workers' Camp Management Plan,
- iv) Risk factors to the SPIU that should be considered, include,
 - weak institutional capacity of the implementing agency;
 - predominant presence of contractors without strong worker management and health and safety policies;
 - anticipated high volumes of labor influx;
 - pre-existing social conflicts or tensions;
 - weak local law enforcement;
 - prevalence of gender-based violence and social norms towards it in the community (acceptance of gender-based violence);
 - prevalence of transactional sex;
 - local prevalence of child and forced labor;

- existing conflict situation between communities;
- absorption capacity of workers to the community (See <u>http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-fr</u> <u>om-project-labor-influx.pdf</u>)
- v) The SPMU will be required to incorporate social and environmental mitigation measures into the civil works contract and responsibilities for managing these adverse impacts. This will be a binding contractual obligation on the SPMU, with appropriate mechanisms for addressing non-compliance

The Supervision Consultant or Focal NGO shall be responsible for monitoring the contractor performance and adherence to the labor influx guideline and that of its Sexual Exploitation and Abuse (SEA) prevention and response obligations, including a protocol in place for immediate, timely, mandatory, and confidential reporting in case of incidents to project community. This allows the SPMU to enforce the implementation of such mitigation measures, which are required to ensure the consultant's own compliance with Bank policy requirements. While the Bank reviews and clears project-level safeguard instruments such as the ESIA/ESMP, it is the SPMU's responsibility to: (i) ensure the safeguard instruments are reflected in the contractor's ESMP (CESMP), and (ii) ensure the project is implemented in accordance with the CESMP, safeguard instruments and other relevant contractual provisions.

5.4.2 Gender Based Violence, Sexual Exploitation & Abuse, and Sexual Harassment

Nigeria has ratified or acceded to the core international human rights treaties and is a party to the major regional human rights instrument which obliged States to respect, protect and fulfill human rights of all persons within the territory and subject to the authority of the State, without discrimination. Rape may violate several human rights obligations enshrined in the instruments ratified by Nigeria and is also a form of gender-based violence and a brutal manifestation of violence against women. As a State party to the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa (the "Maputo Protocol"), Nigeria has made legally binding commitments to exercise due diligence to combat gender-based violence and discrimination.

Accordingly, Nigeria has an obligation to take all appropriate measures to prevent rape, ensure that there are adequate sanctions for rape in law and in practice, and ensure access to reparation for the victims. Furthermore, several human rights instruments require Nigeria to take extraordinary measures to protect the rights of individuals who are vulnerable to sexual violence, namely women, children, and persons with disabilities.

The United Nations Special Rapporteur on violence against women has provided guidance on States' due diligence obligations in combating sexual violence, noting that it must be implemented at both individual and systemic levels. Individual due diligence focuses on the needs of individual survivors and "places an obligation on the State to assist victims in rebuilding their lives and moving forward," for instance through the provision of psychosocial services. Individual due diligence "requires States to punish not just the perpetrators, but also those who fail in their duty to respond to the violation." As for systemic due diligence, it includes ensuring "a holistic and sustained model of prevention, protection, punishment, and reparations for acts of violence against women.
International Treaties

- The International Covenant on Civil and Political Rights (ICCPR) (2004)
- The International Covenant on Economic, Social and Cultural Rights (ICESCR) (2004)
- The Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) (1993)
- The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1984)
- The Convention on the Rights of the Child (CRC) (1990), and the Convention on the Rights of Persons with Disabilities (CRPD) (2012)
- International Convention on the Elimination of All Forms of Racial Discrimination (1976)

Regional Treaties

- The African Charter on Human and Peoples' Rights (ACHPR) (1982)
- The African Charter on the Rights and Welfare of the Child (ACRWC) (2007)
- The Protocol to the ACHPR on the Rights of Women in Africa (the "Maputo Protocol") (2007)

National polices

- The National Action Plan for the Implementation of United Nations Security Council Resolution 1325 (2009);
- The National Gender Policy (2010)

Nigeria is among the 10 percent of countries worldwide that exhibit the highest levels of gender discrimination according to the OECD's Social Institutions and Gender Index (see the Figure 5.1), with an assessment of "high" or "very high" in all of the evaluated categories (discriminatory family code, restricted physical integrity, son bias, restricted resources and assets, restricted civil liberties). It also falls into the group of countries with highest gender inequality in human development outcomes (UNDP 2016).

The indicator is defined as the ratio of the gross enrollment rate of girls to boys in primary and secondary education levels in both public and private schools. Women have an enormous impact on the well-being of their families and societies, but their potential is sometimes not realized because of discriminatory social norms, incentives, and legal institutions. Although their status has improved in recent decades, gender inequalities persist. Education is one of the most important aspects of human development, and eliminating gender disparity at all levels of education would help to increase the status and capabilities of women. This indicator provides a measure of equality of educational opportunity and relates to the third MDG that seeks to promote gender equality and the empowerment of women.



Figure 5.1 Nigeria Degree of Gender Inequality according to the Social Institutions and Gender Index

Gender-Based Violence (GBV) remains pervasive and underreported in the country, constraining women's autonomy, and life chances. The 2013 Demographic Health Survey (DHS) indicates that nationally 38 percent of women between the ages of 15-49 have experienced some form of physical or sexual violence from the age of 15, and 11 percent experienced physical violence within the 12 months prior to the survey. 45 percent of women who experienced violence never sought help or never told anyone about the violence. Besides interpersonal and sexual violence, child marriage and Female Genital Mutilation are the other culturally harmful practices prevalent across Nigeria. Conflict in the Northeast has further contributed to a steep rise in targeted violence against women and children by Boko Haram increasingly for abduction and violence. Women are increasingly being used as instruments of war, making them vulnerable to stigmatization and rejection from their families and communities.

5.4.3 GBV Risk Management Mechanisms

A GBV workshop shall be conducted during the project preparation to sensitize the SPMU staff on the key principles and specific requirements to address GBV/SEA/SH. As such specific measures to reduce and mitigate the risk of GBV/SEA/SH in the project are identified to include:

- i) GBV/SEA/SH assessment of project;
- ii) Mapping and quality assessment of GBV service providers (medical, psychosocial, legal, security, shelter and livelihood) to create referral pathways for immediate quality care for survivors
- iii) Mandatory contractors' code of conduct on GBV/SEA/SH;
- iv) Appointment of NGO for the implementation of mapping, sensitization and GRM of GBV/SEA/SH in SPIN;
- v) Appointment of a GBV Specialist/Consultant to monitor GBV/SEA/SH in SPIN
- vi) Community and workers' sensitization on GBV/SEA/SH;
- vii) Provision of referral units for survivors of GBV/SEA/SH;

- viii)Provisions in contracts for dedicated payments to contractors for GBV/SEA/SH prevention activities against evidence of completion;
- ix) GBV GRM with reporting channels and operators trained in a survivor-centered response and the Accountability and Response Framework
- x) Contractor and SPMU requirement to ensure a minimum target of female employment with incremental rewards of the obtainment of this target.

The following actions are recommended for immediate implementation:

- Hiring a dedicated GBV/SEA specialist or retraining SLOs for the project,
- Including in the focal NGO's ToR services for managing social risks associated with GBV/SEA in the project,
- Building and improving FPMU/SPMUs, local communities and other relevant stakeholders' capacities to address risks of GBV/SEA by developing and providing guidance, training, awareness, and dissemination of relevant GBV/SEA materials to communities,
- Developing a clear SPIN GBV Action Plan including a Reporting and Response Protocol,
- guide relevant stakeholders in case of GBV/SEA incidents,
- Strengthening operational processes of SPIN states project area on GBV/SEA,
- Identifying development partners and cultivating pragmatic partnership on GBV/SEA prevention measures and referral services,
- Developing Codes of Conduct for civil works contractors with prohibitions against GBV/SEA/SH,
- Consultations with women and girls on safe and appropriate reporting channels for the GRM
- Operationalizing GBV/SEA specific grievance redress mechanisms,
- Providing financial support implementation of the GBV/SEA actions described herein, including training and awareness building for various stakeholders,
- Establishing inter-ministerial committee to advance GBV/SEA actions described above.

Overall, GBV risks in the project target areas might include Intimate Partner Violence (IPV), public harassment including harassment, verbal insults, physical abuse, rape, harmful widowhood practices and women and child trafficking. Targeted support to women under the program could likely exacerbate these risks. Development and implementation of specific GBV risk prevention and mitigation strategies, tailored to local contexts, will be critical. Guidelines for situation analysis of GBV and safe reporting guidelines will be implemented in line with international best practices. Further, all risks related to labor influx will have to be mitigated by participation of project beneficiaries/communities, and involvement of project contractors and contractors' workers and consultant employees, in identifying mitigation and implementing measures, including developing mitigation instruments such as "Labor Influx Management Plan" and "Workers Camp Site Management Plan".

6.0 INSTITUTIONAL ASSESSMENT AND FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

6.1 Selection Criteria for SPIN States

SPIN is structured around a phased implementation approach. Participating states are under specific River Basin Development Authorities (RBDAs) and will be initially supported with technical assistance activities for enhancing critical capacity and skills needed to develop integrated site designs to the highest international quality standards. To participate in the project, sites will need to achieve specific readiness factors including approved engineering designs for all civil works within priority catchments. Excluding direct financial obligations, the specific criteria (relating to this ESMF) for participation in SPIN include:

- Security/Conflict Situational provisions;
- State Commitment to Banks Fiduciary and ESF requirements;
- Formation of Interim multi-sectoral SPIU);
- Provision of office space for the SPIU;
- Commitment to finance involuntary resettlements (as necessary) as counterpart contribution to the project

6.2 Implementing the ESMF

Implementation of the ESMF involves a process that identifies and assesses the potential concerns and implications that may arise with the project implementation, to influence the design and other engineering feasibility options and decisions, for informed and sustainable project development.

Key stages of the ESMF include subproject identification, screening, approval of screening decisions, preparation of E&S instruments, review and approval of instruments, monitoring and enforcement of implementation of ESMPs/standards/etc., monitoring and reporting on implementation of the ESMF, and modification of the ESMF as required based on experiences.

6.3 ESMF Implementation Budget

The total estimated budget for implementing the ESMF is given below.

S/N	ESMF activity	Cost \$ (USD)
1	Trainings	1,800.000.00 ¹²
2	ESIA/ESMP (including production of safeguard manuals)	3,000.000.00 ¹³
3	Monitoring	1,800,000.0014
4	Total	6,600,000.00

Table 6.1: Total estimated budget for implementing the ESMF

This budget was prepared based a consideration for a number of activities, which are described below:

1. Trainings:

Trainings will have to be held to familiarize the various SPIUs and FPMU with E&S requirements, and build their capacity, as may be necessary. These trainings will be held prior

¹² This figure is based on an assumption that trainings will be held in each geo-political region an this will cost US\$300,000 per geopolitical zone

¹³ A similar basis as 2 above is applied, with an estimate of US\$500,000 per zone

¹⁴ Monitoring will be annually and a sum of US\$250,000 is allocated per annum, for a 6 year period

to commencement of project construction activities, so that project contractors, managers and supervisors will be fully apprised of E&S requirements and can apply them, as project implementation progresses. For ease of administration, these trainings will be held in each of the country's 6 geopolitical zones, since the project is planned to have national coverage.

It is estimated that US\$300,000.00 (Three hundred thousand United States Dollars only) will be required for training in each geopolitical zone, and the costs will include rental of training venue, production of training materials, logistics (travels, etc), and honorarium for resource persons who will deliver the trainings.

In all, the cost of raining for the 6 geopolitical zones will add up to US\$1,800,000.00 (One million, eight hundred thousand United States Dollars only).

2. Preparation and Production of ESIAs/ESMPs for the Projects

It is expected that ESIAs/ESMPs will be prepared for each project site. At this level, details of the number and distribution of sites are not clear yet. Therefore, for the purpose of this document, certain assumptions have been made, including the fact that each each geopolitical zone will have a maximum of five (5) sites, and preparation of these documents will cost an estimated US\$100,000.00 (One hundred thousand United States Dollars only) per site, this adding up to US\$500,000 per zone. These costs will cover consultancy services for preparation of the ESIA/ESMP as well as supporting documents such as Waste Management Plans, Biodiversity Management Plans, etc., along with project administration and in-country disclosure.

The total costs will therefore add up to US\$3,000,000.00 (Three million United States Dollars only).

3. Monitoring Costs

Monitoring will cover the entire project life, starting from pre-construction to operations and will be expected to occur a least half yearly. Again, although project details are not available to the extent of allowing granular costing, estimates have been made based on geopolitical zones. It is estimated that monitoring costs (including third party monitoring) will amount to US\$50,000/zone/per year. This translates into US\$300,000 nationally, per year. Assuming a 6-year period for the project, and believing that monitoring will be annually during this period, the total costs for monitoring will come to US\$1,800,000.00 (One million, eight hundred thousand United States Dollars only), over the 6 year period

Total cost of ESMF Implementation will therefore come to US\$6,600,000.00 (Six million, six hundred thousand United States Dollars only) over the 6 year period.

6.4 Implementation of SPIN

The successful implementation of the SPIN Project depends on the commitment of the sector and related institutions, and the capacity within the institutions to apply or use the ESMF effectively, and the appropriate and functional institutional arrangements, among others. This section addresses the key SPIN areas relevant to its successful implementation:

- Implementing the ESMF activities;
- Institutional arrangements;
- Capacity building;

- Grievance Redress Mechanism;
- Monitoring and Evaluation
- Environment and Social Audit;
- Health Impact Assessment
- Disclosure of the Safeguard Policies

6.4.1 SPIN Institutional Arrangements

Project implementation would follow based on the TRIMING model, with a National PMU and project level PIUs, which will either be state based or based on RBDA covering specific sites. The institutional arrangement of SPIN will be led by a National Steering Committee that will be chaired by the Honorable Minister of Finance while the Honorable Minister of Agriculture shall serve as co-chair. Other members shall include the Honorable Minister of Water Resources and the Honorable Minister of Environment and Heads of relevant Agencies and Departments.

The National Steering Committee shall ensure inter-ministerial coordination and policy direction and engagement of the various sites. Since activity implementation will be site-specific, the FPMU will provide supervision and technical support to specific sites as needed. Project steering committees, similar to that at the Federal level will be established at each site, and backed up with a site-specific Project Management Unit, which will be staffed with a broad range of expertise, supplemented by secondments from the relevant MDAs. Details of the institutional arrangements of SPIN will be fleshed out in coordination with FGN during project preparation.

The SPIN will be implemented and monitored by the Technical/Steering Committee (Board) made up of relevant stakeholders from relevant institutions with the SPIUs managing everyday affairs of the subprojects in each State. The individual implementing agencies will constitute their PIUs and their responsibilities include:

- Coordination of the SPIN programmes and actions in the various Sites;
- Plan, coordinate, manage and develop the various subproject activities
- Prepare plans for SPIN management and development.

The SPIU shall liaise with the various levels of government and other identified stakeholders, namely the FPMU, relevant Federal MDAs, State MDAS, Local Government Council Offices, the communities, NGOs/CBOs, Traditional Rulers; Trade Unions/Local social and professional groups e.g., farmers, Water Users Associations, fishery groups, market women, road transport workers and the general public.

6.4.2 Capacity Building for SPIN

There will be a need for technical capacity in the human resource base of the ESMF implementing institutions. This will ensure effective implementation of the ESMF, logistical facilitation and enable the implementing institutions to identify and understand the social and environmental issues associated with the SPIN Projects. Appropriate understanding of the support mechanisms for implementing the ESMF must be provided to various stakeholders implementing SPIN, including the FPMU and SPIUs.

To enhance the respective roles and collaboration of the relevant stakeholders, the following broad areas (not limited to) for capacity building have been identified as deserving of attention for effective implementation of the ESMF:

- i) Project Management
- ii) Dam safety
- iii) Emergency Preparedness
- iv) Flood control
- v) Early warning systems
- vi) Morden Agriculture Processes
- vii) Power sector
- viii) Environmental Impact Assessment (EIA);
- ix) Occupational Health and Safety
- x) Environmental Management Planning;
- xi) Monitoring and Environmental Audit;
- xii) Annual Environmental Report preparation and other reporting requirements;
- xiii) Public participation techniques Public Hearing Procedure;
- xiv) Public awareness creation / educational techniques (on environmental, social and health issues).
- xv) Grievance Management
- xvi) Gender-Based Violence
- xvii) Stakeholder Engagement

Capacity building efforts are needed at three different levels to enable taking specific responsibilities in the promotion of desertification, erosion control and watershed management programs at Federal, state and local levels. There is need to ensure that all authorities, institutions and organizations involved integrate their activities within appropriate coordinating mechanisms to give consistent signals for the management of desertification, erosion and watershed.

Capacity Building at Federal Level

At the federal level, capacity building needs to be built upon the already existing ministerial institutions and the successful WB-supported programs such as the NEWMAP, ACRESAL and TRIMING. They are primarily concerned with development and promotion of institutions and organizations that deal with policymaking and legislation. The existing FPMU for the TRIMING Project is envisaged to evolve into the SPIN FPMU with support from specialized experts from the Ministry of Power.

Capacity Building at Site Level

Capacity building at the SPIN site level will provide the link for the two-way feedback process between federal and local level activities. The state level will require more detailed integrated planning and management capacity building for proper and effective implementation at the level. The following capacity enhancement programs may be considered:

<u>Motivation stage</u>: Using mass education techniques to create awareness of the SPIN to the people in their various communities and to promote participation in the program.

<u>Technical assistance stage</u>: Training in actual planning, design, layout and physical or biological engineering interventions.

<u>Follow-up stage</u>: assistance to selected target groups by the extension agency in obtaining loans for farming inputs and in marketing their produce; and by the responsible government institutions in the maintenance of conservation structures and practices.

Capacity Building at Local Level

The actual development and implementation of SPIN subprojects will take place at the local level. A necessary precondition for sustainable adoption of solutions is that the changes must be profitable and provide tangible benefits to the communities and land users. Mechanisms need to be developed to influence the behaviour of community members in such a way as to motivate them to adopt the desired measures.

Capacity development for community facilitators, GRC and field-level staff will be implemented because they are the organs that will reach out to the communities, and it becomes necessary for these staff and representatives to be well grounded with adequate information on the subproject. They will be able to communicate effectively in the local languages, understanding community dynamics and processes, negotiation and conflict resolution, and empathizing with communities and their needs. Building trust and maintaining good rapport with the people in the Project areas by providing relevant information on the project and responding effectively to their needs and concerns will help solve issues before they even become grievances. It is also important that the community facilitators, GRC and field-level staff provide feedback to the SPMU.

The Tables 7.2 and 7.3 below highlight specific areas for effective institutional capacity needs. Training programs are scheduled for Environmental and Social Accountability, Health Impact Assessment (HIA), and Occupational health and safety management plan (OHSMP)

E&S Staffing Requirements at Federal and State Levels

With respect to the technical expertise required in developing and implementing the SPIN E&S safeguards measures, the TRIMING FPMU will be reinforced by a pool of consultancies at the highest standards available: (i) environmental experts' advisory consultancy, and (ii) a social and livelihood experts' advisory consultancy. The role of the pool of consultants shall be to collect, analyze and disseminate lessons coming out of the different sites during implementation, including the reviews of the E&S safeguards instruments prepared for the various state subprojects.

