DRAFT FINAL REPORT

TRANSFORMING IRRIGATION MANAGEMENT IN NIGERIA (TRIMING) PROJECT

FINAL REPORT FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR DADIN KOWA DAM REHABILITATION

TRIMING

Transforming Irrigation Management in Nigeria Project

Final Report

Environmental and Social Management Plan (ESMP) for the Dadin Kowa Dam and Reservoir Rehabilitation Works under the TRIMING Project

December 2022

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ACRONYMS AND ABBREVIATIONS

ADPs	Agricultural Development Projects
AIDS	Acquired Immunodeficiency Syndrome
CBN	Central Bank of Nigeria
CBO	Community Based Organizations
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CRA	Child Rights Act
CRC	Convention on the Rights of the Child
CRPD	Convention on the Rights of Persons with Disabilities
CSO	Civil Society Organizations
CSR	Corporate Social Responsibility
DID	Department of Irrigation and Drainage
DKIS	Dadin Kowa Irrigation Scheme
EIA	Environmental Impact Assessment
ESHS	Environmental, Social, Occupational Health and Safety
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FCT	Federal Capital Territory
FEPA	Federal Environmental Protection Agency
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture and Rural Development
FMEnv	Federal Ministry of Environment
FMWASD	Federal Ministry of Women Affairs and Social Development
FMWR	Federal Ministry of Water Resources
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GOSEPA	Gombe State Environmental Sanitation and Protection Agency
GRM	Grievance Redress Mechanism
ICCPR	International Covenant on Civil and Political Rights
IEC	Information Education and Communication
MDAs	Ministries Departments and Agencies
NCWR	National Council of Water Resources
NESREA	National Environmental Standards and Regulations Enforcement Agency
NEWMAP	Nigerian Erosion and Watershed Management
NGOs	Non-Governmental Organizations
NTCWR	National Technical Committee on Water Resources
NWRI	National Water Resources Institute
OHS	Occupational Health and Safety
PAPs	Project Affected Persons
PDO	Project Development Objective
PMU	Project Management Unit
PPE	Personal Protective Equipment
RBDAs	River Basin Development Authorities
RPF	Resettlement Policy Framework
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment

SID	State Irrigation Departments
SMAs	State Ministries of Agriculture
STIs	Sexually Transmitted Diseases
ToR	Terms of Reference
TRIMING	Transforming Irrigation Management in Nigeria
UBRBDA	Upper Benue River Basin Development Authority
UN	United Nations
VAC	Violence Against Children
VAPP	Violence Against Persons Prohibition Act
WB	World Bank
WHO	World Health Organisation
WMP	Waste Management Plan
WUA	Water Users' Association
WWD &SE	Water Works Design and Supervision Enterprise

EXECUTIVE SUMMARY

ES 1: Background

Dadin Kowa Dam was completed about 34 years ago, however, its utilization has been minimum. Currently, the Dam provides water for irrigating less than 120 ha of land only, in addition to being the main supplier of water for Gombe Metropolis. Recently, there was an attempt to maximize its utilization by serving as source of electricity (40 MW) and water for additional irrigation (2,000 ha). These new projects demand a change in the operations of the Dam, as more water is required at the reservoir for turning turbines and supporting expansion of the irrigation. Thus, this is not without some risks and potential impacts both positive and negative. Therefore, the concern with safety becomes necessary. The TRIMING project under the Federal Ministry of Water Resources has undertaken oversight function of ensuring that the Dadin Kowa Dam Safety is guaranteed and that the dam reaches its full potentials in the areas of power generation and irrigation systems that will enhance the livelihood of farmers who depend on it. The Project Development Objective (PDO) of the TRIMING Project is to improve access to irrigation and drainage services and to strengthen institutional arrangements for integrated water resources management, with the overall aim to support agricultural productivity improvement in selected large-scale public schemes in Northern Nigeria including Sokoto-Rima (Bakolori Irrigation Scheme) Hadejia-Jama'are (Kano River Irrigation Scheme and Hadejia Valley Irrigation Scheme) and the Upper Benue (Dadin Kowa Irrigation scheme) and Middle Rima Valley Irrigation Scheme. From the foregoing, it becomes clear that the rehabilitation works at the Dadin Kowa Dam call for thorough environmental and social investigations in an attempt to forestall the potential environmental and social risks that are almost certainly bound to arise before, during, and after the project. This justifies the preparation of an (ESMP) for the proposed rehabilitation of Dadin Kowa Dam, hence the preparation of an Environmental and Social Management Plan for the Dadin Kowa Dam.