Under TRIMING, the E&S Safeguards Unit of the FPMU currently consists of the following safeguards officers:

- 1) Environmental Safeguards Officer (ESO);
- 2) Social Development Officer (SDO);
- 3) Gender Officer

		ning i rogramo			untubility)	
Training Required	Who to train	When	Training to be conducted by who	Institutional Responsibilit y to organize training	Training type	Training Costs USD (\$)
WB E&S Awareness	FPMU, SPIU FMENV, project affiliated MDAs	During project preparatory stage	World Bank	World Bank	All relevant cadre	Not inclusive in costs
WB Social accountability system	FPMU, SPIU FMENV, project affiliated MDAs	During project preparatory stage	World Bank	World Bank	All relevant cadre	Not inclusive in costs
Nigerian Environmental Guidelines	FPMU, SPIU FMENV, project affiliated MDAs	During project preparatory stage	EIA Consultant	FMENV/FPMU (Federal),	All relevant cadre	100,000
Project Screening and Scoping	FPMU, SPIU FMENV, project affiliated MDAs	During project preparatory stage	ESIA Consultant	FMENV/FPMU (Federal),	Training of Trainers	PMUs Operational costs
Preparation of EA and EMP Term of Reference/Impl ementation	FPMU, SPIU FMENV, project affiliated MDAs	During project preparatory stage	ESIA Consultant	FMENV/FPMU (Federal),	Training of Trainers	PMUs Operational costs
Preparation and administration of questionnaires and stakeholders consultation/FD G	FPMU, SPIU, FMENV, project affiliated MDAs	During project preparatory stage	ESIA Consultant	FMENV/FPMU (Federal),	Training of Trainers	PMUs Operational costs
GBV/SEA/SH awareness, monitoring and reporting	FPMU, SPIU, Project community women and girls; Project community men and boys	During project Preparatory and implementati on stage	Women Consultants	FPMU, SPIU	Training of Trainers	PMUs Operational costs
Project Management (scope, implementation, time, budget, costs, resource, quality, procurement, monitoring and evaluation)	FPMU, SPIU, FMENV, project affiliated MDAs	During project Preparatory and implementati on stage	Project Management Consultant	FMENV/FPMU (Federal),	Training of Trainers	PMUs Operational costs

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Training Required	Who to train	When	Training to be conducted by who	Institutional Responsibilit y to organize training	Training type	Training Costs USD (\$)
Environmental and Social Audits	FPMU, SPIU, FMENV, project affiliated MDAs	During project preparatory stage	ESIA Consultant	FMENV/FPMU (Federal),	Training of Trainers	900,000.00
GPS/GIS Interpretation	FPMU, SPIU, FMENV, project affiliated MDAs	During project Preparatory and implementati on stage	ESIA Consultant	FMENV/FPMU	Training of	50,000
Geo-morpholog y and climate change	FPMU, SPIU, FMENV, project affiliated MDAs	During project Preparatory and implementati on stage	ESIA Consultant	(Federal),	Trainers	
Grievance redress	FPMU, SPIU, FMENV, project affiliated MDAs	During project Preparatory and implementati on stage	ESIA Consultant	FMENV/FPMU	Training of Trainers	150,000.00
Logistic and planning	FPMU, SPIU, FMENV, project affiliated MDAs	During project Preparatory and implementati on stage	Project Management Consultant	FMENV/FPMU	Training of Trainers	
Total			1			1,200,000.00

Table 6.3 Training Programs [Occupational Health and Safety Management Plan (OHSMP)]

Training Required	Who to train	When	Training to be conducte d by who	Institutional Responsibilit y to organize training	Trainin g type	Training Costs USD (\$)
Occupational Health and Safety Leadership Management	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors, Project affected Community representative s	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	50,000

Training Required	Who to train	When	Training to be conducte d by who	Institutional Responsibilit y to organize training	Trainin g type	Training Costs USD (\$)
Safety performance assessment	FPMU, SPIU ,FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	180,000
Hazard Analysis and Control	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	HIA Consultant	FMENV/FPMU	Training of Trainers	120,000
Hazard Communicatio n Program	FPMU, SPIU, FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	HIA Consultant	FMENV/FPMU	Training of Trainers	50,000
Effective Accident Investigation	FPMU, SPIU, FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	30,000
Conducting Health and Safety Audits	FPMU, SPIU, FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	25,000
Job Hazard Analysis	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	15,000
Occupational Health Risk Assessment	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	15,000
Work Stress Risk Assessment	FPMU, SPIU, , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	15,000
Electrical safety	FPMU, SPIU, FMENV,	During project	OHS Consultant	FMENV/FPMU	Training of	15,000

Training Required	Who to train	When	Training to be conducte d by who	Institutional Responsibilit y to organize training	Trainin g type	Training Costs USD (\$)
	project affiliated MDAs, Contractors	Preparatory and implementation stage			Trainers	
Fire Safety	FPMU, SPIU, FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	15,000
Fall protection Plan	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	20,000
Fleet Safety Management	FPMU, SPIU , FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	10,000
Disaster Management and Emergency Planning	FPMU, SPIU, FMENV, project affiliated MDAs, Contractors	During project Preparatory and implementation stage	OHS Consultant	FMENV/FPMU	Training of Trainers	10,000
Total						600,000.00

Note: Trainings will be conducted by Local Consultants

6.4.3 Grievance Redress Mechanism (GRM)

For each subproject, the SPMU will establish a grievance redress mechanism (GRM) that will allow the public in the subproject area, affected subproject communities or individuals, and PAPs to file complaints and to receive responses in a timely manner. A separate GBV GRM shall also be established to address issues relating to GBV/SEA/SH and any victims. The GRM system will record and consolidate complaints and their follow-up.

Further details on the GRM for this project is presented in Section 8.

6.4.4 Environmental and Social Management Plans (ESMPs)

ESMPs will be very important aspects and useful implementation tools for the management and mitigation of identified environmental and social impacts under the SPIN. The construction activities for SPIN subprojects shall be required to meet the specific E&S obligations which will be provided in the ESMPs and incorporated into the contract specifications for the project. Work programmes shall be developed for fieldwork to guide and explain how the mitigation measures recommended in the ESMPs are to be implemented during the subproject project execution. This shall be in addition to other contractual provisions for the subprojects.

A generic subproject related to ESMP is provided below.

Table 6.3: Environmental	and Social Management	Plan Framework for SPIN	(Generic)
			/

Activity	Threat or Impact	Mitigation	Responsibility	Costs (USD)	Performance Indicator
Pre-constru ction phase	Social Impacts • Community resources e.g. Land • Community perception Damage to natural and planted vegetation GBV/SEA/SH Corona virus pandemic	Prepare RAP. Assessment of all possible social impacts and threats with respect to the SPIN as a basis for defining social protection, putting in place measures and procedures for enforcing social protection and social accountability, and setting up monitoring mechanisms to ensure adherence to measures proffered.Establishmentof Grievance-address systems and Indigenous PeoplesPrepare ESMP. Baseline elemental Studies (water, air, soil quality).Conduct Health Management Plan (HMP).	FPMU SPIUs World Bank Task Team Independent Consultant FPMU SPIUs Independent Consultant FPMU SPIUS Independent Consultant	310,000	Have studies been carried out and plans prepared? Have environmental and social monitoring mechanisms been established? Have Grievance Address Mechanisms been established? Is there effective feedback from project affected persons? Have environmental, social, health and broader impacts been identified and mitigation measures designed. Has HIA been conducted, and impacts identified (health, social, environmental)
Constructio n phase	Physical Impacts • Land degradation & Subsidence • Geomorpholog y & Hydrology • Topography • Land use etc. Waste generation; Air, dust and noise pollution	Integration of community driven interventions (legal, scientific and social) for achieving community participation and acceptance of project objectives amongst project affected persons. Good practice in the utilization of physical and biological engineering techniques for erosion sites rehabilitation and management, including dam safety measures. Impacts Identification and ESMP implementation.	World Bank Task Team SPIUs FPMU SPIUs CONTRACTOR SPIUs FPMU SPIUs	160,000 1,000,00 0 500,000 4,000,00 0	Is there community driven approach inuse/ how are community reaction Have standard operating procedures for best environmental practices been established? Does the contractor have a HAZCOM program?

Activity	Threat or Impact	Mitigation	Responsibility	Costs (USD)	Performance Indicator
	Water pollution; Erosion and Sedimentatio n	Institute a Noise Hazard Communication Program (HAZCOM) for workers and project affected communities, Continued/sustainable afforestation program.	SPIUs CONTRACTOR/ INDEPENDENT CONSULTANT	80,000	Are there Material Safety Data Sheets (MSDS) Is a sustainable afforestation program in progress?
	GBV/SEA/SH Corona virus pandemic	Establishment of safe work procedures for operations and activities Disaster/Emergency planning framework.	SPIUs CONTRACTOR/IN DEPENDENT CONSULTANT	50,000	Does the contractor have a safe-works procedure? Is there an emergency planning framework?
	Biological Impact • Flora and Fauna • Wildlife	Pre-construction site surveys; Vegetation and biomass management plan;	SPIUs INDEPENDENT CONSULTANT	50,000	ESMP Reports, Feasibility Study Reports
	Socio-econom ic Impacts • Transportation & Traffic impact • Accidents • Migration • Community Perception- Employment • Human Displacement • Archaeological & Cultural loss • Social stress & disruption	Institute traffic management plan. Reduce road congestion in project areas and access routes. Trainings to enable community motorists to be responsive to changes as per civil works. Institute a Resettlement Action Plan (RAP), Mechanism for the preservation of cultural heritage and Indigenous Peoples Planning Framework (IPPF).	SPIUs INDEPENDENT CONSULTANT World Bank Task Team FPMU	20,000 50,000 500,000	Has a traffic management plan been made? Are government related agencies (Federal Road Safety Corps and Department of Road Transport Services) part of implementation of the traffic management plan?

Activity	Threat or Impact	Mitigation	Responsibility	Costs (USD)	Performance Indicator
	Public Health Impacts • HIV/AIDS and STDs • Water-Borne Diseases (e.g. Cholera, Dysentery, Amoebiasis, Salmonellosis etc.) • Malaria • Occupational Health & Safety -PPEs	Conduct trainings on Occupational diseases and awareness campaigns on Sexually Transmitted Infections and other infectious Diseases. Conduct health screening Conduct Occupational Health Risk Assessment for contractors, personnel and project affected communities (broader effects/health impacts of project activities on	World Bank Task Team FPMU SPIUS INDEPENDENT CONSULTANT SPIUS INDEPENDENT	50,000 50,000 500,000	Have health disease trainings been conducted? Have subsequent health screenings been conducted in project affected communities? Has an Occupational Health Risk Assessment Been Conducted?
		communities is a very important issue)	CONSULTANT		
Operation & Maintenance Phase	Physical Impact • Land Degradation & Agriculture • Air Quality • Noise and Vibration • Water Quality • Morbidity and mortalities • Disasters	Monitoring and Evaluation/Verification processes. Implementation of ESMP Disaster and Emergency planning framework.	FPMU SPIUs	TBD	Are environmental and social monitoring mechanisms being implemented? ESMP document Is disaster and emergency planning proactive? Has training on disaster management been conducted?
	Social Impact • Traffic and Transportation GBV/SEA/SH Community common (recreational) areas	Monitoringandevaluation/verificationprocesses.Implementation of ESMPDisasterand Emergencyplanning framework.	FPMU SPIUs	100,000	Is the traffic management plan being implemented? Who is responsible and why? Is the ESMP being implemented? Success in mitigation measures. Is disaster management inplace. No of GBV/SEA/SH victims; No of land slides No casualties. Complaints from communities

Table 6.4 Monitoring & Evaluation Framework for the ESMF

S/ N	Phase Being Monitored	Institution Responsible	Performance Indicator	Period to be conducted	Costs (US\$)
1	Pre-construc tion phase)	FPMU SPIUs World Bank Task Team Independent Consultant	Have environmental and social accountability trainings been conducted Have studies been carried out and plans prepared? Have environmental and social monitoring mechanisms been established? Have Grievance redress Mechanisms been established? Is there effective feedback from project affected persons? Have environmental, social, health and broader impacts been identified and mitigation measures implemented?	Before initiation of civil works	100,00
2	Construction phase	World Bank Task Team FPMU SPIUs CONTRACTOR/ INDEPENDENT CONSULTANT	Is there community driven approach in- use/how are community reaction Is the Grievance redress mechanism effective Have standard operating procedures for best environmental practices been established? Does the contractor have a HAZCOM program? Are there Material Safety Data Sheets (MSDS) Is a sustainable afforestation program in progress? Does the contractor have a safe-works procedure? Is there an emergency planning framework?	In the course of civil works implementatio n	80,000
3	Operation & Maintenance Phase	World Bank Task Team FPMU SPIUs	 Are environmental and social monitoring mechanisms being implemented? EMP document Is disaster and emergency planning proactive? Has training on disaster management been conducted? Is the traffic management plan being implemented? Who is responsible and why? Is the ESMP being implemented? Success in mitigation measures. Is disaster management in-place. No of land slides No casualties. 	Operational stage to project closure	80,000

The other required specific E&S management plans include the following:

6.4.5 Occupational/Public Health, Safety and Security Management Plan

Selected Contractor shall be required to develop and implement an occupational and community health and safety plans that contributes to a healthy workforce and local community for the subproject. The health and safety plan shall be submitted to the SPMU and FPMU for necessary approvals prior to implementation. In developing the Plans, the Contractors shall evaluate possible hazards that may be associated with the project activities such as: (a) imported backfill material; (b) Hazards to the aquatic environment arising from toxic effects of imported material (pH, COD, salinity, dispersed material); (c) Flood hazards due to heavy downpour during the construction period; (d) Physical/mechanical hazards due to the movement of solid material in the event of an accident; (e) Hazards resulting from soil contamination.

Selected Contractor shall also be required to identify who and what can be affected assuming possible scenarios (such as construction failures). Consideration should be given to issues relating to the environment (water, soil, air and biota), humans (life, health and living conditions), and economic losses of the population (damage to infrastructure, property) in the event of the possible scenarios. Cooperation between the Contractor, the SPMU and the local community is recommended for emergency planning.

The selected Contractor shall fully comply with the WB Environmental, Social, Health and Safety (ESHS) obligations and bear the cost of implementation. Community Health, Safety and Security assessment will identify potential negative risks related to the different phases of the project. Some of the significant risks to be considered include:

- Possible pressure and/or additional demand on community health services associated with the influx of workers from outside the project area;
- Possible pressure and/or additional demand on utility services including water and wastewater system associated with the influx of workers from outside the project area;
- Possible pressure and/or additional demand for social services because of an increased family stress and violence;
- Possible sexual harassment and gender-based violence;
- Possible illicit drug use and alcohol;
- Possible crime and criminal activities;
- Possible change in community wellness because of alcohol, and substance abuse associated with the influx of workers from outside the project area;
- Possible change in Community Health because of sudden spread of communicable and non-communicable diseases including sexually transmitted diseases (STDs) associated with the influx of workers from outside the project area;
- Possible pressure on traffic and transportation network associated with construction and operations activities; and
- Possible change in water and air quality associated with construction and operations activities.
- In addition to the potential negative impacts which would require mitigation, the rehabilitation
 of the dam also has the potential to improve community health safety and security through
 the following means:

- o Improved access to medical facilities for communities due to the dam rehabilitation and the restoration of connecting roadways;
- o Improved healthcare infrastructure;
- o Improved workforce health awareness;
- o Improved standards of living of direct and indirect employees due to better income in the employee's households; and
- o Improved standards of living of vulnerable groups and their households, including support to the elderly within the respective households.

6.4.6 Gender Based Violence/Sexual Exploitation and Abuse Management Plan

The Gender Based Violence/Sexual Exploitation and Abuse Management Plan (GBV/SEA MP) is required to identify and assess key risks, develop mitigation measures to prevent and respond to sexual exploitation, abuse and other forms of Gender Based Violence (GBV). Selected Contractor shall prepare and submit for approval of SPMU and FPMU, the necessary GBV/SEA MP to be implemented for the project. The GBV/SEA MP will set out a formal system by which the Contractor will carry out mitigation measures that will reduce any impacts relating to Gender Based Violence matters. The GBV/SEA MP shall include actions outlined in the SEA/SH Good Practice Note and an associated budget. A GBV Specialist and NGO shall be retained to implement and supervise activities.

Specifically, the GBV/SEA MP will provide details regarding the implementation of mitigation and management measures for impacts related to the possibility of or any existing risks which may lead to GBV/SEA issues. The scope of the GBV/SEA MP will cover pre-construction, construction and post construction/closure phases of the Project.

The risk indicators to be considered shall include but not limited to:

- Possible pressure and/or additional demand for social services as a result of an increased family stress and violence;
- Possible sexual harassment (including rape, sexual assault and harassment in all public and private spheres of life);
- Norms, attitudes and stereotypes around gender in general and violence against women in particular;
- Various forms of structural inequality or institutional discrimination on any particular gender.

6.4.7 Vegetation Conservation Management Plan

The Contractor shall be required to prepare and submit for approval of SPIU and FPMU, a comprehensive Vegetation Conservation Management Plan (VCBMP). Along with this ESMP, the VCBMP will provide the specific activities to protect the natural biodiversity of the project area and maintain appropriate public access.

The specific objectives of the Plan are to:

- Identify appropriate, ecologically sustainable, and spatially explicit management actions, such as re-vegetation with native plant species, based on biological and hydrological factors, as well as the reasonableness of costs, local community expectations, and other key considerations.
- Develop monitoring methods to evaluate progress toward Plan objectives, to apply adaptive management to enhance the likelihood of achieving those objectives, and to increase understanding of water and ecosystem interactions.

- Prepare for anticipated changes to the system, such as climate change and land-use changes.
- Prepare for implementation of rapid, active ecological restoration and other management strategies for threatened, endangered, and other native wildlife species potentially displaced by construction activities, and to enhance pollinator habitat.
- Consider proper implementation techniques, implementation costs, short- and long-term maintenance needs, water use/savings, and wildfire control.

The approved Plan shall form part of the construction documents and requirements for Contractor implementation through the project.

6.4.8 Air Quality Management Plan

Air quality plans identify potential control measures and strategies, including rules and regulations that could be implemented to reduce air pollutant emissions from construction equipment, on and off-road motor vehicles, and other sources. The Contractors shall be required to prepare and submit for approval of SPIU and FPMU, a comprehensive Air Quality Management Plan (AQMP). The Contractors shall implement these strategies through rules and regulations, public education and outreach, and partnerships with other agencies and stakeholders.

6.4.9 Emergency Response and Incident Plan

The Contractor shall be required to prepare and submit for approval of SPIU and FPMU, a comprehensive Emergency Response and Incident Plan (ERIP). The Plan will describe the set of necessary actions to be taken in response to defined circumstances, across all hazards, and through the phases of mitigation, preparedness, response, and recovery during this project.

The Plan will provide necessary guidance for how to organize assets to respond to an incident (system description) and processes to manage the response through its successive stages (concept of operations). The Plan will document the combination of facilities, equipment, personnel, procedures, and communications existing within the Contractor's organizational structure and designed to help in the management of resources during incident response.

The activities contained in the Plan will address the phases of mitigation, preparedness, response, and recovery and will identify potential hazards, assess their likelihood of occurrence, their potential impact and the organization's vulnerabilities to the impact, and also provide a basis for understanding how the hazard likelihood and organizational vulnerabilities can be addressed.

For the Plan to be effective, the emergency incident must be formally defined so that there is clarity and consistency as to what is being managed. This may be best accomplished by defining the incident response through delineation of response goals and objectives, and by explaining response parameters through the Emergency Response and Incident Plan (ERIP).

6.4.10 Water Management Plan

The Contractor must prepare and submit for approval of SPIU and FPMU, a Water Management Plan. The Plan will provide information about current water uses and charts a course for water efficiency improvements, conservation activities, and water-reduction goals.

An important step in creating a water management plan is to establish a water balance for the project. It is necessary to ensure that water supply, wastewater, storm water issues, and water

efficiency Best Management Practices (BMPs) are considered before the construction works begin. Water emergency and other contingency plans should describe how the construction facility will meet minimum water needs during emergency or other water shortages.

6.4.12 Traffic and Vehicle Management Plan

Managing traffic at a construction workplace is an important part of ensuring the workplace is without risks to health and safety. Vehicles including powered mobile plant moving in and around a workplace, reversing, loading and unloading are often linked with death and injuries to workers and members of the public. Traffic includes cars, trucks and powered mobile plants like excavators or graders, and pedestrians like workers and visitors. The most effective way to protect pedestrians is to eliminate traffic hazards.

Selected Contractor shall be required to prepare and submit for approval of SPIU and FPMU, a comprehensive Traffic and Vehicle Management Plan (TVMP). With this ESMP, the TVMP will provide a specific and general guide to vehicular movements throughout the project area to protect the community and workforce from accidents and safety hazards during construction.

Key issues to consider for managing traffic at the construction workplace include:

- Keeping pedestrians and vehicles apart including on site and when vehicles enter and exit the workplace;
- Minimizing vehicle movements;
- Eliminating reversing vehicles or minimizing the related risks;
- Ensuring vehicles and pedestrians are visible to each other;
- Using traffic signs, and,
- Developing and implementing a traffic management plan.

Selected Contractor shall be required to provide appropriate information, training, instruction or supervision necessary to protect all persons from risks to their health and safety. The Contractor must also ensure construction induction training is provided to workers who carry out construction work.

- State PIU will place speed limits and appropriate road signage along all Project roads;
- The SPIU will enforce speed limits for safety, air quality, and noise purposes both on the Project site and beyond;
- All project drivers should be trained by a road safety specialist; and,
- All vehicles should be properly maintained and undergo periodic safety inspections.
- Observance of speed limits by contractor's vehicles / drivers should be part of the contractual agreements

6.4.13 Waste Management Plan

A waste management plan (WMP) is required to achieve the goals set for managing construction waste. The construction Contractor shall prepare and submit for approval of SPMU and FPMU, a comprehensive Waste Management Plan (WMP). The WMP will provide a specific and general guide to the management of solid and liquid waste throughout the project area and for the project's duration. The contractor shall be responsible for implementing the Plan, including procedures for salvage, reuse and recycling materials. The implementation of

the WMP will protect the community and workforce from the health hazards of indiscriminate waste disposal during construction.

The waste management plan should cover the following:

- i. Specify who is responsible for managing waste on site.
- ii. Establish goals and objectives.
- iii. Estimate the waste types and amounts involved.
- iv. Set targets for reducing the amount of each waste sent to the waste disposal site;
- v. Describe recycling/reuse methods for each material.
- vi. Identify the waste destinations and transport modes, including what materials are being segregated on site for reuse or recycling.
- vii. Track progress.
- viii. Describe special measures for material use and handling.
- ix. Describe communication and training to support and encourage participation from everyone on site.

6.4.14 Chemical Management Plan

Selected Contractor shall prepare and submit for approval of SPIU and FPMU, Chemical Management Plan (CMP) for the SPIN subproject. The CMP will provide specific and general guidance in the storage, use and disposal of any chemicals or chemical products associated with activities to be carried out as part of the project. Chemicals are an integral part of everyday life, essential to our economy, our communities and our homes. While chemical substances provide benefits, they may also have harmful effects on human health and the environment if not properly managed.

The CMP is aimed at protecting human health and the environment by assessing chemicals used in the project and by taking action on the chemicals found to be harmful. The CMP helps protect the project community and their environment from the harmful effects of chemical substances. The CMP will assess the environmental and human health risks posed by the chemical substances to be used in the project and develop measures to be implemented to prevent or manage those risks.

6.5 Environmental and Social Auditing

Auditing refers to the examination and assessment of a certain type of performance. In the case of the SPIN, an audit will assess the actual environmental and social impacts of subprojects, their accuracy of prediction, the effectiveness of impact mitigation measures, and the functioning of monitoring mechanisms. The audit should be undertaken upon a project run in operation, for some time, and it must be performed once or twice in the entire project cycle.

Types of Audits

- Decision Point Audit examines the effectiveness of ESIA as a decision-making tool.
- Implementation Audit ensures that approved conditions have been met.
- Performance Audit examines the responses of stakeholders/agencies concerned with project management.
- Project Impact Audit examines environmental changes arising from project implementation.
- Predictive Technique Audit examines the accuracy and utility of predictive techniques by comparing actual against predicted environmental effects
- EIA Procedures Audit critically examines the methods and approach adopted during the EIA study.

Not all the audit types mentioned above are required to be implemented in the SPIN implementation process. However, at the subproject approval stage, both subproject proponent and authorizing agency should consider whether an application of a particular audit technique is likely to result in new information or an improvement in management practices. Particular attention should be given to the project cost-effectiveness of any proposed audit and to technical difficulties likely to be encountered.

It is envisaged that the use of environmental audits will play a significant role in the success of SPIN. In addition, environmental and social auditing should compare monitoring results with information generated during the pre-project period. Comparisons can be made with similar projects or against standard norms.

Relating actual impacts with predicted impacts will help in evaluating the accuracy and adequacy of ESIA predictions.

Environmental Auditing Plan

Environmental Audit should be carried out upon the completion of project construction and after 3 years of project operation to obtain information on:

- The condition of natural/social/economical resources prior to project implementation and after the project construction is completed,
- Whether or not, all the mitigation measures implemented are effective to control adverse impact, or enhance beneficial impacts,
- Whether or not all degraded landscape due to project implementation have been restored into original condition,
- What are the impacts of boom-bust scenario among the workforce involved in the subproject implementation and the local economy, and
- The effect on the local economy of project implementation.

In Summary, Information from monitoring output should also be utilized for carrying out environmental audit.

6.6 Health Impact Assessment (HIA)

Purpose

This document is intended to provide good practice guidance for conducting a Health Impact Assessment (HIA) to determine potential impacts on community health from project development. This document has three objectives:

- To present methodological approaches to assess and address potential community health impacts that might typically be encountered in the development or review of future projects.
- To assist in the development of the terms of reference (TOR) that may be needed to conduct the HIA
- To help ensure inclusion of health impact aspects in the social and environmental impact assessment process or in the conduct of independent HIAs for projects.

Key Characteristics

Consultants should possess the experience and expertise in the identification of major characteristics which define HIAs. These will include, to a minimum, the following:

- Predicting the consequences of project-related actions
- Providing information that can help decision makers prioritize prevention and control strategies throughout the project lifecycle.

Major Processes in Identifying the Need for HIA

Screening - Preliminary evaluation to determine whether a proposed project is likely to pose any significant health questions. Specialists should generally assume that projects requiring environmental or social impact assessments are also likely to have potential health impacts. During the screening step, the need for an HIA can be determined. The SPIN-PMU and relevant stakeholders should handle this.

Scoping – This is a process for outlining the range and types of hazards and beneficial impacts. The overall types and categories of questions that should be addressed are defined at this stage of the HIA. The input of key stakeholders and the relevant host- country health authorities are critical, so that the HIA adequately addresses a realistic range of health concerns. This stage also is the time to develop the TOR for the scoping. The HIA effort should be "fit to purpose," and it should adequately and realistically match the complexity of the project. The SPIN PMU and relevant stakeholders should handle this.

Risk Assessment- This should address activities to investigate, appraise, and qualitatively or quantitatively rank the impacts the project is likely to have on the health of the defined communities. The spectrum of potential impacts—their relative importance and at what level they are expected to occur is determined in this step.

Health Action Plan (HAP) - Considers the rankings developed in the risk assessment and develops a written health action plan (HAP). The HAP, also known as a health management plan, it should establish the proposed actions needed to mitigate identified impacts and promote health opportunities in the project. HIA consultants should include information on mitigation.

Mitigation is a systematic process by which to avoid, reduce, remedy, or even compensate for potentially negative impacts. Review and analysis by key stakeholders, including host-country health authorities, should be a critical aspect of HIAs to be conducted under the SPIN projects.

Implementation and Monitoring – This should occur after the Health Action Plan(s) for subprojects have been developed. At this point it is necessary to decide how the mitigation actions will be implemented and monitored, and to establish the roles and responsibilities of the SPIN-PMU and key stakeholders. During this process, the project should establish action frameworks and allocation of resources, and it should design monitoring systems to ensure that mitigation progress is satisfactory. In addition, the monitoring system should be designed to capture unanticipated effects or provide an early-warning system to alert people that problems are occurring at the community level. The monitoring plan should define appropriate key performance indicators.

Evaluation and Verification of Performance and Effectiveness- HIA documents for the project should include a system for determining that implementation has been accomplished and is achieving the intended results.

Types of HIAs

When gathering new field data for the HIA, the project will encounter different levels of effort and needs. The key descriptive terms for these cases *"comprehensive"* and *"rapid appraisal"* indicate the different depths of analysis and consultation required, and whether the performance of the HIA involves collecting new field data. In many situations, a rapid appraisal HIA will be sufficient; however, this assessment may uncover significant data gaps and trigger the need for a more comprehensive HIA, that is, new data collection.

Comprehensive HIA

A comprehensive HIA includes screening, scoping, stakeholder consultation, risk assessment, appraisal, implementation and monitoring, and verification. Stakeholder communication and consultation should take place at all stages—from screening through implementation and monitoring. During the project concept and feasibility studies and project planning phases, the project also will perform a limited level of local community stakeholder consultation. A comprehensive HIA is more likely to be considered for large, complex projects, particularly if resettlement or relocation of existing communities is involved or if a significant influx of persons is expected, regardless of whether it is a new-project or new-location situation or a significant expansion of an existing facility. An essential element of the comprehensive HIA is the need for new data collection in potentially affected communities and for helping predict changes in health determinants, the associated risks, and health outcomes. This data collection typically consists of health-questionnaire surveys.

Rapid Appraisal HIA

These assessments require less-intensive efforts; however, in-country investigation may be triggered. Typically, rapid appraisal HIAs are subdivided into desktop HIAs and limited incountry HIAs.

Desktop HIA

It is a qualitative review of potential health impacts and is used to internally inform and comment on the proposed design of the project. It is also useful for determining whether a more detailed review is needed.

Limited in-Country HIA

This uses information that is already available or easily accessible. Thus, no specific new data collection is required. Data sources may include peer-reviewed scientific literature and 'grey literature," that is, health department data. Workshops or discussions with key internal and external stakeholders, which are usually planned in the context of other social and environmental assessment efforts, also can provide useful health-related information. The overall results are typically incorporated into the social and environmental impact assessment, although the limited in-country HIA may also be issued as a stand-alone report. Limited incountry HIAs are appropriate for many expansion scenarios where new data collection is not needed. In some situations, large health databases are available, sufficient for documenting current baseline community conditions, making new field collection efforts unnecessary.

6.7 Integrated Pest Management Plan (IPMP)

A detailed assessment and preparation of a Pest Management Plan has been done as a stand-alone document.

6.8 Chance Find Procedures

In the event of chance finds of items of cultural significance, all forms of excavation in and around the site will be stopped. archaeologists and anthropologists would be recruited to investigate and propose plans for preserving such cultural artifacts.

During the project site induction meeting, all contractors will be made aware of an on-site archaeologist who will monitor earthmoving and excavation activities. The following procedure is to be executed in the event that archaeological material is discovered:

- All construction activity near the find/feature/site will cease immediately.
- Delineate the discovered find/ feature/ site will be delineated.
- Record the find location, and all remains are to be left in place.
- Secure the area to prevent any damage or loss of removable objects.

- The on-site archaeologist will assess, record and photograph the find/feature/ site.
- The archaeologist will inspect in accordance with all project health and safety protocols directed by the Health and Safety Officer.
- In consultation with the statutory authorities the on-site and Project Archaeologist will determine the appropriate course of action to take.

The Chance Find Procedure is required for all subprojects to address the specific impacts that may occur because of any "Archaeological Chance Finds" or existence of cultural resources during the planned construction works. It is anticipated that some of the construction activities associated with the SPIN project may impact cultural resources such as the graveyards.

The graveyards identified within the subproject areas shall be considered only of local significance and may not be affected by construction. However, if any graveyard needs to be relocated due to the subproject, the local people, community leaders, NGOs and others should reach a consensus and be involved in the relocation process., if the graveyard is considered of archaeological and historical value, then the Contractor shall develop a strategy for restoration, conservation and management which shall be implemented.

6.9 Resettlement Action Plan

The WB requires the preparation, in advance of project implementation, of a Resettlement Action Plan/Abbreviated Resettlement Action Plan (RAP/ARAP) where project impacts are known to displace persons within the project community or affect their social and economic well-being. The RAP/ARAP seeks to specifically identify, evaluate and document the set of mitigation, monitoring and institutional actions to be undertaken for the project to eliminate identified adverse community or individual social and livelihood impacts before commencing the remedial construction and rehabilitation works.

The Resettlement Action Plans for the SPIN project shall be prepared as stand-alone documents and are to be incorporated accordingly into the Environmental and Social Management Plan by reference.

CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCESS

7.1 Introduction

This ESMF incorporates an overall environmental and social management process for the SPIN Project and its subprojects. The process involves distinct steps and associated activities linked to deliver a robust and veritable management framework in line with the stated objectives of the ESMF. The management process will help identify the critical social and environmental issues associated with SPIN subprojects, and ensure that positive impacts are optimized, and negative impacts are minimized or mitigated. The management process will help to improve the understanding of the subprojects by the local communities, and this will increase trust between the PIUs and the local community.

The environmental and social management procedure to be followed shall include the following steps:

- i) Subproject identification and screening
- ii) Preparation of appropriate E&S safeguard instruments;
- iii) Stakeholders' consultations;
- iv) Disclosure of safeguard instruments;
- v) Incorporation of the ESMP in construction bid documents;
- vi) Implementation of the ESMP;
- vii) Monitoring and evaluation of the ESMP Implementation.

Each element of the E&S management procedure is described in further detail in the following sections.

7.2 Subproject Identification and Screening/Scoping

7.2.1 Subproject Identification

All States/RBDAs participating in the SPIN project must generate a long list of their prioritized sites requiring SPIN intervention. The states will be further required to be involved in a site selection and prioritization exercise (Workshop) in which the states shall confirm their approval for the sites selected and the associated tentative contract sums.

Prior to the workshop, each state shall work with state-level stakeholders (communities, technical and steering committees, and governors), to confirm that all identified sites meet the procedures for site selection defined in the Project Concept Note. The site selection criteria to be used shall include:

- a) Availability of Dam for Irrigation
- b) Availability of irrigation command area, with opportunity for expansion
- c) Potential for inclusion of hydro in dam
- d) Size of affected population (disaggregated by poverty rate);
- e) Replication potential of the site treatment;
- f) Readiness of the state to cover the cost of resettlement (if required); and,
- g) No on-going competing intervention in the same project area.

7.2.2 Screening of SPIN Subprojects

The objective of screening is to determine the appropriate level of environmental and social impact assessment and management for a proposed subproject. All potential subprojects under the SPIN shall be screened for E&S risks and impacts prior to subproject approval for implementation by the respective SPIU. A designated officer or Consultant of the SPMU can carry out the screening. The screening process will include robust assessment of the subproject and associated activities to determine the following:

- i) The appropriate subproject categorization EA;
- ii) Applicable World Bank ESS;
- iii) Potential for environmental and social liability; and,
- iv) Cultural or other sensitivities.

Additionally, each site intervention under SPIN shall be screened for ESS5 impacts. Civil works and other intervention activities could result in land acquisition or the displacement of families or businesses temporarily or permanently. Works such as drainage trenches or canals could also result in loss of access even when agricultural, commercial, or residential plots themselves are not affected. Land acquisition for project works will trigger the ESS5 standard even when people are not displaced.

Environmental and Social screening process distinguishes subprojects and activities that will require thorough environmental review to prevent/mitigate negative environmental impacts or those which will provide opportunities to enhance positive impacts. Thus, one of the objectives of the screening process is to rapidly identify those subprojects, 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 for environmental and social management. In other words, based on environmental screening, subprojects with no significant impacts are cleared from further environmental inquisition while subprojects with some impacts proceed to the level of conducting an environmental assessment, which will be evaluated to clear the subproject.

Screening shall be done early in the planning process by trained state PIU staff, in consultation with specialists who design and supervise the site interventions. Project designs will seek to minimize displacement and loss of access to the extent feasible. Consultations with and participation of affected people and possible host communities are mandatory.

Consequently, a checklist has been prepared for the screening of subprojects.

Scoping is the process of determining the most critical issues of the subproject to study and involves community participation. It is at this early stage that environmental and social safeguards can most strongly influence the subproject proposal. For successful implementation of subproject activities under the SPIN, scoping should occur early in the project cycle, as is consistent with international best practices including World Bank Safeguards Standards and the Nigerian EIA Law. The scoping process will aid in the identification of the key environmental and

social issues and is perhaps the most important step in ensuring subproject safeguards. The scoping process under the SPIN will involve participation from several stakeholder groups, particularly decision makers (Federal and State governments), MDAs, CBOs, NGOs, the project affected communities and the scientific community. All these groups will have an interest in helping to deliberate the issues which should be considered (scoping is designed to canvass their views).

Scoping is important for two reasons. Firstly, so that problems can be pinpointed early, allowing mitigating design changes to be made before expensive detailed work is carried out. Secondly, scoping is done to ensure that detailed safeguards activities are only carried out for important issues. It is not the goal to carry out exhaustive studies on all environmental and social impact issues for all subprojects. If key issues are identified and a full-scale ESIA is considered necessary, the scoping should include terms of reference for these further studies. At this stage the option exists for cancelling or drastically revising the subproject should major environmental and social problems be identified. Equally, the need for the ESIA process may be terminated should the impacts be found to be insignificant. Once this stage has passed, the opportunity for major changes to the subproject is restricted.

7.2.3 Risk Categorization/Classification

Based on the SPIN's scope, the number of participating States and the level and spread of stakeholders involved in the project, significant environmental and social impacts are envisaged for the SPIN Project. The project is therefore classified as High Risk or Category I. This ESMF, however, recognizes that most subproject activities under SPIN are expected to have generic environmental and social issues that are manageable through standard procedures and codes of practice. As such, ESIAs and site-specific ESMPs may be sufficient to satisfy WB and national requirements. Following the screening and scoping exercise, the TOR for the ESMP (or ESIA) shall be developed and submitted to the FPMU and World Bank for review and approval.

SPIN subprojects will fall into one of the three Nigeria EIA categories: I, II and III, or into one of the four WB Classifications: *High Risk, Substantial Risk, Moderate Risk* or *Low Risk.* In determining the appropriate EIA category or risk classification, the relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the proposing State (including any other entity responsible for the implementation of the subproject) to manage the environmental and social risks and impacts in a manner consistent with the EIA requirements and WB ESSs.

High Risk or Category I projects are those whose impacts are sensitive, diverse, unprecedented, felt beyond the immediate project environment and are potentially irreversible over the long term. Such projects require full EA.

Substantial Risk and Moderate Risk or Category II Projects will result in adverse environmental impacts on human populations or environmentally important areas--including wetlands, forests, grasslands, and other natural habitats-that are less adverse than those of High Risk or Category I projects. In general, such impacts are localized; do not affect sensitive

area/resources, and reversible, unlike High Risk or Category I projects. All category II projects will also require EA. However, the scope will be reduced.

Low Risk or Category III Projects are generally benign and typically do not require EA. However, all such projects should be screened to determine if specific environmental management plans (e.g., waste management plans) are required.

7.3 Preparation of Appropriate E&S Safeguard Instruments

The ESMF will be applied to the overall project through a two-stage process as described below:

Stage I: Undertaking Environmental and Social Due Diligence Assessment of all subproject Dams by conducting E&S scoping and screening to identify E&S risks and impacts and to determine risk category of the overall project (L/M/S/H). In essence, if the risk category of a subproject is L or M - ESMP including other mitigation plans required by relevant ESS applicable to the dam.