ES 2: Brief Site Description

The Dadin Kowa multipurpose dam is the source of water for irrigating the potential irrigable areas at Dadin Kowa scheme. The dam, when completed in 1988, had a total storage capacity of 2.8 billion m3 and live storage capacity of 1.77 billion m3. This amount is expected to have reduced due to siltation since then. The dam is located at a distance of about 38km from Gombe town, but the reservoir extends into two (2) states namely Gombe and Yobe. The dam embankment is 42m high, crest level is at elevation 239masl, maximum recorded flood level is 245.5m.a.s.l, and the full level water elevation extends 60km upstream and occupies an area of 300km2.

Dadin Kowa Dam was completed in 1987 which consists of two types of dam: the Roller-Compacted Concrete (RCC) Dam and the Earth-fill Embankment Dam. The catchment area of Dadin Kowa Dam Reservoir is 31,500 Km^2 with a total reservoir capacity of 2.8 BCM. The design spillway capacity of Dadin Kowa Dam can release the maximum runoff discharge 1,100 m^3 /s. The elevation of the spillway crest is +247 masl whereas that of the dam crest is +252 masl.

Dadin Kowa dam consists partly of a gravity dam section and partly of a zoned embankment dam section. It has total create length of 520 meters closing the valley. The crest width of the dam which is accessible by road is 8.0 meters. The upstream slope of the dam is 1V:2.5H whereas the downstream slope of the dam is 1V:2.2H. The maximum height of the dam is 42.0 meters. The overflow section of the dam is equipped with controlled or gated spillway. The spillway is characterised as Ogee. The outlets consist of power intake structures and irrigation intake structures.

The Dadin Kowa dam was originally designed to irrigate a gross area of 6,200 ha (72% sprinkler and 28% gravity) at Dadin Kowa and 18,800 hectares (55% sprinkler and 45% gravity) by a diversion weir under design at Guyuk. The design also includes provision for hydropower plant of 34 MW capacity currently

installed as 40 MW combined capacity requiring a discharge of 65 m^3 /s. Other purpose for constructing the dam includes the provision of potable water supply (86,400 m^3 /day); fisheries development (20,000 t/annum); flood control and recreation. About 124 km downstream of Dadin kowa dam and about 30 km upstream of the confluence of Benue and Gongola Rivers at Numan is the Kiri dam constructed across River Gongola at Kiri, near Numan in Guyuk local government area of Adamawa State, north east Nigeria.

ES 3: Proposed Intervention Works

Following are the broad dam safety remedial works in Dadin Kowa Dam:

- Rehabilitation of dam
- Rehabilitation of main spillway
- Rehabilitation of instrumentation
- Rehabilitation of Electrical and mechanical works
- Construction of Flume Bridge and Fourd

Some specific activities under the rehabilitation works include the following:

- Crest road overlay with bitumen/asphalt;
- Fixing of ripraps that have moved down the slope;
- Clearing of vegetation on the slope;
- Clearance of clogged drains in spillway gallery;
- Provision of lighting in the gallery;
- Servicing of water supply outlet gate (for high rust)
- Provision of simple elevator for ease of access to the gallery;
- De-watering and inspection of plunge pool;
- Provision of additional rocky material in plunge pool to re-establish design condition;
- Installation of warning system for flood alert;
- Gantry crane installation;
- Rehabilitation of seepage measuring weir in the dam;
- Provision of a hook for the stoplog crane;
- Maintenance of all outlet valves;
- Maintenance of leakage at the bypass pipeline valves;
- Installation of downstream seepage monitoring V-notch weir;
- Felling of trees;
- Provision of PPEs.

DAM SAFETY HARDWARE AND INSTRUMENTATION

- Rock replacement in the plunge pool to avoid rock sliding;
- The dyke that separates plunge pool from power house tail race has slumped due to erosion of toe area and it needs to be re-established;
- The stop log that is still dangling at the irrigation outlet chamber needs to be de-mounted and restored;
- Access road to the dam site require maintenance. The broken culvert at the start of the access road needs to be reconstructed;
- Provision of Valve room;
- Provision of Standby power supply;
- Provision of hook;
- Provision of cranes, lubrication and maintenance of gates;

- Provision of valves and replacement of damaged components is required;
- Provision of standby generators for spillway, mobile cranes for stop logs need to be in place;
- Spare wire ropes for gates need to be made available for maintenance purpose;
- Provision of manual and automatic reservoir gauge, seepage measurement V-notch weir;
- Provision of perimeter fencing. Damaged guard rails need to be fixed and warning signs put in place.