ESDD would be prepared through the study of sub-project information, proposed interventions, their magnitude and locations; assessing the relevance and applicability of laws, regulations and procedures for assessment including WB ESS requirements, development and implementation plans of the projects; understanding baseline environment and social settings, institutional assessment to identify existing capacities & relevant gaps to manage E&S risks and impacts; conducting preliminary stakeholder consultations to help identify potential stakeholders and potential concerns and issues; carrying out activity wise environment and social screening and identify risks and impacts and to classify the sub-project based on risk level (low, moderate or substantial and high) and finally, presenting conclusion on risk category, need for the detailed ESIA and recommendations for ESMP. All ESDDs and their assessment of the risk profile will be reviewed and cleared by the Bank

Stage II: At this stage, dams will be categorized into two groups as either Low to Moderate Risk or Substantial to High risk. Based on risk category, ESMP will be prepared depending on sub project specific activities for L/M risk subprojects. Detailed ESIA will be carried out for substantial or high-risk projects. In essence, if risk category is classified S or H, ESIA will be conducted with an ESMP prepared highlighting potential risk/impact including other required mitigation instruments based relevant ESS and approved Terms of Reference by World Bank. All large dams will require a full ESIA regardless of scope of civil works at those specific sites. ESIAs for large dams will need to include an audit/assessment of the dam which will cover E&S legacy issues, how cumulative impacts were taken into account for the dam construction and operation model, and e-flow. ESIAs for all large dams will be disclosed 120 days before commencement of works

As part of the SPIN project procedure for E&S, all participating states/schemes will be required to conduct ESDD or environmental and social audit for all sub-project dams to identify any liability, legacy issues, how cumulative impacts were considered for the dam construction and operation model, environmental flow and the risk category. The studies will be done using the dam safety plans that will be developed under the SPIN Project. The Bank will clear all ESDD and the assessment of the risk profile. Wherein it has been described as low to moderate risks, a standard ESMP with relevant guidelines will be prepared and implemented; however, all large dams will require a full ESIA regardless of

<u>scope of civil works at those specific sites. For all sub-projects categorized as</u> <u>Substantial to High risk will undergo a detailed ESIA. ESIAs for large dams will be</u> <u>disclosed 120 days before commencement of rehabilitation works.</u>

The mitigation instruments required to address the E&S risks and impacts identified in section 5 to meet requirements of each ESS includes the following plans:

ESS	Plan/Instrument	Content Description
1	ESMP/ESIA	Includes provisions for addressing risks relating to environmental and social aspects in each sub project or dam. This will be a standard ESMP for sub projects identified as low to moderate risk (as per ESDD). High risk sub projects will undergo Detailed ESIA and an ESMP highlighting recommendations to mitigate project risks and impacts.
2	Labor Management Procedure	The procedure shall present requirements relating to provision of terms and conditions of employment; promoting of non-discrimination and equal opportunity; worker's organization etc. and finally a mechanism to redress grievances of direct and contracted workers
3	Construction Debris and Other waste management Plan	Dam rehabilitation activities may generate various type of waste depending on nature of rehabilitation work involved such as debris and construction waste, empty paints containers, waste lubricants, electrical waste, and municipal waste from labour camps. Some of these wastes are biodegradable, some are reusable/saleable, and some are nonbiodegradable and non-reusable. Many of these wastes attract provision of law for its disposal and require controlled handling and disposal. Constructional Debris and Solid Waste Management Plan (CDSWMP) is aimed to fulfil the requirement of safe handling and controlled disposal of these wastes. (b)
3	Pollution Prevention and Environmental quality management Plan	It follows the principle that any waste is a resource misplaced and if a resource is released to environment than it results in affecting the environmental quality depending on nature of waste released to environment viz air, solid or liquid. This Pollution Prevention and Environment Quality Management Plan (PPEQMP) framework shall provide guidelines which can result in conservation of resources and thus prevention of pollution.
4	Community Health and Safety Plan	This plan will include framework for in relation project workers, and any risks of labor influx, such as communicable and non-communicable diseases. CoC for contractors in relation to workers at site will also be included.
5	Resettlement Action Plan	In accordance with SIA findings and RPF provisions, RAP will be prepared that enumerates nature and quantum of each type of impact and impacted persons by socio-economic category and entitlement measures, budget
6	Biodiversity Conservation and Management Plan (BCMP)	Biodiversity Conservation and Management Plan for the subprojects /Dam sites close to the conservation areas and suggest biodiversity conservation guidelines and Plan for all such dams. Where relevant, should also address ecological/environmental flows and ecosystem services

Table 7.1: Mitigation instruments

8	Cultural Heritage	A Cultural Heritage Management Guidelines shall be prepared and if
	Management Plan	required a Plan in sub projects if any such cultural aspects is likely to be
		affected from any of the dam scheme. This will include chance find
		procedures as well.
10	Stakeholder	Each ESMP will include a Project specific SEP for meaningful
	Engagement Plan	consultations and Accessible, functional and responsive GRM for
	GRM	stakeholders

7.4 Environmental and Social Management Plan (ESMP)

7.4.1 Introduction

The ESMP for each subproject will be required at the proposal stage. Each participating State PIU shall, as part of its proposal, submit an overview of how environmental and social issues of the subproject will be addressed continuously and will also specify standards proposed for the subproject to ensure environmental sustainability and social acceptability. The standards and plans proposed shall also address social issues including involuntary resettlement and legacy issues. Environmental assessment will determine the extent of impacts and how the impacts will be mitigated, or minimized by planning, approaching the activities in an environmentally sensitive manner and adopting specific mitigation measures.

The following steps shall be taken in preparing site-specific ESMP in accordance with relevant and applicable WB Safeguards Standards and the EIA Act of Nigeria. The ESMP process starts with

- 1) Preparation of the TOR in consultation with the EIA department of the FMEnv, and key stakeholders within a given site.
- 2) The draft TOR will be sent to the World Bank for review and concurrence.
- 3) Preparation of the ESIA/ESMP will include collection of baseline data and elaborate consultation with key stakeholders especially potential PAPs within a given watershed where the intervention will take place.
- 4) The draft ESIA/ESMP report will be shared with the affected communities in a format of town hall meeting or stakeholder workshop.
- 5) The draft report would also be sent to the World Bank and the FMEnv for review. The feedback from the draft report review shall be incorporated into the final report.
- 6) Upon being cleared by the FMEnv and the World Bank, the ESIA/ESMP will be disclosed publicly at both the federal and state levels as well as the World Bank website.

7.4.2 Baseline Data Information

Baseline data information is an important reference point in preparing the ESIA/ESMP. The term "baseline" refers to the collection of background information on the biophysical, social and economic settings of the proposed subproject area. Normally, information is obtained from secondary sources when there exists facility of database, or the acquisition of new information through field assessments. The task of collecting baseline data starts from the period of subproject inception; however, most of this may be undertaken during scoping.

Objectives of Baseline Data Collection

- To provide a description of the status and trends of environmental and social factors or variables (e.g., gully size, soil, vegetative cover, topography, geomorphology, drainage system, water quality, suspended particulate, sediment transport and waste management, demographic characteristics etc.) against which predicted changes can be compared and evaluated in terms of importance, and
- To provide a means of detecting actual change by monitoring once a subproject has been initiated.

For each site-specific ESIA/ESMP prepared, this ESMF requires that baseline data on the original environmental, socioeconomic (demographic structure, settlement pattern, occupation, social networks) and health conditions around the SPIN prioritized sites be described and reported in the subproject safeguards documents. This will help establishments responsible for ESMF implementation (SPIN-FPMU, SPIN-SPMU, etc.) understand the baseline conditions of subproject areas before civil work activities begin, as well as provide a platform to monitor changes that may occur in the physical, biological and social environments due to developmental works. Results of the documentation and analysis of the baseline conditions will inform the engineering designs and point to potential livelihood options subsequently.

The SPIN is geared towards maximizing positive impacts. The gathering of baseline data information will aid in the development of indicators to demonstrate the effect of civil work activities on all baseline conditions. Information on general baseline conditions of the States benefiting from the SPIN is provided in this ESMF document, however precise baseline information on interventions especially for prioritized sites will be provided during and after the preparation of the site-specific ESMPs.

7.4.3 Potential Impacts Identification of Subprojects

The most effective approach to identifying, assessing, and managing the impacts of a development project is through undertaking an Environmental and Social Assessment (ESA) with rigorous scientific analysis and stakeholder engagement.





Figure 7.1: Standard Flowchart for a Systematic Approach to Impact Assessment

A qualified Consultant shall be retained to conduct an Environmental and Social Assessment to identify potential impacts of any proposed subproject under the SPIN. The SPMU will need to procure ESIA/ESMP consultants to conduct these studies before subprojects are awarded for construction works.

7.5 Public/Stakeholders' Consultation Process

Consultations with the public/stakeholders for any subproject under SPIN are very important because it will give the communities and the potentially Project Affected Person(s) the opportunity to contribute in the subproject and give feedback information, aimed at strengthening the development project and avoiding negative impacts or mitigating them where they cannot be avoided. All consultations to be held under SPIN shall be carried out in compliance with the provisions of the SEP.

7.6 Disclosure of Safeguard Instruments

Once the state participation criteria are met, the state will then phase into detailed design preparation, including the preparation of safeguards instruments, leading to implementation of SPIN activities. For states where detailed designs have been prepared, the ESIA/ESMPs and RAPs shall be prepared and cleared by the World Bank. These include screening processes to determine the appropriate environmental and social instruments to be prepared, approved, and disclosed prior to implementation of individual interventions.

Each site approved for intervention support shall be eligible for financing only after an integrated ESIA/ESMP and RAP consistent with WB ESS1 -10 has been completed and disclosed. Effective integration of project management and ESMF implementation should result from the fact that the Federal Ministry of Environment and state Ministries of Environment are the lead executing agencies for SPIN.

7.7 Incorporating the ESMP into Construction Bid Document

The ESMP shall be implemented by the construction contractor supervised by the SPIU Environment and Social Safeguards Officer(s). Consequently, the ESMP should be incorporated into the construction bidding documents to enable the bidding contractors appropriately and adequately budget and plan towards its implementation. Contractors shall be required to implement the ESMP and a site-specific Contractors' ESMP to be supervised by the site environmental engineer responsible and accountable for its faithful implementation. The World Bank and the Federal and State PMUs will carry out supervision missions to ensure compliance.

7.8 Environmental and Social Safeguards Reviews

Whether sub-projects fall into high or moderate risk (by WB Standards), or Category 1 and 2 (by National Standard), prepared ESA documents will have ESMPs which will indicate how the environmental and social issues that may arise for the subprojects would be addressed and mitigated. All ESMPs (whether standalone or part of an ESIA) shall be reviewed and cleared by the World Bank to ensure compliance with ESS1 and any other relevant policies, procedures and guidelines.

The application of ESMF to the SPIN subprojects enables preparation of standardized environmental and social safeguards documents for the appraisal and implementation of the subprojects. Annex 2 presents an Environmental & Social Screening checklist consistent with the Nigerian EIA Laws and World Bank safeguards requirements.

7.9 Monitoring and Enforcement of ESMP Implementation

In addition to the project and safeguards reports required, a quarterly audit on ESMP implementation shall be prepared by the SPIN-SPIU and delivered to the SPIN-FPMU and the Bank. Each subproject in the various States that may require an ESMP study (or RAP etc) will also be required to produce an annual audit report for delivery to the SPIN-FPMU and the Bank. Table 7.2 below describes the Monitoring and Evaluation framework for the ESMP.

S/ N	PHASE BEING MONITORED	INSTITUTION RESPONSIBLE	PERFORMANCE INDICATOR	PERIOD TO BE CONDUCTED
1	PREPARATION/PRE- CONSTRUCTION PHASE	SPIN-PMU (Federal) SPIN-PIU (State) World Bank Task Team Independent Consultant	Have environmental and social accountability trainings been conducted; Have screening and scoping been carried out? Have studies been carried out and plans prepared? Have environmental and social monitoring mechanisms been established? Have Grievance redress Mechanisms been established? Is there effective feedback from project affected persons? Have environmental, social, health and broader impacts been identified, and mitigation measures designed	Before initiation of civil works
2	CONSTRUCTION PHASE	World Bank Task Team SPIN-PMU (Federal) SPIN-PIU (State) CONTRACTOR/IND EPENDENT CONSULTANT	Is there community driven approach in- use/how are community reaction Is the Grievance redress mechanism effective Have standard operating procedures for best environmental practices been established? Does the contractor have a HAZCOM program? Are there Material Safety Data Sheets (MSDS)?	In the course of civil works or other intervention activities implementation

 Table 7.1: Monitoring and Evaluation Framework for ESMP

S/ N	PHASE BEING MONITORED	INSTITUTION RESPONSIBLE	PERFORMANCE INDICATOR	PERIOD TO BE CONDUCTED
			Is a sustainable afforestation program in progress? Does the contractor have a safe-works procedure? Is there an emergency planning framework?	
3	OPERATION AND MAINTENANCE PHASE	World Bank Task Team SPIN-FPMU (Federal) SPIN-SPIU (State)	 Are environmental and social monitoring mechanisms being implemented? EMP document Is disaster and emergency planning proactive? Has training on disaster management been conducted? Is the traffic management plan being implemented? Who is responsible and why? Is the EMP being implemented? Success in mitigation measures. Is disaster management in-place. No of land slides No of casualties. Complaints from communities 	Operational stage to project closure

7.10 Other Instruments

For each project site, an Environmental and Social Due Diligence (ESDD) will be undertaken, including screening and Risk Categorization, described in 7.1 above. Based on the outcomes of such screening activities, the need for additional instruments will be identified. Such safeguards instruments could include Livelihood Restoration Plas (LRP), Biodiversity Management Plans (BMP), Labour Management Plan (LMP), etc. Once the need for any of these instruments is identified, they will be prepared as standalone documents, but will form a part of documents that must be prepared and disclosed, prior to project commencement at the site-specific stage.

8.0 STAKEHOLDER ENGAGEMENT AND GRIEVANCE MECHANISM

8.1 Introduction

Early and continuous stakeholder engagement is very important because it will give the communities and the potentially Project Affected Person(s) the opportunity to contribute input and feedback information, aimed at strengthening the development project and avoiding negative impacts, or mitigating them where they cannot be avoided. It also reduces the possibilities of conflicts between and among the project and adjacent communities. Therefore, effective and close consultation with them is a pre-requisite for the successful running and execution of the SPIN project.

As such, there is the need to utilize social development approaches (such as inclusive and continuous stakeholder participation in project implementation) as key accelerators to achieving results. Social sustainability program will support but also test what citizens can do to keep the government's investments through the project operating properly and yielding benefits to the citizenry as intended.

Stakeholder and citizen engagement will be built by:

- setting up effective grievance redress and beneficiary feedback mechanisms;
- ensuring an intensive program of engagement with project stakeholders;
- deploying of effective strategic communications and public education;
- deepening the consultation process which began during project preparation; and
- monitoring social impact through annual stakeholder surveys.

SPIN will ensure that at various stages of the project, there will be continuous engagement with stakeholders, including communities, groups, or individuals affected by the project, and with other interested parties, though information disclosure, consultation and informed participation in a manner proportionate to the risk to and impacts on affected communities. In addition, a grievance redress mechanism, a tool to address affected communities' concerns and complaints, will be available both at SPIN PIU level, RBDA Level and the Federal level (FMWR&S and Federal Ministry of Power).

8.2. Stakeholder Consultation and Engagement

The objectives of stakeholder engagement are:

- To keep stakeholders informed about the project components at different stages of implementation.
- To address the environmental and social concerns/ impacts and device mitigation measures, considering the stakeholder's opinion/ suggestions.
- To generate and document broad community support for the sub-projects.
- To improve communications among interested parties.
- To establish formal complaint submittal / resolution mechanisms.
- To discuss the subprojects and document their issues, concerns and mitigation measures.
Based on the consultations held, a comprehensive Stakeholder Engagement Plan (SEP) has been prepared for the SPIN project. However, a summary of the key issues emanating from discussions with stakeholders is presented below, for each of the three (3) dams visited towards preparing this ESMF.

8.3 Stakeholder Consultation

8.3.1 Stakeholder Consultation in Doma

Stakeholder consultation was held with different groups between 3rd April and 8th April 2024. Groups that were engaged includes farmer's group, batch A and B, dam management, security personnel, farm manager, and communities downstream of the dam.



Individuals from Man's Camp (Fishermen)



Farmers under LBRBDA, Doma



Consultation with Farmers' Group



Consultation with the Project Manager & Farm Manager, Doma

Some Outcomes of the Stakeholders' Consultations

1. The sub-project needs to develop E & S capacities that are currently lacking, including a need to engage E & S experts.

- 2. There is no land take envisaged for the intervention or pending legacy issues within and outside of the dam area. All agricultural lands being used by farmers belongs to the Lower Benue River Basin Development Agency (LBRBDA).
- 3. Fishermen's group are in dire need of fingerling stock in the Doma dam to revive their livelihood.
- 4. Farmers' group claims there has been no rift between them and herders in the area.
- 5. All the participants welcomed the proposed interventions.
- 6. All participants expressed eagerness in the proposed intervention and asserted that they do not have grievances related to the LBRBDA/dam management, Doma.

Based on these findings relating to both structural and non-structural interventions, potential stakeholders were categorized as affected stakeholders, other interested stakeholders and disadvantaged & vulnerable stakeholders.

Affected Stakeholders: There are no affected persons who shall be directly or indirectly adversely affected by the proposed interventions.

Other interested stakeholders: In relation to structural interventions, these would be contractors, regulatory bodies/institutional stakeholders such as revenue, environmental authorities, people living in downstream reaches etc. In relation to non-structural interventions, these would be communities living downstream including farmers; community leaders, State Emergency Management Agency etc.

Communities downstream of the dam would be key stakeholders requiring to be involved in the preparation and implementation of Emergency Action Plan (EAP).

The stakeholders including inhabitants of Man's Camp welcomed the project and were happy with the interactions. They indicated that they would prefer Dam authorities conduct such face-to-face meeting periodically at a convenient location to inform about the developments/interventions relevant to them.

Questions posed by Consultant	Responses Provided	Observations/Remarks
Please confirm if all proposed structural rehabilitation are within the dam area or are there activities outside of the dam area.	Yes, all proposed structural rehabilitation works will be undertaken within the dam area.	The dam facilities are dilapidated and require renovation/civil works and upgrade of instrumentations. On the other hand, about 8km access road from the colony to the dam needs repair and asphalting, however, it is unclear if this road rehabilitation will be included in the work packages.
If there are activities outside of the dam area/compound, please name such activities and their location.	8km access road	
Is there any unsettled issues (legacy) related to displacement or resettlement, pending since time of dam construction? If yes, please give a brief detail.	There are none, all lands being used by downstream settlers and farmers belong the LBRBDA.	This was confirmed during consultations with the fishermen and farmers.

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Questions posed by Consultant	Responses Provided	Observations/Remarks
Any unauthorized encroachers or squatters living within the dam premise? If yes, do they pose a threat to the dam security?	None	There was no encroacher within the dam area.
Do they now hold any legal rights to the land they occupy, possibly through state government sanctions?	N/A	
What is the proposed institutional arrangement to deal the Environment and Social activities within the scheme i.e. in-house team of experts/hired agency or individual experts?	There is no E & S arrangement as at the time of the consultation. There may be a need to refer this case to the headquarters.	
Who will be in charge of E&S related activities at dam site and at SPMU level?	This is yet to be confirmed.	
How do communities contact dam officials? Is there any existing mechanism known to communities to contact dam officials (through telephone/mobile/e-mail/official website?).	Physically	
What is existing mechanism to communicate with downstream communities/public on unregulated releases of water during high flood time siren/written communication to district authorities/ telephone/mobile/text messages or any other mode of communication?	Physical meetings	
How do you ensure that downstream community is fully aware of the above existing mechanism?	There are interactions with the settlement from time to time.	
Are there women employees at the dam site? If yes, are there gender differentiated measures in place to safeguard against GBV, SEA & H? Kindly shed light on these, if they are in place.	There are no women employees	
Is there any existing Grievance Redressal Mechanism (GRM) within the department to address any kind of grievance/complaints by the general public?	No GRM	Based on observations, there is an urgent need for a GRM at the sub-project.
Is there a GRC? If yes, please provide information on those who constitutes this committee.	There is no GRC	Same as above
Are there grievance logbook, complaint boxes, and toll-free lines? If yes, give details.	No	No complaint boxes seen and the PM has confirmed that the sub-project does not have a complaint logbook.
Is dam premise a restricted area or has open access to general public?	The dam area is not restricted, and this has led to avoidable loss of lives in the past.	This was corroborated by settlers at the downstream of the dam.
Are there tribals living in the surrounding area of dam complex? Which tribes are these? Please give brief detail.	There are two tribals living in close proximity to the dam area. The Jukun who are fishermen and the Fulanis upstream, who are herders.	
Does the dam have any tourism/water recreation facilities? If yes, how many	The Doma dam used to be a tourist attraction in the 80s where speed boats	The dam (facility) appears moribund and it will require a

Questions posed by Consultant	Responses Provided	Observations/Remarks
approximate tourists visits annually, annual revenue generated, whether any portion of this generated revenue is diverted to regular O&M of this dam.	were used on the waters.	major upgrade to bring it to a possible tourist attraction.
Do you engage any local labourers for routine dam maintenance work? If yes, what is the process of engaging these locals for work at dam, whether through Government approved contractor or hired individually?	Yes, on hired basis.	

Table 8.2: Focus Group Discussion (FGD) Guide for Settlements Downstream

Questions posed by Consultant	Responses Provided	Observations/Remarks
How many villages are in the immediate downstream vicinity?	Apart from our settlement (Man Camp) there are two villages downstream of the dam, they are Alagya and Iwashi. Alagya is about 3-4 km to the dam, while Iwashi is about 6 km to the dam.	Man camp is the downstream settlement where the fishermen live, and it is under 1 km to the dam, making it the closest settlement to the dam.
Are they dependent on the dam in any way for their livelihood?	Yes, our major occupation is fishing, and we rely on the dam to carry out our fishing activities.	
Did the construction of the Dam require any of these villages to relocate and receive compensation? Is there any pending compensation issues?	There are no such issues, as a matter of fact, we pleaded with the LBRBDA to give us land to settle and we're happy they provided us with this place.	
Is there any affected person known to you who is currently working with the dam authorities? If so, in what capacity (employee/direct worker/contractor)	None	
Are you aware of any fishing communities living immediately downstream of dam whose livelihood are directly linked with the fishing activities of this dam?	The people of our settlement relies on the dam for our fishing activities.	
Are you aware of local women affected in any way by dam operations?	We are all affected by the dam operations as we face challenges in our fishing business. The challenge we have been facing for some time borders around scarce	

Questions posed by Consultant	Responses Provided	Observations/Remarks
	fishes in the dam.	
Are you aware of any early flood warning system for this dam, or any other system wherein downstream communities getting regular update during flood season for any uncontrolled release of water?	There is none. We are not aware of any.	None was seen at the field.
Are you aware of any dam related incident happened in the past wherein some loss of life encountered? If yes, brief summary may be given,	Yes, some students came on an excursion at the dam without the consent of the dam management, maybe because of the free entrance to the facility. Two of them lost their lives as we found their bodies days later when we were out fishing.	There is no access restriction to the dam area and this could increase the chances of having loss of lives from time to time.
If you have to contact the dam authorities; how will you contact, through telephone/mobile/e mail/personally?	We do so personally/physically.	
In the past, on any occasion, did you contact dam authorities for any specific reason affecting public in general? If so, how did you contact and how was the response of dam authority?	Our meetings have always been physical, it's either we go to the management or they come to our settlement, or send a messenger to us.	The level of education and income level of the fishermen are low, deterring them from utilizing ICTs to facilitate communication with the dam management. Poor telephone network connectivity was also observed.
Give your views about the dam, how this dam is helping Country, State, district or local communities in meeting its objectives, any specific concern can also be given?	The dam has been helpful to us over the years. However, we face some unprecedented challenges in recent times. Fishes are now scarce in the dam, sometimes, our catch after a full day's work does not exceed 4 fishes. This has been deeply concerning for us as this event proves mysterious because even after stocking points in the dam, we still cannot find the fishes which is unusual. We implore the management of the dam to look into this issue so that our business can thrive again.	
Are you aware of any document named Emergency Action Plan (EAP) of the dam?	No	
If yes, do dam authorities conduct any annual mock drill or consultation meeting on dam site and invite all stakeholders to inform about various protocols in place and consequences in case dam fails?	N/A	

Questions posed by Consultant	Responses Provided	Observations/Remarks
In future, during stakeholder's consultation meeting, would you like to be a part of these consultation and mock drill activities to be conducted by dam authorities?	Yes, we will be happy to be part of future consultations.	
Any suggestion to improve overall system by dam authorities in any way, please give in brief?	Bring adequate fingerlings Ensure proper maintenance of the dam	

8.3.2 Stakeholder Consultation In Naka

Stakeholder consultations was conducted on 16^{th} April 2024. The consultation included Focal Group Discussion (FGD) with Farmers, fishermen, burnt brick makers and Key Informant Interviews (KII). The participants, who represented the fishermen association, youth and women groups during the stakeholders consultation meeting were interviewed in Makurdi, due to insecurity along the Makurdi – Naka Road on the day of proposed meeting. These individuals are also household heads who live in close proximity to the dam. It was also attended by members of Staff of the dam as well as members of the communities. The works proposed to be carried out for the dam were explained to them. The consultations with Naka Dam project manager and some staff helped to assess the E&S capacity of the project. Outcomes of consultations are documented in Tables 8.3 - 8.5 below.

Questions posed by Consultant	Responses Provided	Observations/Remarks
Please confirm if all proposed structural rehabilitation is within the	All proposed work is around the dam area/site.	
dam area or are there activities outside		
of the dam area.		
If there are activities outside of the dam	None	
area/compound, please name such		
activities and their location.		
Is there any unsettled issues (legacy)	compensation will be appreciated by	
related to displacement or resettlement,	PAPs.	
pending since time of dam		
construction? If yes, please give a brief		
	X7	
Any unauthorized encroachers or	Yes, there are encroachers, but they do	
squatters living within the dam	not pose security threats to the dam.	
the dam security?		
Do they now hold any legal rights to	No	
the land they occupy, possibly through	110	
state government sanctions?		
What is the proposed institutional	No institutional arrangement to deal	
arrangement to deal with the	with E&S activities.	
Environment and Social activities		

Table 8.3: Focus Group Discussion (FGD) Guide for Dam Management/Engineers

Questions posed by Consultant	Responses Provided	Observations/Remarks
within the scheme i.e. in-house team of experts/hired agency or individual		
experts?		
Who will be in charge of E&S related	The LBRBDA will select among its	
activities at dam site and at SPMU	officers.	
level?		
How do communities contact dam	The Communities contact the dam	
officials? Is there any existing	official through phone calls/walk to the	
mechanism known to communities to	office. The use of telephones have been	
contact dam officials (through	effective over the years.	
telephone/mobile/e-mail/official		
website?).		
What is existing mechanism to	No existing mechanism.	
communicate with downstream		
communities/public on unregulated		
releases of water during high flood time		
siren/written communication to district		
authorities/ telephone /mobile/text		
messages or any other mode of		
How do you ansure that downstream	NA	
now do you ensure that downstream	NA	
existing mechanism?		
Are there women employees at the dam	No women employees at the dam	
site? If yes are there gender	No women employees at the dam.	
differentiated measures in place to		
safeguard against GBV SEA & H?		
Kindly shed light on these, if they are		
in place.		
Is there any existing Grievance Redress	Yes	
Mechanism (GRM) within the		
department to address any kind of		
grievance/complaints by the general		
public?		
Is there a GRC? If yes, please provide	Yes	The information about the
information on those who constitutes		composition and details are not
this committee.		available as at the time of
		compiling this Report.
Are there grievance logbook, complaint	 There is a logbook for dam 	
boxes, and toll-free lines? If yes, give	activities where grievances can	
details.	also be recorded.	
	 No complaint boxes nor toll-free 	
Is down memories a restricted area on has	The error is restricted to multip access	
open access to general public?	but the area is not fenced	
Are there tribals living in the	The majority of the people living	
surrounding area of dam complex?	around the dam are the Tivs. Others	
Which tribes are these? Please give	include Igede, Idoma, Igbo, Hausa,	
brief detail.	Yoruba.	
Does the dam have any tourism/water	None	
recreation facilities? If yes, how many		
approximate tourists visits annually,		
annual revenue generated, whether any		
portion of this generated revenue is		
diverted to regular O&M of this dam.		
Do you engage any local labourers for	Locals are not engaged for routine dam	
routine dam maintenance work? If yes,	maintenance work.	
what is the process of engaging these		
locals for work at dam, whether		
through Government approved		

Questions posed by Consultant	Responses Provided	Observations/Remarks
contractor or hired individually?		

Questions posed by the Consultant	Responses Provided	Observations/ Remarks
How many villages are in the immediate	No villages in the	
downstream vicinity?	immediate downstream	
	vicinity.	
Are they dependent on the dam in any way for	-	
their livelihood?		
Did the construction of the Dam require any of	No villages were relocated	
these villages to relocate and receive	but there were lands that	
and receive	ware acquired Ves there	
compensation? Is there any pending compensation	were acquired. Tes, there	
issues?		
	issues.	
Is there any affected person known to you who is	None.	
currently working with the dam authorities? If so,		
in what capacity (employee/direct		
worker/contractor)		
Are you aware of any fishing communities living	No fishing community	
immediately downstream of dam whose	living downstream.	
livelihood are directly linked with the fishing	8	
activities of this dam?		
Are you aware of local women affected in any	No	
way by dam operations?	110	
Are you aware of any early flood marine	No	
for this dam on any other system wherein	140	
for this dam, or any other system wherein		
downstream communities getting regular update		
during flood season for any uncontrolled release		
of water?		
Are you aware of any dam related incident	No	
happened in the past wherein some loss of life		
encountered? If yes, brief summary may be given,		
If you have to contact the dam authorities: how	Telephone.	
will you contact, through telephone/mobile/e	1	
mail/nersonally?		
In the past on any occasion did you contact dam	No	
authorities for any specific reason affecting public	110.	
in general? If so, how did you contact and how		
In general? If so, now did you contact and now		
Was the response of dam authority?		
Give your views about the dam, how this dam is	The dam is helping the	
helping Country, State, district or local	community in a lot of ways.	
communities in meeting its objectives, any	Such as for domestic	
specific concern can also be given?	purposes (drinking	
	-majorly, washing, milling,	
	etc.)	
Are you aware of any document named	No	
Emergency Action Plan (EAP) of the dam?		
If yes do dam authorities conduct any annual	_	
mock drill or consultation meeting on dom site		
and invite all stakeholders to inform about		
and myne an stakenolicers to inform about various		
follocois in place and consequences in case dam		
	37	
In Tuture, during stakeholder's consultation	res.	
meeting, would you like to be a part of these		
consultation and mock drill activities to be		
conducted by dam authorities?		
Any suggestion to improve overall system by dam	There are no suggestions.	
authorities in any way, please give in brief?		

Table 8.4: Focus Group Discussion (FGD) Guide for Settlements around the dam and downstream

8.3.3 Stakeholder Consultations in Wuro Keso

Stakeholder consultation was conducted on 16th to 18th April 2024. The groups that was consulted include the following;

- i. Staff of UBRBDA at their head office in Yola
- ii. Staff of the UBRBDA working at dam,
- iii. Water Users Association members,
- iv. Fishermen Association members,
- v. Gassol Integrated Farm (Privately owned farm),
- vi. Representative of the traditional District Rulers and
- vii. Other members of the communities

During the interactive session, explanation on the proposed intervention through SPIN Project was made to the stakeholders. It was a formal consultations and the record of the discussion is enunciated in table below.

The following is the outcome of the stakeholders' consultation:

- 1. Inhabitation is not there in the close proximity of the dam as the dam is located around the confluence of River Taraba and River Benue.
- 2. Farming is the main source of livelihood of people in the nearby area. They are planting crops like rice, maize, beans, Irish potato etc. They are also into fishing.
- 3. The people nearby are engaged in the project activities as unskilled workers.
- 4. All the participants welcomed the proposed interventions relating to the rehabilitation
- 5. There are no known pending issues regarding dam construction related resettlement for now.
- 6. The participants explicitly mentioned that the rehabilitation works of the dam will in no way affect them and instead they will be getting some earnings by being engaging as unskilled labour for the works.
- 7. Participants have expressed that they do not have any grievances as far as the rehabilitation works proposed by SPIN Project.

Based on these findings relating to both structural and non-structural interventions, potential stakeholders were categorized as affected stakeholders, other interested stakeholders and disadvantaged & vulnerable stakeholders.

- Affected Stakeholders: These are affected persons who shall be directly or indirectly adversely affected by the proposed interventions.
- Other interested stakeholders: In relation to structural interventions, these would be contractors, regulatory bodies/institutional stakeholders such as revenue, environmental authorities, people living in downstream reaches etc. In relation to non-structural interventions, these would be communities living downstream including farmers; community leaders; district administration, police, state disaster management authority, revenue department, electronic and print media, etc. These communities would be key stakeholders requiring to be involved in the preparation and implementation of

Emergency Action Plan (EAP).

Communities welcomed such interactions and indicated that they would prefer Dam authorities conduct such face-to-face meeting regularly at a convenient location to inform about the developments/interventions relevant to them. They welcomed other means of information such as advertisements in the local papers, formation of WhatsApp group etc.

Consultations were made with the Project Manager and Engineer, Gassol Integrated Farms, Water Users Association, Fishers and other Locals in the communities is tabulated below;

Table 8.5 Interaction with the Director Land and Planning, Project Manager, Project Engineer (Staff of

	UDNDA)	I
	Questions	Responses provided / Observations
1.	Please confirm whether all proposed structural rehabilitation activities for this dam are limited to dam compound only or any activities are proposed beyond dam complex like catchment area treatment plan, stabilization of reservoir rim area, slope stabilization, de-silting etc.? Please specify if any possibility of local community interference exist during the implementation of rehabilitation measures; including stakeholders' consultation meetings planned for dissemination of emergency action plans which is a non-structural measure.	Proposed structural rehabilitation activities for this dam is not limited to dam compound only. Other activities proposed beyond dam complex include catchment area treatment plan, de-silting of reservoir and river trailing.
2.	Is there any unsettled issues (legacy) related to displacement or resettlement, pending since time of dam construction? If yes, please give a brief detail.	No
3.	Any unauthorized encroachers or squatters living within the dam premise? If yes, are these not a threat for dam security and dam premise, any official action taken in the past, does the state government have legalized these squatters and these have full right in the property of dam authorities.	No
4.	What is the proposed institutional arrangement to deal the Environment and Social activities within the scheme i.e. in-house team of experts/hired agency or individual experts?	
5.	Who will be in charge of E&S related activities at dam site and at SPMU level?	UBRBDA staff
6.	How do communities contact dam officials? Is there any existing mechanism known to communities to contact dam officials (through telephone/mobile/e-mail/official website?	Visit to the Dam Administrative Office in Wuro Keso
7.	How do you ensure that downstream community is fully aware of the above existing mechanism?	Through Awareness creation
8.	Are there women employees at the dam site?	No

9.	Is there any existing Grievance Redressal Mechanism (GRM) within the department to address any kind of grievance/complaints by general public?	No
10.	Details of any grievances received lately related to this new Scheme?	No
11.	Is dam premise a restricted area or has open access to general public?	It has open access to general public
12.	Are there tribal's living in the surrounding area of dam complex? Which tribes are these? Please give brief detail.	Wurbo tribes
13.	Does the dam have any tourism/water recreation facilities? If yes, how many approximate tourists visits annually, annual revenue generated, whether any portion of this generated revenue is diverted to regular O&M of this dam.	No
14.	Do you engage any local labourers for routine dam maintenance work? If yes, what is the process of engaging these locals for work at dam, whether through Government approved contractor or hired individually?	Yes. Through government approved contractor

Table 8.6 Interaction with Representatives of the Traditional District Head, Water Users Association, Gassol Integrated Farm, Fishermen Association and the Community

S/No	Questions	Responses provided / Observations
1.	How many villages are in immediate downstream vicinity?	1
	Are they dependent on dam in any way for their livelihood?	Yes
2.	Does any of these villages were displaced and rehabilitated during the construction of the Dam. Is there any pending compensation issues?	No
3.	Is there any R&R affected person known to you who is currently working with the dam authorities? If so, in what capacity (employee/direct worker/contractor)	
4.	Are you aware of any fishing communities living immediately downstream of dam whose livelihood are directly linked with the fishing activities of this dam?	No
5.	Are you aware of fishing working seasons, revenue earning, any access to general public for fishing, any suggestion etc.	Yes
6.	Are you aware of local women affected in any way by dam operations?	No
7.	Are you aware of any early flood warning system for this dam, or any other system wherein downstream communities getting regular update during flood season for any uncontrolled release of water?	No
8.	Are you aware of any dam related incident happened in the past wherein some loss of life encountered? If yes, brief summary may be given	No
9.	If you have to contact the dam authorities; how will you contact, through telephone/mobile/e mail/personally?	Personally

	In the past, on any occasion, did you contact dam authorities for any specific reason affecting public in general? If so, how did you contact and how was the response of dam authority?	
10.	Give your views about the dam, how this dam is helping Country, State, district or local communities in meeting its objectives, any specific concern can also be given?	The dam helps in providing water for irrigation during dry season
11.	In future, during stakeholder's consultation meeting, would you like to be a part of these consultation and mock drill activities to be conducted by dam authorities?	No
	If yes, how to contact you, please give the corresponding address along with all details to receive the official communication.	
12.	Are you a regular follower of official website of dam authorities as a general public, in case you are a contractor, do you follow various tenders' notices being invited for various maintenance of this dam?	Yes
13.	Any suggestion to improve overall system by dam authorities in any way, please give in brief?	
14.	Communities within the vicinity/corridor of the Dam	Wuro keso
15.	Communities making use of the Dam for Irrigation	Wuro Keso and people from all over the country
16.	Communities downstream of the Dam and irrigation	Wuro keso

8.4 Grievance Mechanism

The project will set up a project-specific Grievance Mechanism for people to report concerns or complaints, if they feel unfairly treated or are affected by any of the subprojects. A separate GBV GRM shall also be established to address issues relating to GBV/SEA/SH and any victims. The GRM system will record and consolidate complaints and their follow-up.

While the GBV GRM is designed to exclusively and confidentially handle matters of GBV/SEA/SH nature, the project GRM system will be designed to handle complaints perceived to be generated by the subproject or its personnel. It may also include disagreements about compensation and other related matters. The mechanism will amongst other things:

- provide information about project implementation;
- provide a forum for resolving grievances and disputes at the lowest level;
- resolve disputes relatively quickly before they escalate to an unmanageable level;
- facilitate effective communication between the project and affected persons;
- win the trust and confidence of project beneficiaries and stakeholders and create productive relationships between the parties.

The GRM should review any existing resolution systems (government/traditional) that are operative in the area and propose ways that the GRM may fit within these systems. Ideally the subproject GRM should have second and third levels of appeal (including the court system, if appropriate, for legitimate claims that cannot be resolved at lower levels). The functioning of the GRM system, how to register complaints (written, by phone, or in person), where to go and hours of service, all should be clearly explained in local language during initial public consultations on the subproject. Local language brochures should be provided reiterating the functioning of the GRM.

The FPMU is responsible for setting up and maintaining the GRM that allows the general public and affected communities or individuals to file complaints and receive responses promptly. will also record and consolidate complaints and their follow-up. This system will be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

The GRM will be communicated to all stakeholders during the project's stakeholder engagement activities and remain available throughout the project cycle. It is expected to address concerns promptly an effectively, in a transparent manner that is culturally appropriate and readily accessible to all project affected parties, at no cost and without retribution. It also will allow for anonymous complaints to be raised and addressed.

The NPCU will assign a specific staff member to ensure that this is functioning properly. The consultants should review any existing GRM systems (government/traditional) that are operative in the area and propose ways that the GRM may fit within these systems. Ideally, the GRM should have second and third levels of appeal (including the court system, if appropriate, for legitimate claims that cannot be resolved at lower levels). The functioning of the GRM system, how to register complaints (written, by phone, or in person), where to go and hours of service, all should be clearly explained in local language during initial public consultations on the project. For clear procedure below, present a typical grievance redress process and modality.

The Grievance Management Process as shown in table 8.7 will include;

- Different ways in which users can submit their grievances, which may include submission in person, by phone, text message, mail, email or via a website;
- A lot where grievances are registered in writing and maintained as a database;

- Publicly advertised procedures, setting out the length of time users can expect to wait for acknowledgement, response, and resolution of their grievances;
- Transparency about the grievance procedure, governing structure and decision makers; and
- An appeals process (including the national judiciary) to which unsatisfied grievances may be referred when resolution of grievance has not been achieved.

Process	Description	Time	Other Information
Identification of grievance	Face to face; phone; letter; mail; e-mail; website; recorded during public/ community interaction; others The responsible party to receive the grievances will be REA and the subproject implementers	Frame 1 Day ¹⁵	Email address; hotline number
	The grievance can also be passed through other parties, such as the chief office because the public are more conversant with this office. The grievance receiver would then pass the complaint to REA contact person		0: 15
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e., in a logbook) It will be prudent to have a grievance record book where the grievances are recorded for follow up	3-6 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law/ policy or this ESMF provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	3 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-8 Days	
Response signed off	Redress action approved at appropriate	8-15 Days	
Implementation /communication of response	Redress action implemented and update of progress on resolution communicated to complainant	5-9 Days	

Table 0.7. Crievence Menagement Dree	~ ~ ~
Table o. / . Grievance Management Proce	355

If complainants are not satisfied with the grievance process, even after arbitration, the affected persons will still have the right to present their complaint through the court system.

8..4.1 The SPIN FPMU Grievance Redress Committee

The Grievance Redress Committees, GRC, will be mandated to deal with all types of grievances arising at the community level due to SPIN subprojects except GBV/SEA/SH matters. As earlier indicated, a separate GBV GRC shall be established to address any grievances relating to any GBV/SEA/SH in accordance with the provisions of this ESMF under Section 8.5. The project GRC members will comprise qualified, experienced, and competent personnel who can interact and gain the trust of the Affected Persons (AP's) in their communities. The GRC should consist of both male and female representatives. They should be able to accept complaints, provide relevant information on the

¹⁵ Day means working day

process, discuss the complainants' situations with APs, and explore possible approaches for resolution. The project Grievance Redress Committee will include the following members;

- 1. SPIU Environmental Safeguards Specialist and Social Development Specialist
- 2. SPIU Communication Specialist
- 3. SPIU M&E Specialist
- 4. SPIU Gender Specialist (if available)

The project Committee will be responsible for the following:

- Communicating with the Affected persons (AP's) and evaluate if they are entitled to recompense.
- Publicizing within the Communities, the list of affected persons and the functioning of the established grievance redressal procedure;
- Recommending to the Social Officer of the SPCU solutions to such grievances from affected persons;
- Communicating the decisions to the AP's;
- to acknowledge appeals from persons, households or groups who rightfully will not be affected by SPIN and its projects, but claim to be,
- Recommending to the SPCU whether such persons should be recognized as AP's, and,
- Communicating back the decisions to the Claimants.