ES 4: Description of the Projects' Environmental and Social Baseline

Environmental Baseline

Surface Water: From the physiochemical analysis, all values of analyzed samples were within the FMEnv limits. Soil: The levels for pH, conductivity, Total Organic Carbon (TOC), Soil Organic Matter (SOM) and Phosphate were all within their respective FMEnv Limits respectively. Soil samples contained varying mean levels of heterotrophic bacteria count ranging from 0.16 x 103cfu/ml to 0.37 x 103cfu/ml and for fungi ranged from 0.38 x 103 to 0.48 x 103cfu/ml. The predominant bacteria were Bacillus Spp., Pseudomonas Spp. and Salmonella Spp. Noise and air quality levels of the project area were both within FMEnv and WHO Levels.

Social Baseline Study

Using Stratified Random Sampling, a total of 300 respondents were selected from the following strata; traditional rulers, chiefs, Water Users Association (WUA), women and youth groups. Most (82.5%) of the respondents are within the age bracket of 25 – 35; most (87.9%) of the respondents were males while only (12.1%) were females. Respondents in the study were predominantly married as this group constitutes 85.0% of the participants while 94.5% were Muslims. Furthermore, findings show that majority of the respondents (67.0%) currently earns not more than ₦500,000 per year from their farming and related activities (livelihood) and half (50.0%) have primary education. About half (53.0%) of the respondents believes that the community is safe while majority (77.0%) of the indicated that the grievance redress option known to them is seeking redress through the traditional rulers and majority (71.0%) of the respondents indicated that the major source of conflict in the community is resource overkill, where farmers and herders compete for agricultural land.

Health

Majority (76.0%) indicated that they make use of pit latrine 24.0% indicated that they practice open defecation (bush). This implies that there may be impending health crises such as cholera in the area. This may be exacerbated by the influx of migrant workers into the area. Results further reveal that most (77.0%) of the respondents burn their refuse while 23.0% practice open dumping of wastes in their respective settlements. This implies that the population need to be sensitized on proper waste management to improve environmental care, hygiene, and health status. Majority (68.7%) indicated that they do not have access to potable water, mostly relying on stream and well water. This will adversely impact the health of the people in Dadin Kowa settlements. Some (55.0%) of the respondents visit the hospital occasionally while 45% never visits the hospital not because they never get ill but because they rely on traditional means of treating themselves or their family members. The prevalent health challenges among the people include Chest pain, Cough, Stomach pain, Diarrhoea, and typhoid. Some of the factors contributing to the prevalence of these health issues include; Poor Sanitary Conditions/Mosquito bites, Lack of potable water supply and Lack of good food/poor dietary intake.

PROJECT ENVIRONMENT

Climate

The study area is influenced by the inter-tropical convergence zone, characterized two distinct seasons; six months of dry spell, alternating with another six months of rains. As obtainable in other savanna ecosystem, the rainfall distribution is triggered by a seasonal shift of the inter-tropical Convergence Zone (ITCZ). The

wet season begins in April/May and ends in September/October while from November to April are the dry period.

Rainfall

The average annual rainfall over ten years ranges from 55 mm to 185 mm. The rainfall stabilises in May and peaks in July/ August. Most of the rains are received between July and September, thus defining the agricultural season of the area. In, August/September when rainfall is at its peak, crops are not expected to experience any moisture stress since evapotranspiration is balanced out by rainfall as a result, most annual and short season crops could be successfully cultivated at this period.