This committee shall be the apex authority of the SPIN GRM, which will make recommendations for action to the Project Coordinator in the case of issues of extreme importance, or make referral to the Citizens' Rights/Mediation Centre in the Ministry of Justice of an applicable state in the case of grievances that are either unresolvable at the committee level or found to be extraneous to the execution of the SPIN Project

8.5 Gender Based Violence (GBV) and Sexual Exploitation, Abuse and Harassment (SEAH)

All complaints related to GBV shall be treated in a private and confidential manner, limiting information to what the survival or complainant is freely willing to provide. A separate register shall be opened for this category of cases and shall ONLY be accessed by the community-based GRC secretary, the GRM coordinator at the SPCU (and any female GRC member empowered to handle GBV cases where the Chairman and Secretary are all male). The complainant (if a survival) shall be attended to with empathy, assurance of safety and confidentiality. If the complainant is not willing to divulge any information, the GRM officer should respect this view, and the complainant referred to the appropriate nearest medical centre, approved with available GBV service provider or police, depending on the complainant's choice. Such a complaint should be reported to the World Bank Task Team by the SPIU GRC.

Other considerations for the handling of GBV/SEA grievances include:

- No GBV data on anyone who may be a survival should be collected without making referral services available to support them
- All GBV complaint should be referred to the right service provider and other relevant institutions, information to be requested should be limited to:
- The nature of the complaint (what the complainant says in her/his own words without direct questioning) If, to the best of their knowledge, the perpetrator was associated with the project

Note, a separate SEP has been prepared for the SPIN Project, based on the World Bank's Environmental and Social Standard 10 on Stakeholder Engagement.

9.0 DISCLOSURE REQUIREMENTS

The sharing of information is essential for sustainable development. It stimulates public debate on, and broadens understanding of development issues, and enhances transparency and accountability in the development process. It also strengthens public support for efforts to improve the lives of people in developing countries, facilitates collaboration among the many parties involved in development, and improves the quality of assistance projects and programs.

On April 3, 2013 the World Bank's Board approved revisions to the Policy on Access to Information. The new <u>World Bank Policy on Access to Information</u>, effective July 1, 2013, supersedes the World Bank Policy on Access to Information (AI) dated July 1, 2010. The changes to the AI policy are clearly aligned with the World Bank Group's commitment to greater transparency, accountability and access to information.

The AI Policy endeavors to strike an appropriate balance. It is based on the following five principles:

- 1. Maximizing access to information;
- 2. Setting out a clear list of exceptions;
- 3. Safeguarding the deliberative process;
- 4. Providing clear procedures for making information available;
- 5. Recognizing requesters' right to an appeals process.

The ESMF was prepared with the FPMU, Federal and State MDAs, CBOs/NGOs, RBDAs, WUA and other relevant stakeholders. The ESMF is expected to be disclosed publicly as a separate and stand-alone document for review and comment through the Federal/State Ministries of Environment at designated locations at Federal and in the participating States, and in World Bank website. ESIAs/ESMPs will be prepared for each sub-project based on the guidelines and procedures highlighted in this ESMF and disclosed similarly.

10.0 CONCLUSION

The Environmental and Social Management Framework (ESMF) has been prepared to establish the mechanism to determine and overcome potential adverse environmental and social impacts originating from the SPIN project. In addition, requirements for environmental and social management and monitoring and institutional strengthening have been highlighted. The local communities and stakeholders interviewed during the impact assessment and stakeholder engagement were well in support of the proposed project. The ESMF is designed to ensure that all activities under this project will be carried out sustainably.

The proposed environmental and social screening process will enable the Implementing Agencies to identify and subsequently assess and mitigate potential adverse impacts in accordance with the statutory federal and state instruments in Nigeria, as well as World Bank ESS requirements. The ESMF has also provided guidance for preparation of the site-specific safeguards instruments (ESDD, ESMP/ESIA) which will be required during project preparation and implementation in each state.

The proposed SPIN project is environmentally viable, and the implementation of mitigation measures identified in this study will minimize the environmental and social impacts associated with various components of the proposed project. However, the SPIN project impact ranges from "Low to Moderate and Substantial to High in significance subject to nature and scope of rehabilitation proposed for execution at each dam including the safety risk categorization of individual dam (ESS4 – Annex A).

Overall, the environmental and social risk rating for the Project has been rated as High, because the project is expected to cover many existing dams (medium, large) across various States in Nigeria with varying geographical conditions and environmental and social sensitivities. The extent of project activities impact are currently not known and environmental and social impacts and risks will need to be assessed when projects are identified. The Project will also prepare feasibility studies and E&S due diligence for a future hydropower investment. Additionally, the capacity of implementing agencies, i.e., the River Basin Authorities, participating States, and other associated agencies towards management of E&S risks is low and necessitates significant capacity building efforts.

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ANNEXES

ANNEX ONE: List of Potential Dams and Irrigation

s/N	NAME	ТҮРЕ	WATER SOURCE	Utilization/Purpose	DAM HEIGHT (m)	CREST WIDTH (m)	CREST LENIGTH (m)	RESERVOIR STORAGE (MCM)	POPULATION D/S	LAT.	LONG.	Water Supply (m3/s)	Irrigation (hectare)	HP (MW)	CATEGORY	STATE	RBDA	OWNER	Year of Completio n
	Dam rehabilitation fi	rom Irrigation	Projects																
1	KAMPE (IRR)	EARTHFILL	OMI DAM	Irrigation, Water Supply	42.5	8	1,976	250.0	11,414	8° 12'	5° 38'	0.69	4,100	6	LARGE	KOGI	LNRBDA	LNRBDA	1999
2	LOWER OGUN (IRR)	ZONED EARTHFILL	OYAN DAM	Water Supply, Irrigation, Hydro	30.44	8	1,044	270.0	77,594	7º 15'	3° 15'	8.10	3,000	9	LARGE	OGUN	OORBDA	OORBDA	1983
3	DOMA (IRR)	EARTHFILL	DOMA DAM	Water Supply, Fishing, Irrigation	27	8	520	37.5		8° 23'	8° 21'		2,000		LARGE	NASARAWA	LBRBDA	Nasarawa State Govt	1988
5	TURUNKU (IRR)	EARTHFILL	WEIR, D/S OF GALMA DAM	Water Supply, Irrigation, Fishing	28	6	2,700	186.1		10 62/75	8.35339		60		LARGE	KADUNA	HJRBDA	FEDERAL GOVERN MENT	2013
e	LOWER TARABA (Wuro Keso)	EARTHFILL	Wuro Keso Dam	Irrigation	10	6	500	15.0								Taraba	UBRBDA		
7	CHAM (IRR)	Rockfill + Earthfill	CHAM DAM	Water Supply, Irrigation	13	9	1,176	65.4		10°20"	10° 38'		200	24/25	LARGE	Gombe	UBRBDA	UBRBDA	1991
8		Earthfill	NAKA DAM	Irrigation, Water Supply, Fishing	8.5		600	2.50		7° 36'	8° 25'		50		Medium	Benue	LBRBDA	LBRBDA	1986
9	OBAGAJI	Earthfill	OBAGAJI DAM	Irrigation, Water Supply	5	3	350	1.10		7° 45'	7° 55'		1,000		Medium	Benue	LBRBDA	LBRBDA	
	Dam rehabilitation proposed by Dams Department																		
13	ADADA	EARTH FILL	ADADA	Water Supply, Fishing	15	6	254	1.4		6° 44'	7° 17'				LARGE	ENUGU	ANAMBRA IMO	FEDERAL GOVERN MENT	COMPLET ED
14	OGBESSE	EARTHFILL	OGBESSE	Water Supply ,Hydro	10	6	1,050	73.5	6,805	7° 27'	5° 18'			1	LARGE	EKITI	BORBDA		
15	IRAWO	EARTHFILL	PAAPA	Water Supply, Irrigatio	r 16	7	1,000	9.5		8° 31'	3° 21'	0.05	600	0.11	LARGE	ογο	OORBDA	FEDERAL GOVERN MENT	
16	ile IFE	EARTHFILL	OWENA		20		660	14.0		7° 45'	3° 56'				LARGE	OSUN	OORBDA	FEDERAL GOVERN MENT	
17	IKERE GORGE	EARTHFILL + CONCRETE	OGUN, ANAKA, OWU	Irrigation,Water supply, Hydro	51	5.5	646	565.0	2,232	8 3/17	3.74		3,000	6	LARGE	Ογο	OORBDA	OGUN- OSHUN RIVER BASIN	1991
18	GALMA MULTIPURPOSE	EARTHFILL	GALMA	Water Supply, Irrigation, Fishing	28	6	2,700	186.1	27,348	10 62/75	8.35339		60		LARGE	KADUNA	HJRBDA	FEDERAL GOVERN MENT	2013
19	INYISHI	Earthfill	Mbaa	Water Supply, Fishing	12	6	210	25.0		5.600185	7.162007				MEDIUM	імо		AIRBDA	2012
20	MGBOWO				11	6	210	0.08											
21	IBIONO IBOM				13	6	110	2.2								Akua Ibom			2018
22	ALAU	Earthfill	Ngadda	Multipurpose	9.5	6	344	5.6		11° 40'	13º 12'	0.88			Medium	Borno	CBDA	CBDA	1992
23	SABKE	EARTHFILL	SABKE	Water Supply, Irrigation, flood Control	12	6	780	31.1		13 5/83	8.15834	unknown	1,200	NA	LARGE	KATSINA	SRRBDA	STATE GOVERN	1997
24	AKUME																		

**Dam number 1 to 9 are the dams identified which are linked to potential irrigation schemes and dams number 13 to 24 are the dams identified

by the

Government as no-regret measures.

ANNEX TWO: GENERIC CHECKLIST FOR ENVIRONMENTAL AND **SOCIAL SCREENING**

Generic Environmental and Social Screening Checklist

INTRODUCTION INTRODUCTION City City City City City City City City	No	Item	Details									
1 Name of the State 2 City 3 Local Government 4 Brief description of the project 5 Dees the site /project require any; 7 Maintino of land, wetlands 6 Minimum land area required for the project for the and area within the identified location (fish) 7 Available total land area within the identified location (fish) 8 Espected construction period 9 Responsible contact person with contact information (fish) 10 Present Land Ownership 11 Source of Punding 7 Available total fish 12 Total Cost of the Project 13 Anticipated Date of Completion DESCRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) 15 Relief (difference in elevation) Low <20m			INTR	ODUCTI	ON							
2 City City City Second Government 4 Brief description of the project No If yes give the extent (in ha) 5 Dees the site /project require any: Yes No If yes give the extent (in ha) 6 Minimum land area required for the project development (ha) Image: Construction period Image: Construction period Image: Construction period 7 Available total fand area within the identified location (hard) Expected construction period Image: Cons	1	Name of the State										
3 Local Government 4 Brief description of the project 5 Poes the site / project require any: 6 Minimum land, wetlands 6 Minimum land area required for the proposed development (ha) 7 Available total land, area within the identified location (na) 8 Expected construction period 9 Responsible contal tand area within the identified location (na) 10 Present Land Ownership 11 Source of Punding 12 Total Cost of the Project 13 Anticipated Date of Completion PHYSICA DESCRIPTION OF THE ENVIRONMENT PHYSICA 1 Total Cost of the Project 13 Antable total Land orms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are ave provide them 10 PENSICA 14 Total Cost of the Project 13 Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are ave provide them	2	City										
4 Brief description of the project 5 Does the site / project require any; Reclamation of land, wethands Image: State in the state in t	3	Local Government										
Sector of land, wetlands Yes No If yes give the extent (in ha) Reclamation of land, wetlands If yes give the extent (in ha) If yes give the extent (in ha) Reclamation of land, wetlands If yes give the extent (in ha) If yes give the extent (in ha) Reclamation of land, wetlands If yes give the extent (in ha) If yes give the extent (in ha) Response development (ha) Available total land area within the identified location (ha) If yes give the extent (in ha) Responsible contact person with contact Information Information Other (specify) 11 Source of Punding State Private Other (specify) 12 Total Cost of the Project Anticipated Date of Completion Provide them Provide them 13 Anticipated Date of Completion Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are ava provide them Provide them Sol0 14 Topography & Landforms (map) Low <20m	4	Brief description of the project										
Yes No If yes give the extent (in ha) Recharation of land, wetlands I I Clearing of forest I I Felling of trees I I 6 Minimum land area required for the proposed development (ha) I I 7 Available total land area within the identified location period I I 9 Responsible total and area within the information I I 10 Present Land Ownership State Private Other (specify) 11 Source of Funding I I I I 10 Present Land Ownership State Private Other (specify) 11 Source of Funding I<	5	Does the site /project require any;	•									
$ \begin{array}{ c c c c c c } \hline Reclamation of land, wetlands & c c c c c c c c c c c c c c c c c c$				Yes	No	If y	ves give t	he exte	ent (in ha)			
Clearing of forest		Reclamation of land, wetlands										
Felling of trees Image: Second S		Clearing of forest										
6 Minimum land area required for the proposed development (ha) 7 Available total land area within the identified location (ha) 8 Expected construction period 9 Responsible contact person with contact information 10 Present Land Ownership 11 Source of Funding 12 Total Cost of the Project 13 Anticipated Date of Completion BECRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are ava provide them 15 Relief (difference in elevation) 16 Slope 17 Position on Slope 18 Soil 19 Soil Beth 20 Soil Beth 21 Climate 22 Source of fresh Surface Water 23 Source of fresh Surface Water 24 Surface Water Use 25 Surface Water Use 26 Ground Water Quality 27 Poor 28 Ground Water Quality		Felling of trees										
6 Minimum land area required for the proposed development (ha) 7 Available total land area within the identified location (ha) 8 Expected construction period 9 Responsible contact person with contact Information 10 Present Land Ownership 11 Source of Funding 12 Total Cost of the Project 13 Anticipated Date of Completion DESCRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are available to a state of the project in elevation 15 Relief (difference in elevation) Low <20m		O O O O O O O O O O										
7 Available total land area within the identified location (ha) Available total land area within the identified location (ha) 8 Expected construction period Importation 9 Responsible contact person with contact Information Information 10 Present Land Ownership State Private Other (specify) 11 Source of Funding Importantion Importantion Importantion 12 Total Cost of the Project Importantion Importantion Importantion 13 Anticipated Date of Completion Importantion Importantion Importantion IPHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avar provide them Importantion Importantion 15 Relief (difference in elevation) Low <20m	6	Minimum land area required for the proposed development (ha)										
8 Expected construction period 9 Responsible contact person with contact Information 10 Present Land Ownership State 11 Source of Funding 12 Total Cost of the Project 13 Anticipated Date of Completion DESCRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avery provide them 15 Relief (difference in elevation) Low <20m	7	Available total land area within the identified location (ha)										
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10 Present Land Ownership State Private Other (specify) 11 Source of Punding	9	Responsible contact person with contact Information										
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12 Total Cost of the Project 13 Anticipated Date of Completion DESCRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avery provide them 15 Relief (difference in elevation) Low <20m	11	Source of Funding										
13 Anticipated Date of Completion DESCRIPTION OF THE ENVIRONMENT PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avaprovide them 15 Relief (difference in elevation) Low <20m	12	Total Cost of the Project										
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PHYSICAL 14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avar provide them 15 Relief (difference in elevation) Low <20m			DESCRIPTION OF	F THE E	NVIR	ONME	NT					
14 Topography & Landforms (map) Attach an extract from relevant 1: 50,000 topographic sheet/ if detailed maps are avery provide them 15 Relief (difference in elevation) Low <20 m		r	PH	YSICAL								
15 Relief (difference in elevation) Low <20m	14	Topography & Landforms (map)	Attach an extra provide them	ct from	releva	ant 1: !	50,000 to	opograj	phic sheet/ if	detaileo	d map	s are ava
16 Slope Low <30% Medium 30-40 % High 40-60 % Very Hig 60% 17 Position on Slope Bottom Mid-slope Upper-slope 60% 18 Soil Soil Deep >100 cm >100 cm 19 Soil Depth Shallow < 20 cm	15	Relief (difference in elevation)	Low <20m	Me	edium	n 20-40	Om		High 40	-60	>6	50m
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	16	Slope	Low <30%	Me	edium	n 30-40	0 %		High 40	-60 %	Ve 60	ery Higl)%
18 Soil 19 Soil Depth Shallow < 20 cm	17	Position on Slope	Bottom	Mi	d-slop	pe			Upper-s	slope		
19 Soil Depth Shallow < 20 cm Moderate 20 - 100 cm Deep >100 cm 20 Soil Erosion Low Medium High 100 cm 21 Climate Wet Zone Intermediate Zone Dry Zone/ Semi Arid 22 Annual dry period Intermediate Zone Dry Zone/ Semi Arid Seasonal Stream 23 Source of fresh Surface Water Spring/canal Tank/Reservoir Perennial Stream Seasonal Stream 24 Surface Water Use Domestic Washing/Bathing Irrigation Aniriuse 25 Surface Water Quality Poor Moderate Good Good 26 Ground Water Availability Dug Well Tube Well Other (specify) Animal 28 Ground Water Quality Poor Moderate Good Good 29 Incidence of Natural Disasters Floods Prolonged droughts Cyclones/tidal waves Other	18	Soil										
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23 Source of fresh Surface Water Spring/canal Tank/Reservoir Perennial Stream Seasonal Stream 24 Surface Water Use Domestic Washing/Bathing Irrigation Anir use 25 Surface Water Quality Poor Moderate Good Irrigation Animal 26 Ground Water Availability Dug Well Tube Well Other (specify) Animal 27 Ground Water Use Domestic Washing/Bathing Irrigation Animal 28 Ground Water Quality Poor Moderate Good Irrigation Animal 29 Incidence of Natural Disasters Floods Prolonged droughts Cyclones/tidal waves Other	22	Annual dry period										
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27 Ground Water Use Domestic Washing/Bathing Irrigation Animal 28 Ground Water Quality Poor Moderate Good Good<	26	Ground Water Availability	Dug Well	Tub	e Wel	11			Other (sp	oecify)		
28 Ground Water Quality Poor Moderate Good 29 Incidence of Natural Disasters Floods Prolonged droughts Cyclones/tidal waves Other	27	Ground Water Use	Domestic	Was	shing/	/Bathir	ng –		Irriga	tion	T	Animal u
29 Incidence of Natural Disasters Floods Prolonged droughts Cyclones/tidal waves Other	28	Ground Water Quality	Poor				Moder	ate		Go	ood	
	29	Incidence of Natural Disasters	Floods Prol	onged d	rough	its	1	Cyclor	nes/tidal wave	es		Oth

No	Item		Details								
30	Geological Hazards		Landslides	5	Ro	ck falls		Sı	ubsidenc	ce	Other
				ECC	DLOGIC	AL					
31	Habitat Types in the Project Site (indicate the % of each habitat type)		Natural %), rive lagoon(home-g	forest erine %] arden	t (%), forest,), estua <u>s(%)</u> ,	degraded grassland ry(%) Other (l forest (%)), coast %) (Lis	:(%), n , aband :al scrut st)	atural so oned ag o(%)	crubland(%), de gricultural land(, mangrove(%)	graded scrubl %), marsh(), salt marsh(
32	Habitat types within 250m radius site periphery (indicate the % of each habitat type)	from the	Natural %), rivo lagoon(home-g	forest erine %] arden	t (%), forest,), estua <u>s(%),</u>	degraded grassland ry(%) Other (l forest (%) , coast %) (Lis	:(%), n , aband al scrub st)	atural so oned ag (%),	crubland(%), de gricultural land(mangrove(%),	graded scrubl %), marsh(salt marsh(
33	Habitat types within 500m radius site periphery (indicate the % of each habitat type)	from the	Natural %), rive lagoon(home-g	forest erine %] arden	t (%), forest,), estua s(%),	degraded grassland ry(%) Other (l forest (%) , coast %) (Lis	:(%), n , aband al scrub st)	atural so oned ag (%),	crubland(%), de gricultural land(mangrove(%),	graded scrubl %), marsh(salt marsh(
34	Are there any environmentally and o sensitive areas within 250m?	culturally	Protecte Areas	ed	Migrat pathwa animal	ory ays of s	Arc	heologic	al sites	Wetlands	Mangroves strands
35	Are there any plants of cons importance within 250m (ender threatened species)? If yes, encouraged to provide a list	servation nic and									
36	Are there any animals of cons importance within 250m (ender threatened species)?	servation nic and									
	ii yes, encouraged to provide a list		FNVIR)NMF	ΝΤΔΙ S	FNSITIVI	тv				
37	Does the project wholly or partly fall	within an	v of the fol	lowing	g areas)					
	Area			- (Yes	No	Unaware	
	100m from the boundaries of or with	thin any a	area								
	100m from the boundaries of or with	thin any a	area								
	Coastal zone										
	Any erodible area										
	Any Flood Area										
	Any flood protection area										
	60 meters from the bank of a public	stream									
	Any reservations beyond the full su	pply level	of a reser	voir							
	Any archaeological reserve, ancient	or protect	ted monun	ient							
	Within a distance of one mile of the b	ounaary (of a <u>Nation</u>	al Rese	<u>erve</u>						
	FNVIRONMENTAL IM	ΡΑΓΤ ΔΝ	DMITICA	TION	/ ENH 4	NCEMEN		ING COP	ISTRUC	TION PERIOD	
	ІМРАСТ						MITIG	ATION /	ENHAN	ICEMENT	
		Н	М	L		N/A					
38	Soil erosion										
39	Water pollution										
40	Noise pollution										
41	Solid waste generation										
42	Loss of vegetation cover										
43	Habitat loss or fragmentation										
44	General disturbance to animal behavior										
45	Interference with normal movement of animals										
46	Irreversible/irreparable										
	environmental change	MDACT /			NI / ENI	JANCEME			DEDATI		
47	ENVIKUNMENTAL			ATIU		IANCEME	INT DU	JAING U	Sewage	Pond	
47	Sewerage Dispusar	Sentic 7	oi Fank		<u> </u>				Other		
L		Deptie	with the second se		1				ourer		

No	Item	Details				
48	Solid Waste Disposal					
49	Drinking Water Supply	Common Dug Well	Yes / No	Individu	al dug well	Yes No
		Common Tube Well	Yes / No	Town su	pply – pipe	Yes No
		Spring	Yes / No	Town su	pply – Stand post	Yes No
50	Alteration to storm water drainage pattern	No changes	No major Change	s	Major changes	
	CO	NTACT DETAILS OF OFFIC	CIALS AND RECOM	MENDATIO	NS	
51	Name of the officer completed the form (From the Developer)					
52	Designation and contact Information					
53	List of team members					
55	Overall observation and recommendation					
55	Signature and date					
56	Name and Contact Information of the officer who checked this form (Environmental Officer)					
57	Remarks					
58	Signature and Date					

Generic Environmental and Social Mitigation Measures Checklist

Upon completion of the screening form, which would have identified potential sub-project negative environmental and social impacts, the PCU or stakeholders at various levels may use the checklist below to identify the corresponding mitigation measures to successfully manage these impacts.

	Land Degradation	Water	Bio-diversity, Natural	People
Planning	Flood control: (i) Rehabilitate anti-flooding infrastructure such as, micro-basins, micro dams, hill side terracing, soil bunds etc. (iii) Construct new anti-flooding infrastructure. (iv) Introduce crop rotation management, use of fertilizers, tree planting and soil drainage (v) Control bush burning and fires. vi) Protection of roadsides by planting of vegetation. vii) Protection of outlet of drainage canals and culverts to avoid clogging of river drains. viii) Prepare an effective and sustainable maintenance plan.	 i) Promote potable water and sanitation sub projects. ii) Promote environmental health measures and public health education. iii) Improve management of household and solid waste, including infrastructure for collection and treatment of liquid waste and waste water. iv) Review, update and enforce pollution control legislation. v) Strengthen enforcement capacity. vi) Develop and implement rural water supply and sanitation policy. vii) Locate sub projects at far/safe distances from water points and sources. viii) Increase public awareness. 	 i) Consideration of alternative locations/siting of sub projects. ii) Reduce biomass use through provision of alternative energy sources and construction materials (cooking stoves, photovoltaics). iii) Strengthen natural resource management capacities iv) Develop alternatives to slash and burning clearing, decrease overgrazing. v) Promote agro forestry. vi) Wetlands management and small irrigation development. vii) Protect sensitive ecosystems such as forests and wetlands, prevent further encroachment in protected areas. viii) Enforce existing laws. ix) Locate sub projects appropriately. x) Training of communities of sustainable uses of resources. xi) Identify certain species of trees and animals that must be protected. xii) Exclude ecosystems that provided and important habitat for protected parks and wetlands 	 i) No involuntary settlement allowed due to land acquisition, denial or restriction of access to economic resources such as trees, buildings etc., used by members of communities. ii) Provide social services in areas of Primary education Primary health care Water supply Micro-finance Feeder roads Soil conservation and natural resources management. Basic and required training at State and local community levels. Ensure that these services are equitably distributed throughout the districts and that access is open to all ethnic groups irrespective of status. iii) Ensure that vulnerable groups in sub project areas are included in project activities and benefit from decision-making and implementation. iv) Provide employment opportunities during of Civil works e.t.c

	Land Degradation	Water	Bio-diversity, Natural Habitats and Wetlands	People				
Construction	 Construction in d Adequate protect Employ all unski when available th Source goods and Control and daily Provision of adee hazardous mater Dust control by v Appropriate and Siting of Latrine sewage drainage Restrict construct Minimize loss of sensitive species Restoration of ve Safety designs (s Ensure availabilit Use of appropriat 	In dry season. Protection of son surfaces during construction. tection from livestock entry by fencing the site perimeters. 1skilled labour from local community and semi-skilled labour first from local commun- le there in. and services from local districts first, when available. laily cleaning at construction sites. adequate waste disposal services including proper disposal of chemicals and ot aterials. by water, appropriate design and siting, restrict construction to certain times. and suitable storage of building materials on site. 'ines at safe distances from wells and other water points and using closed systems age. ruction to certain hours s of natural vegetation during construction; alternative sites; various special measures cies f vegetation; cleanup of construction sites. s (signage) bility of clean potable water for use in latrines, canteens and for drinking. priate building materials. No asbestos etc						
Day to Day Operations	 Use facilities/inf Employ trained s Log and report a Perform periodi Monitoring Plan. 	ties/infrastructure as designed and as intended. rained staff to man and secure facilities. report any damages done and repairs needed. periodic monitoring of all aspects as contained in the sub project Environmental and Social 1g Plan.						
Maintenance	 Prepare and add Maintain approp Implement main repairs to damag Have suitably training 	 Prepare and adopt suitable maintenance plan. Maintain appropriate budget necessary to implement maintenance plan. Implement maintenance plan in two stages: for activities requiring day-to-to maintenance such as repairs to damages done, regular inspections etc and longer/periodic term maintenance. Have suitably trained staff to carry out maintenance and access to materials/goods/equipment. 						

Additional Screening Questions to Determine the Need and Possible Extent of Further Environmental and Social Review and Management

	ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POS ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT	SIBLE EXTENT OF FURTHER
1.	Biodiversity and Natural Resources	Answer (Yes/No/ Not Applicable)
1.1	Would the proposed project result in the conversion or degradation of modified habitat, natural habitat or critical habitat?	
1.2	Are any development activities proposed within a legally protected area (e.g. natural reserve, national park) for the protection or conservation of biodiversity?	
1.3	Would the proposed project pose a risk of introducing invasive alien species?	
1.4	Does the project involve natural forest harvesting or plantation development without an independent forest certification system for sustainable forest management (<i>e.g. PEFC, the Forest Stewardship Council certification systems, or processes established or accepted by the relevant National Environmental Authority</i>)?	
1.5	Does the project involve the production and harvesting of fish populations or other aquatic species without an accepted system of independent certification to ensure sustainability (<i>e.g. the Marine Stewardship Council certification system, or certifications, standards, or processes established or accepted by the relevant National Environmental Authority</i>)?	
1.6	Does the project involve significant extraction, diversion or containment of surface or ground water? For example, construction of dams, reservoirs, river basin developments, groundwater extraction.	
1.7	Does the project pose a risk of degrading soils?	
2.	Pollution	Answer (Yes/No/ Not Applicable)
2.1	Would the proposed project result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for negative local, regional, and transboundary impacts?	
2.2	Would the proposed project result in the generation of waste that cannot be recovered, reused, or disposed of in an environmentally and socially sound manner?	
2.3	Will the propose project involve the manufacture, trade, release, and/or use of chemicals and hazardous materials subject to international action bans or phase-outs? For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants, or the Montreal Protocol.	
2.4	Is there a potential for the release, in the environment, of hazardous materials resulting from their production, transportation, handling, storage and use for project activities?	
2.5	Will the proposed project involve the application of pesticides that have a known negative effect on the environment or human health?	
3.	Climate Change	
3.1	Will the proposed project result in significant ¹⁶ greenhouse gas emissions? Annex E provides additional guidance for answering this question.	
3.2Is 4.	the proposed project likely to directly or indirectly increase environmental and social vulnerability to climate change now or in the future (also known as maladaptive practices)? For example, a project that would involve indirectly removing mangroves from coastal zones or encouraging land use plans that would suggest building houses on floodplains could increase the surrounding population's vulnerability to climate change, specifically flooding. Social Equity and Equality	Answer
4.1		(Yes/No/ Not Applicable)
4.1	volid the proposed project have environmental and social impacts that could affect vulnerable groups?	
4.2	Is the project likely to significantly impact gender equality and women's empowerment?	

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ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT			
4.3	Is the proposed project likely to directly or indirectly increase social inequalities now or in the future?		
4.4	Will the proposed project have variable impacts on women and men, different ethnic groups, social classes?		
4.5	Have there been challenges in engaging women and other certain key groups of stakeholders in the project design process?		
4.6	Will the project have specific human rights implications for vulnerable groups?		
5.	Demographics	Answer (Yes/No/ Not Applicable)	
5.1	Is the project likely to result in a substantial influx of people into the affected community(ies)?		
5.2	Would the proposed project result in substantial voluntary or involuntary resettlement of populations? For example, projects with environmental and social benefits (e.g. protected areas, climate change adaptation) that impact human settlements, and certain disadvantaged groups within		
5.3	these settlements in particular. Would the proposed project lead to significant population density increase which could affect the environmental and social sustainability of the project? For example, a project aiming at financing tourism infrastructure in a specific area (e.g. coastal zone, mountain) could lead to significant population density increase which could have serious environmental and social impacts (e.g. destruction of the area's ecology, noise pollution, waste management problems, greater work burden on women).		
6.	Culture	Answer (Yes/No/ Not Applicable)	
6.1	Is the project likely to significantly affect the cultural traditions of affected communities, including gender-based roles?		
6.2	Will the proposed project result in physical interventions (during construction or implementation) that would affect areas that have known physical or cultural significance to indigenous groups and other communities with settled recognized cultural claims?		
6.3	Would the proposed project produce a physical "splintering" of a community? For example, through the construction of a road, powerline, or dam that divides a community.		
7.	Health and Safety	Answer (Yes/No/ Not Applicable)	
7.1	Would the proposed project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions? <i>For example, development projects located within a floodplain or landslide prone area.</i>		
7.2	Will the project result in increased health risks as a result of a change in living and working conditions? In particular, will it have the potential to lead to an increase in HIV/AIDS infection?		
7.3	Will the proposed project require additional health services including testing?		
8.	Socio-Economics	Answer (Yes/No/ Not Applicable)	
8.1	Is the proposed project likely to have impacts that could affect women's and men's ability to use, develop and protect natural resources and other natural capital assets? For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their development, livelihoods, and well-being?		
8.2	Is the proposed project likely to significantly affect land tenure arrangements and/or traditional cultural ownership patterns?		
8.3	Is the proposed project likely to negatively affect the income levels or employment opportunities of vulnerable groups?		
9.	Cumulative and/or Secondary Impacts	Answer (Yes/No/ Not Applicable)	

	ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT			
9.1	Is the proposed project location subject to currently approved land use plans (e.g. roads, settlements) which could affect the environmental and social sustainability of the project? <i>For example, future plans for urban growth, industrial development, transportation infrastructure, etc.</i>			
9.2	Would the proposed project result in secondary or consequential development which could lead to environmental and social effects, or would it have potential to generate cumulative impacts with other known existing or planned activities in the area? For example, a new road through forested land will generate direct environmental and social impacts through the cutting of forest and earthworks associated with construction and potential relocation of inhabitants. These are direct impacts. In addition, however, the new road would likely also bring new commercial and domestic development (houses, shops, businesses). In turn, these will generate indirect impacts. (Sometimes these are termed "secondary" or "consequential" impacts). Or if there are similar developments planned in the same forested area then cumulative impacts need to be considered.			

Is the proposed project likely to increase environmental and/or social vulnerability to climate change now or in the future?

			YES	NO
i	Does th	e project involve any of the following activities?		
	0	Changes in land use		
	0	Agricultural expansion or intensification		
	0	Intensification of water use		
	0	Development in areas that are under existential threat (<i>e.g. low-lying coastal areas</i>), or the longer-term habitability of which is in question (<i>e.g. areas at risk of extreme desertification or extreme disaster risk</i>)		
	0	Other economic/livelihood development based on climate-sensitive resources (<i>e.g. exploitation of rangelands, forests, fisheries, rivers, lakes; natural resource-based tourism; etc</i>)		
	0	Activities in areas with existing conflicts over natural resources		
	0	Pricing of basic commodities (e.g. water)		
	0	Privatization of, or formalisation of rights over, natural resources		
	0	Resettlement (e.g. facilitated or incentivised voluntary resettlement)		
ii	Does the already such as	ne project have the potential to have nagative impacts on any marginalized or vulnerable groups, particularly those dependent on climate-sensitive resources,		
	0	Pastoralists		
	0	Hunter-gatherers		
	0	Forest dwellers		
	0	Subsistence farmers or fisher folk		
	0	Indigenous peoples (or other peoples) living outside of the mainstream economy		
	0	Women and minority groups		

resource abundance, ecological conditions, etc).	iii	Are project activities/outcomes predicated on assumptions (implicit or explicit) that future climatic and environmental conditions will resemble those of the present day? (e.g. require persistence of current rainfall regimes, surface runoff, extremes frequency/severity, natural resource abundance, ecological conditions, etc).		
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ANNEX THREE: TERMS OF REFERENCE FOR THE ESIA

1.0 INTRODUCTION

1.1 The Purpose of the ESIA

There is need to carry out an Environmental and Social Impact Assessment (ESIA), which will have to comply with the environmental procedures of the Federal Republic of Nigeria and with the environmental guidelines of the financing institutions, World Bank.

2.0 Objectives of the ESIA

The objectives of the ESIA are to:

• Thoroughly document baseline conditions of the seven study area and the socio-economic conditions of the affected communities.

• Place the ecological baseline conditions of the concession area in the context of the surrounding region.

• Inform, obtain and address contributions from stakeholders including relevant authorities and the public.

• Assess in detail, the environmental and social impact that would result from the project

• Identify mitigation measures that would reduce the significance of predicted negative impacts or enhanced predicted benefits of the proposed mining projects.

• Develop an appropriate Monitoring Plan for the proposed SPIN project

• Meet the requirements of the National environmental regulatory agencies in Nigeria as well as international best practice for project of this nature.

The ESIA will identify the potential impacts associated with the development and then provide the measures that will be required to manage those impacts, which will be in-corporated into an Environmental Management and Monitoring Plan. A multi-disciplinary team of experts will conduct the ESIA with the stages identified as follows:

3.0 Phase Description

Screening/Scoping- Identification of key issues and concern that are to be addressed by the specialist studies

Baseline -Characterize current broadly defined environmental conditions on and near the site to serve as a basis against which impacts can be measured and monitored.

Assessment and Mitigation - Identification of positive and adverse impacts. The potential spatial extent, severity, duration and probability of impacts are described along with mitigation actions.

Integration - Collation of specialist studies and assessments and the compilation of the ESIA Report.

Review - The ESIA Report is reviewed by EPA, EAB, sector agencies and stakeholders The ESIA process will be guided by the Federal Guidelines for EIA process as stipulated in Annex 1 and international best practice guidelines for projects of this nature such as the World Bank.

4.0 Tasks

In the conduct of the ESIA the consultant team will undertake the following tasks:

Assemble relevant baseline information on the project area including its geology, soils, hydrology, climate, surface water quality, noise, air quality and terrestrial and aquatic flora and fauna.

Collect Information on the socio-economic background of the project areas

· Provide a detailed description of the projects

• Identify the relevant laws, guidelines, regulations and standards that would define the operating framework of the project.

• Identify, as far as is possible, and assess the physical, biological, socio-economic as well as cumulative impacts of the project which will include the transport and processing components of the project.

• Describe alternatives examined in developing the project, and identify other alternatives that would achieve the same objectives. This will include alternative methods for Erosion and Watershed management, and the rationale for the preferred choice.

• Prepare an Environmental Management Plan that recommends measures to address those adverse impacts that can be avoided, or reduced to acceptable levels including a plan for monitoring during project implementation. The Management Plan will include a Mitigation Plan, Emergency Response Plan, Monitoring Plan and provisions for Environmental Auditing.

5.0 Specific Issues to be addresses by the ESIA

The consultant team will address the full range of issues as it pertains to the proposed project. Specific issues include:

- A detailed description of the project areas including maps showing the boundaries of the Project areas, layout of current land uses of the surrounding areas and network of drainage systems.
- Current water quality data from surrounding streams, rivers which include pH, TSS or turbidity, conductivity, TDS, ammonia and sulphates and the establishment of fixed stations for continuous monitoring.
- Dust and noise management in particular from rehabilitation works
- Impacts to aquatic and terrestrial flora and fauna
- Dam Safety issues
- Downstream impact
- Water Use and waste management
- Waste management
- Land use and land use mapping of catchment areas
- Cultural and archaeological resources
- Occupational Health and Safety
- Social and economic impacts to the local communities including direct benefits such as jobs.
- Cultural, gender, and social norms and practices, particularly those which are harmful to women and girls and that would be exacerbated as a result of project implementation. This includes power dynamics, division of labor and participation in decision-making processes in both professional and private spheres.
- Existing data regarding Gender-based Violence (GBV), including data on partner/non-partner sexual violence and physical violence, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), intimate partner violence, family violence, early marriage, and harmful traditional practices, especially those particularly at risk of being exacerbated by project implementation. Availability and accessibility of safe and ethical GBV response services, including medical care, psychosocial services, legal aid, protection services and livelihood opportunities.
- Data regarding access to employment, educational and economic opportunities for traditionally marginalized populations, especially women and girls, and Persons with Disabilities.
- A summary of labour and working conditions, including the risk of SEA/SH and other forms of abuse.
- Cumulative Impacts of the project
- Presentation of the proposed plan with all relevant information concerning potential impacts on the environment and develop mitigation strategies to reduce the identified impacts.
- Presentation of a Sediment Control Plan and Flood Management Plans
- A Monitoring Plan with focus on reclamation efforts and on discharge and receiving water quality limits with provisions for effluent discharge monitoring. This will be base on the results of the ESIA and the management plan.
- A Detailed Emergency Response Plan to respond to environmental emergencies and issues with respect to worker's safety as well as residents. The Plan will consider identification of

emergencies, response mechanisms, personnel responsibilities and equipment and training requirements.

6.0 Site Visit and Scoping

The SPIN Project will cover the cost of site visits associated with the conduct of the ESIA, public notices and other costs associated the ESIA.

7.0 ESIA Report

Outline for an Environmental and Social Impact Assessment Report

An Environmental and Social Impact Assessment process should not exclusively be perceived as a matter of preparing a report and obtaining approval only, instead the use of the ESIA should help ensure that the environmental and social concerns of local communities and other stakeholders are taken into account throughout the life of the SPIN Project. The ESIA should be tailored to the specific sub-project and to the legal requirements, environmental and social conditions where it is situated. The coverage of the ESIA report itself will therefore depend on local circumstances.

To describe and agree on the extent and boundaries of the proposed sub-projects, a system map may be useful. The Identification of relevant stakeholders would be part of this mapping exercise, and these stakeholders can then be involved in the mapping process, which can help everyone understand the complex flow of impacts and feedback loops more easily.

The following outline for a typical ESIA report is offered on the basis that identified issues will not necessarily have the same degree of relevance for all sub-projects in the SPIN Project.