Temperature

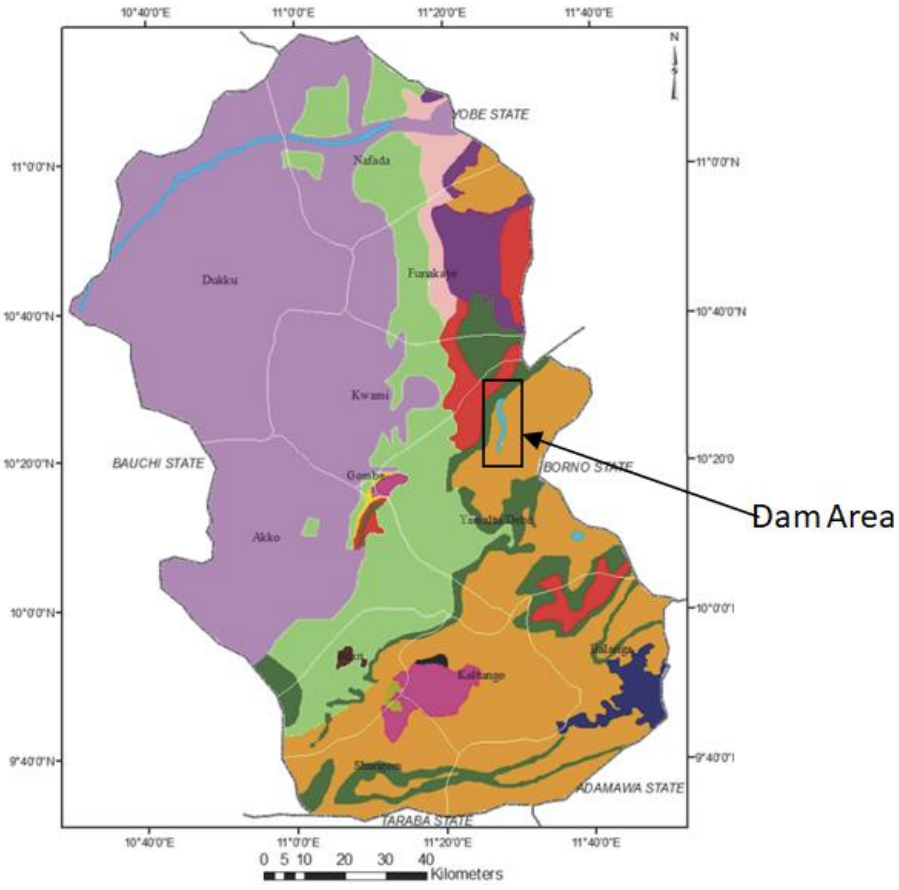
Temperatures begins to drop with onset of the rains, mean minimum temperatures could reach 10 ^{0}C as harmattan period sets in from November.

Relative Humidity

The relative humidity is highest in the peak of raining season. It could reach 88% in the moths of July and September, but it begins to reduce as rainfall reduces and evaporation increases.

Geological formation of the Dam Area

Gombe State consists of fourteen (14) geological units: (i) Alluvium (ii) Basalt (iii) Coarse Porphyritic Homblende Granite (iv) Undifferentiated Granite, Migmatite & Granite Gneis (v) Migmatite and Granite Gneis (vi) Porphyritic Granite (vii) Coarse Porphyritic Biotite (viii) Shale and Minor Sandstone (ix) Older Basalt (x) Shale Sandstone and Limestone (xi) Sandstone, Siltstone and Shale (xii) Shale, Limestone and Sandstone (xiii) Shale and Mudstone (xiv) Sandstone, Siltstone, Shale, Coal and Ironstone. The dam location is mainly Sandstone, Siltstone and Shale with alluvium.



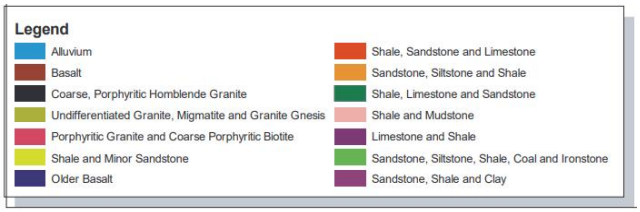


Fig. 1: The Geologic Units in Gombe State

ES 5: Identified Potential Project Environmental and Social Impacts

The aspects considered when assessing the potential impacts of the Project are briefly captured in Table 1 below.

Table 1: Positive Environmental and Social Impacts

POSITIVE IMPACTS	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
Reduced impact of flooding – the dam rehabilitation works when completed will help in better controlling flood which will consequently improve the income and livelihood of farmers since their farming activities can potentially become less interrupted by flooding thereby maximizing their production and optimizing revenue. For instance, dam safety works in the reservoir can see engineers desilt to increase water storage capacity in the reservoir with resultant free flood water outflow from the reservoir or increase the crest to prevent a possible overflow hence a dam failure. It is in view of the reliance on the successful contractor and their high expertise that the project envisages Dam safety and reduced impact of flooding.	**Employment Creation** - Short-term employment of unskilled and semi-skilled labour will be promoted. Most unskilled labour will be sourced locally thereby making members of the Dadin Kowa community benefit directly from the rehabilitation works as ad hoc staff members throughout the project lifecycle. This is expected to have a ripple effect on other members of the community who can be termed as indirect beneficiaries through **increased household income** with resultant improved nutrition and better access to health care services at the barest minimum. Engagement of local suppliers of building materials for construction. This will increase economic activities in the project area as well as grow the local economy. During construction periods, engineers, artisans, technical staff, materials suppliers and food vendors would be engaged directly or indirectly.
Dam safety is an ultimate environmental benefit of the project as environmental protection in terms of biodiversity conservation. Another positive impact is the efficient use and proper channelling of reservoir water without causing erosions or damage to irrigation lands.	Increased household income; Opportunity for improved agriculture through irrigation; Helping to achieve the desired increased food production levels for food and agro-industrial raw materials; Opportunity for sustainable rural development (there are several villages at the periphery of the project area that would be integrated into the irrigation scheme in Dadin Kowa). Food security as there shall