- a. **Executive summary / non-technical summary** The summary should be written in nontechnical language and be accessible and understandable to the relevant stakeholders and/or affected communities.
- b. **Methods and Key issues** This provides the opportunity to clarify some basic information about the ESIA including what difficulties have been encountered and the limitation of the assessment.
- c. Legislative Framework The legislative framework should include the relevant legislation and requirements of the country and region where the project is situated. It is also important to include a statement that commits the project to compliance.
- d. **Consultation Process** Should contain the step by step approach and views expressed. If clear recommendations resulting from the consultation process were not followed, the reasons for those decisions should be provided.
- e. **Description of the existing Social and Environmental Baseline** should describe information collected on the past, present and future context for the Project in order to provide a picture of existing trends resulting from natural events or human activities, the current state of the environment, the current socio-economic conditions in the region, and any potential future changes which may occur as a result of planned developments.
- f. VI. **Consideration of Alternatives** this section should present the results of a well thought-out process that has ensured that reasonable alternatives of different types have been considered.

- i. VII. **Description of the proposed development** this section should cover the objectives and scope of the sub-projects, an overview of the sub-project and its location, a detailed description and layout, the site preparation and construction, and the nature of the process, resources and technologies to be used.
- ii. VIII. **Prediction and Evaluation of significant social and environmental impacts** this should emphasize the most important impacts, who or what these will affect, and how significant the effect will be.
- iii. IX. **Mitigation** / **offset measures** this section should provide an assessment of the hierarchy of impacts and whether mitigation measures proposed to alleviate the impacts and residual and/or cumulative effects. Proposed methodology to reduce negative impacts should also be included.
- iv. X. Environmental and Social management and monitoring plans This section should provide a framework for managing and monitoring impacts (implementation costs inclusive) for the duration of the sub-projects and also ascertain the necessity of introducing corrective measures. It should be designed to ensure that the commitments made in the ESIA, and in any subsequent assessment reports, together with any license approval or similar conditions are implemented.
- v. XI.**Bibliography** A list of all references cited should be included in the report.

Roles and Responsibilities

In undertaking an ESIA, it is important that the roles, responsibilities, rights and involvements of all stakeholders in the process are clearly defined and agreed before commencement.

The level of involvement of stakeholders in the ESIA will depend (not limited) on the following factors;

- Location of the sub-project
- Legislation
- Source for financing of the sub-project
- Public profile of the sub-project.

Stakeholders in the ESIA process may include, but are not limited to the following groups:

- The project proponent and / or developer
- Teams of specialists (possibly including independent consultants)
- External reviewers
- Relevant local public authorities, government departments and government agencies.
- Financial institutions
- Local residents and communities
- NGOs and community interest groups/project affected persons

Other institutional bodies, such as regional development forums and resource management organizations.
8.0 The Technical team for the ESIA will be procured by the SPIN PIU.

9.0 Management of the ESIA process

The consultant will manage the overall ESIA process and will be responsible for the compilation and presentation of the ESIA Report. The consultant will plan, coordinate and execute all activities of the ESIA process and will assist SPIN PIU in the planning and execution of the public scoping meeting and public hearing if required. The consultant will provide updates to all relevant agencies on the ESIA process.

10.0 Duration

This will be discussed with the SPIN PIU

11.0 ESIA Submission

This will be discussed with the SPIN PIU

ANNEX FOUR: GENERIC GUIDELINES FOR PREPARING AND IMPLEMENTING A PUBLIC INVOLVEMENT PLAN FOR AN ESIA OR ESMP

The idea of involving the community is not for the sole purpose of finding an answer to a problem, but to also engage the community in the sub-project so that they can share ownership and to give them the opportunity to be part of the design process. Furthermore, community involvement will also give the community the comfort of knowing early on in the process the mechanism through which affected individuals/households will be treated. In developing a strategy for public involvement there are a number of key issues that must be considered:

- Secure commitment to effective implementation
- Define goals clearly
- Plan consultation timing and phasing
- Provide adequate resources
- Be aware of the historical context
- Be aware of site specific sensitivities
- Recognize the interest of developers/operators

Be prepared to hear different views, including gender related sensitivities.

When planning the process of a public involvement program, the following principles must be followed:

- Identify all stakeholder groups (typically integrated with social assessment). Who will be affected directly and indirectly? Who else might have an interest or feel that they are affected?
- Identify the key issues around which public involvement will be required (scoping).

These key issues would include:

- Environmental and social issues or decisions at stake
- Key organizations and interested parties involved
- Local authorities and the agencies involved
- Size of the issue or importance of the decision
- Urgency and time frame
- Understand the decision making process
- Identification of parties making the decisions
- Where in the project cycle decisions are made

Determine the necessary level of involvement. Meaningful public involvement takes place at three levels:

- conveying information to the public
- listening to the opinions and preferences of the public
- Involving the public in making decisions

The nature and size of the project, combined with both the nature and number of stakeholders and the status of national legislation, will largely define when, where, and at what level public involvement is required for an EA and the Environmental Management Plan.

- Identify key points to be included in the public involvement process.
- Timely disclosure of information is important and it may be useful to develop systems to ensure that stakeholders receive information on time and in an accessible format. Whilst it is important that consultation take place before major decision points, the aim should be to facilitate

consultation throughout the preparation and implementation phases. This implies that consultation will often be necessary as part of the research effort of the EA and in the development of mitigation measures during the analysis phase of the study.

- Select most effective involvement techniques to be used
- Define a communication methodology
- Develop a budget

ANNEX FIVE: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN OUTLINE

This annex provides a framework for preparing an Environmental and Social Management plan (ESMP). Where applicable, the contractors for the sub-projects should adopt this ESMP in achieving and demonstrating sound environmental performance.

Benefits of Environmental Management Plan

Establishing an ESMP would be able to help in ensuring legal compliance and effective implementation of control mechanisms and/or mitigation measures. In addition, the ESMP will also help improve environmental management efficiencies and performance.

ESMP Contents usually are:

- 1. **Description of adverse impacts**: The anticipated impacts are identified and summarized.
- 2. **Description of Mitigation Measure**: Each measure is described with reference to the effects it is intended to deal with. As needed, detailed plans, designs, equipment description, and operating procedures are described.
- 3. **Description of monitoring program**: Monitoring provides information on the occurrence of impacts. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring program should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental impacts are monitored is discussed below.
- 4. **Responsibilities:** The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.
- 5. Cost Estimates and Source of Funds: These are specified for the initial sub project investment and for the mitigation and monitoring activities as a sub project is implemented.

ANNEX SIX: SUMMARY OF THE FINDINGS FROM THE THREE ESDDs

The Government identified three dams for which further investigations was conducted to identify its potential as a sub-project under SPIN. The dams are;

- Doma dam
- Naka Dam

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- Wuro Keso (Gassol) which was identified during the ESDD reporting as a retention pond rather than a dam.

Findings of the 3 potential sub-projects are documented in standalone ESDDs that was prepared by the Government, however, the summary is provided below.

Table A: Summ	ary of Findings	from the ESDDs
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Features	Doma	Naka	Wuro Keso
Basic description	Doma dam is located in Doma Local	Naka dam is a moribund dam built across River Ana in	The Wuro Keso retention pond, a
	Government Area (LGA) of Nasarawa State, and	the 1980s with a capacity of 2 million cubic meters. It	project of dikes built to retain
	the sub-project colony is located approximately 8	was built primarily for water supply to the town with	River Taraba from the Tella
	km away from the dam area. There is a	ten nectares of irrigation farming capacity. The dam is	Barrage in Gasoi, a settlement in
	downstream (<1 km), this ethnic group is known	irrigation infrastructure is not functional. Formers use	is about 38,000 by but only
	as Julium. The meenle of this settlement are	direct numping to irrigate 100 hectares. There is a	33 000 has been cleared by the
	as Jukun. The people of this settlement are	desilting activity currently being carried out by the	UBRBDA.
	enormous challenge in their craft as they have	RBDA. Dry season farming used to be done on the 100	The Gasol community is
	consistently experienced scarcity of fishes which	hectares, with the RBDA ploughing for the farmers and	predominantly a fishing
	they normally harvest from the Doma dam. This	sometimes supplying inputs. This was discontinued a	community. Between 2000 and
	challenge has forcefully made some of the	long time ago. The government has a certificate of	3000 ha are allocated to farmers
	fishermen at the settlement (known as Man	ownership of the 100 hectares but there is a high	who grow rice mainly. There is no
	Camp) migrate into crop farming. The	incidence of encroachment. This encroachment was	electricity in the community and
	sub-project is not located in any reserved forest.	surrounding villages who have been displaced by	installation in the barrage or
		handitry and insecurity Some surrounding whole	anywhere around
		villages like Saav and Kiavs have been abandoned.	
		Fishing is allowed at the dam area only between	
		January and March of any year.	
Proposed works from Project	A. Structural Rehabilitation Works	Site Clearing	A PST was not shared with the
Screening Template	Construction of access road	Dam Toe Clearing	E&S and further investigations
	Grading and asphalting of the crest	Dam Investigations	indicated that Wuro Keso is not a
	Construction of parapet walls	Upstream and Downstream Slope Treatment Creating and Surfacing of Days Creat Due to	dam but a retention pond with
	at the saddle dam	 Grading and Sunacing of Dam Crest Due to usage of the Naka Dam Crest as a local 	irrigation scheme. The ESDD
	Construction of control room and	feeder road	to improve the scheme
	dam office	 Rehabilitation and Improvement of Dam 	to improve the benefite.
	Modifying the morning glory-type	Instrumentation	
	spillway into a pressurized power	 Rehabilitation of Spillway/Spill Concrete 	
	intake with proper submergence	Structures	
	Construction of toilet facilities	Replacement of Bottom Outlet	
	B. Non-Structural Rehabilitation Works	Establishment of Reservoir Rim Demarcation	
	installation of early warning	 vvater Hyacinth (vveed) Treatment Pohabilitation of site office and residence 	
	Installation of sonhisticated security	 Renabilitation of site onice and residence facility 	
	systems (e.g., motion detectors,	laonty	

Features	Doma	Naka	Wuro Keso
	surveillance cameras, security barriers and lighting etc) C. Basic Facilities Improvement Renovation of security post at the dam Renovation of power house Renovation of main pump house Renovation of the auxiliary pump house D. Instrumentation Installation of new instrumentation Re-activating of pumps Installation of Automatic Water Level Recorders E. Other Activities Removal of vegetation around the dam embankment Setting up Labour Camps	 Reactivation of the Pumped Irrigation Water Supply Component Reactivation of the Potable Water Supply Component Provision of Solar-Powered External (Street) Lighting Upgrade of Access Road to Dam Site 	
Key findings	Potential risk/impacts that have been identified relate to Air, water, noise, land use, Soil, Resource use, Ecology, Fish and Aquatic life within dam water body, Labour and GBV/SEAH due to all intervention activities, although they have varying degree of contribution to these risks. These risks are low to moderate and localized, short term and temporary in nature which can be managed with standard ESMP and guidelines. The OHS and CHS could be, substantial risk activity will be treated separately through OHS plan in accordance with WB ESHS guidelines. Hence the overall risk of this sub-project dam is categorized as Moderate.	 The institutional assessment of the Lower Benue River Basin Development Authority (LBRBDA) in managing E&S risks of the project reveals low capacity. The Dam categorisation as revealed by the ESDD is MEDIUM as outlined by the criteria in FGN 2007 Compendium of Nigeria Dams. The project is in an area that has no history of seismic activity. The stakeholder's engagement has identified that The presence of about 10 burnt brick makers whose livelihoods could be impacted as a result of displacement from the command area of the dam downstream, about 20 fishermen whose livelihood could be disturbed if the project is carried out during the period when they are allowed to fish in the reservoir (December to February). 	The Wuro Keso retention pond is a homogeneous embankment of about 3.5m high constructed to create a reservoir for a diversion channel from Taraba River at an elevation of 113 meters above mean sea level (masl) and is bounded approximately by Latitude 8°33'30.35"N and Longitude 10°25'32.13"E. The construction of the Wuro Keso Dam and Irrigation Project started in 1979 with a completion schedule of 14 years for the first phase (23,200 Ha) known as Gassol part. The Project was however abandoned in the 1986 with just a little part of about 250Ha (200 Ha gravity and 50Ha of sprinkler system) constructed after about 5,000Ha of land was

Features	Doma	Naka	Wuro Keso
reatures	Doma	 Naka There are existing legacy issues of compensation from the initial Dam construction with 5 people yet to be compensated and are laying claim to plots within the Dam colony. The locals are grateful for the proposed dam rehabilitation project as it would bring immense benefits to those dependent on the reservoir for their source of livelihood and potable drinking water as well as create direct and indirect employment opportunities for the youths in the community. Security in Benue State generally can be described as tense. This development has led to increase in the population of displaced persons in Gwer West Local Government due to influx of displaced persons from the surrounding areas thus putting pressure on already scarce resources and increasing the risk of insecurity in Naka. The ESDD revealed that project activities will be limited to the dam area and access road to the dam site. Due to the potential environmental and social impacts of the proposed activities, the project has been risk categorized as substantial risk project hence a detailed ESIA is required. Livelihood Restoration Plan and Resettlement Action Plan is also recommended. 	 vuro Keso cleared of debris, trees and other obstructions. The facility does not have a distinctive feature of a dam and should be referred to a retention pond. A rehabilitation works will improve aquaculture activities as well as water supply to its irrigation scheme. Other notable findings: Inhabitation is not in close proximity to the retention pond as it is located around the confluence of River Taraba and River Benue. Farming is the main source of livelihood of people in the nearby area. They are planting crops like rice, maize, beans, Irish potato etc. They are also into fishing. The people nearby are engaged in the project activities as unskilled workers. There are no known pending issues regarding the irrigation site rehabilitation related resettlement for now. The participants explicitly mentioned that a rehabilitation works of the irrigation scheme will in no way affect them and instead they will be getting some earnings by being engaging as unskilled labour for the
			works.

Features	Doma	Naka	Wuro Keso
Recommendations (where		Based on the findings of this ESDD, the following	Detailed recommendations from
relevant)		recommendations are proffered	E&S are provided in Annex 6.1
		1. Where a State Implementation Unit is	below.
		created within Ministry of Water Resources	
		and Environment, the PIU should include	
		experts such as Environmental and Social	
		Safeguards and communication officers	
		among others. The E&S experts should be	
		people with capacity to implement E&S	
		instrument. For improved capacity and	
		knowledge management, the PIU is	
		recommended to work with the Lower Benue	
		River Basin Development Authority	
		(LBRBDA) who is the custodian of the Dam.	
		2. A detailed and site specific ESIA should be	
		prepared in view of the substantial	
		environmental and social impacts the project	
		will have on its immediate surroundings and	
		area of influence and the dam categorisation	
		as Medium. The ESIA should be carried out	
		in line with guidelines prescribed by the	
		Federal Ministry of Environment. An ESMP is	
		to be included in the ESIA document. It will	
		provide measures for mitigation, roles and	
		responsibilities, cost of monitoring, labour	
		management and protection of ambient	
		environment quality and resource	
		conservation (during handling of resources)	
		among other things in line with ESS2 and	
		ESS3 respectively. Likewise, due attention	
		shall be given to Occupational Health and	
		Safety of workers and community in line with	
		the requirements of ESS4 and World Bank	
		Group guidelines on Occupational Health	
		and Safety (OHS). The ESIA should also	
		contain some management plans such as:	
		o Labour Management Plan	
		o Water Use and Water Conservation	
		Plan;	

Features	Doma	Naka		Wuro Keso
		o Resource Effici	iency and Pollution	
		Prevention Plan;	,	
		o Waste Manag	gement Plan/Debris	
		Disposal Plan;		
		o Biodiversity and	Conservation Plan;	
		o Community Hea	alth and Safety Plan;	
		and		
		o Occupational I	Health and Safety	
		Management Pla	an.	
		3. A Stakeholders Engage	ement Plan (SEP) that	
		will further ensure the s	social sustainability of	
		the rehabilitation pro	ject, create greater	
		understanding of the	project as well as	
		ensure the social lice	ence of the project	
		should be developed	d. The stakeholder	
		engagement process	should encompass a	
		range of activities ar	nd approaches such	
		information sharing	g, consultations,	
		participation including	g, negotiation and	
		partnerships with	locals and other	
		stakeholders. The SEF	^o will contain the list,	
		roles and responsibilit	ties of stakeholders,	
		communication platfo	rms and expected	
		information to be	delivered to each	
		stakeholder, etc.		
		4. Prepare LRP/RAP to m	nanage the impacts of	
		economic displacemen	nt of 10 burnt brick	
		the leave we estimate	nen as well as cover	
		line legacy resettierner	about 5 paople. The	
		desuments shell in	about 5 people. The	
		mochanism system to	reasive and facilitate	
		the resolution of	ariovanaca from	
		communities work	glievalices IIUIII	
		stakeholdore It is im	nortant to note that	
		nroject related arievand	res is predicted to be	
		minor and site-specific		
		5 A detailed Security and	Safety Management	
		Plan (SSMP) is also	recommended as a	
		result of the current	state of security in	
			state of security III	

Features	Doma	Naka	Wuro Keso
		 Benue State and Nigeria at large. The SSMP will provide standardized safety and security procedures and other necessary details. 6. An Emergency Preparedness and Response Plan (EPRP) that shall include emergency prevention, preparedness and response arrangements should be developed. This ERP will reduce the risk of an unlikely dam break flood risk disaster management on the upstream and downstream areas of the reservoir. 7. The project should prepare a Dam Safety Management Plan in line with Annex 1 of ESS4. This will be used to undertake periodic safety review of the Naka Dam for hazards in cases involving significant and complex remedial works. 	

Annex 6.1 Suggested Interventions/Activities for Wuro Keso

S/N	Suggested interventions/Activity	Activity	Expected outcome
1.	Water abstraction from the River Taraba to the Retention pond	Comprehensive study on these i. Topography ii. Geophysical Survey iii. Geology/Geotechnical Survey iv. Geochemical Survey	Water demand in terms of quantity and quality established Water Flow Rate from the intake point determined Aquifer characteristics/soil infiltration capacity revealed
2.	Delineation of the proposed catchment area	GPS mapping of proposed site of intervention	Extent of catchment boundary Location of settlement (upper, middle and lower) and community mapping
3.	Land Use Mapping of the catchment area	GPS referencing and mapping	Different land uses distinguished Establish the major land use and various actors (fishermen, farmers, herders, corporate farms) known.
4.	Environmental and Social sensitive/mitigation studies	Environmental Impact Assessment Social Impact Assessment	Environment risks such as Flooding, Water pollution, Siltation, Breakage of Spillway, over abstraction leading to inundation of downstream settlement etc checked Social Risks such as water quality contamination that with affect public health, endangering of aquatic life that have bearing on their livelihood through depletion of fish population, Loss of income due to flooding of farmlands, Threat to settlements and displacement of homes of communities from their

ANNEXURE SEVEN: ESDD TEMPLATE CHAPTER 1: INTRODUCTION

- 1.1 Project Overview
- 1.2 Sub-Project Description
- 1.3 Implementation Arrangement and Schedule
- 1.4 Purpose of ESDD
- 1.5 Approach and Methodology of ESDD

CHAPTER 2: INSTITUTIONAL FRAMEWORK AND CAPACITY ASSESSMENT

- 2.1 Policy and Legal Framework
- 2.2 Description of Institutional Framework

CHAPTER 3: ASSESSMENT OF ENVIRONMENTAL AND SOCIAL CONDITIONS

- 3.1 Physical Environment
- 3.2 Protected Area
- 3.3 Social Environment
- 3.4 Cultural Environment

CHAPTER 4: ACTIVITY WISE ENVIRONMENT & SOCIAL SCREENING, RISK AND IMPACTS IDENTIFICATION

- 4.1 Sub-Project Screening
- 4.2 Stakeholder Consultation
- 4.3 Risk and Impact Identification for the Screened Activities

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

- 5.1 Conclusions
- 5.1.1 Risk Classification
- 5.1.2 National Legislation and WB ESS Applicability Screening
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- 5.2.1 Mitigation and Management of Risks and Impacts
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Figure xx: Project Area showing major intervention locations

Figure xx: Land Use and Land Cover Map of 5 Km radius around Dam site

Figure xx: Figures depicting the important environmental/ culturalareas

Annexures: Screening Forms – SF1, SF2, SF3

(BASED ON THE OUTCOME AND RECOMMENDATION OF ESDD, APPLICABLE ToC's)

ANNEXT EIGHT: PICTORIAL OVERVIEW OF CONSULTATION ACTIVITIES

PICTORIAL PRESENTATION OF CONSULTATION ACTIVITIES AT DOMA DAM, NASSARAWA STATE









Meetings with Stakeholders/WUAs at Doma





GH I

Consultations with stakehold



t Wuro K