Furthermore, the project will ensure proper waste management which is a precautionary measure to pollution of the environment, either soil or water. It will also be mindful of reducing the Carbon footprint to protect the air quality of the area by applying stringent mitigation measures in the project.	be two or more seasons of farming rather than one season farming.

Table 2: Negative Environmental and Social Impacts

POTENTIAL ADVERSE IMPACTS	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
Waste Generation – dam rehabilitation project of this magnitude does not go without generating a significantly large amount of site waste from both domestic and construction sources. Site waste extends to slurry, unused materials, chemical and or toxic wastes and so on. This can pose great threat to the people and the environment through air, soil, and water pollution. By so doing, soil micro-organisms, terrestrial and aquatic lives may experience a stunted growth, their sustenance threatened or can be destroyed outrightly. This impact will be felt to its maximum potentials if an effective Waste Management Plan is not put in place to address it. **Soil –** Oil and chemical leakages from work vehicles, generators and equipment may lead to soil contamination and death of beneficial soil flora and fauna. **Carbon Emissions –** Carbon and Green House Gas (GHG) emissions from in-use vehicles and generators would be generated during the dam rehabilitation works. **Air –** Fugitive dust generation is envisaged especially during civil works when debagging of cement is being done. **Occupational Health and Safety risks –** - Accidents may occur due to excessive driving fatigue, stress, coordinative incoherence, driving at night, bad roads and prolonged road journey for drivers who may need to run multiple errands on a daily basis. - Deep cuts, Bruises and Wounds from poor handling of tools and equipment and due to lack of training.	**Conflicts –** conflicts are bound to arise when groups of people come together, especially when they are from different geographical locations, and with diverse backgrounds, life experiences, and expectations. The dam rehabilitation works in Dadin kowa Gombe State will bring about influx of migrant workers to the community which may be a source of acculturation for host and guest, however, conflicts may ensue in the process due to the divergent views shared by both parties. Conflict can also arise from a number of sources in the project such as; poor/inhumane treatment of workers, non-payment of wages, poor working conditions, side-lining the host community from project-based employment opportunities, underperformance by the contractor, neglect of Corporate Social Responsibility by contractor etc. **Labour Influx –** it is common place for workers to migrate from one location to another for the sake of a project. This is plagued with some impacts that cannot be discarded, some of these impacts include; introduction or exacerbation of crime, prostitution, illicit drug use etc., it can also result to resource overdependent or overkill e.g., medical facilities, housing, transportation etc., which could adversely affect quality of life amongst members of the host community. **Sexual Harassment (SH) and Sexual Exploitation and Abuse (SEA) - attributable to labour influx –** Women and girls (within and outside the communities) may be exposed to sexual exploitation, abuse and harassment as a result of interactions with site (migrant) workers. Younger boys could also be at risk of SEA/SH. Sex workers may contribute to the

- Risk of falls: personnel who work at hight risk falling from heights	spread or suffer contracting infectious diseases, STDs and STIs due to labour influx. There may also be the likelihood of them suffering sexual exploitation and abuse. There is also the possibility of contracting COVID-19.

ES 6: Environmental and Social Monitoring Programme and Costing

In order to address all potential environmental and social impacts, including occupational health and safety risks identified for the project, this plan establishes environmental and social actions with clearly defined desired outcomes. Indicators, institutional setup, roles, responsibilities, and an estimated budget are also included. Information is provided in Chapter 5.

ES 7: ESMP Cost Estimates

Cost Estimates

The total estimated cost for implementing the ESMP (mitigation and monitoring) is Fifty-Four Thousand, Six Hundred and Thirty-Two Dollars ($54,632) equivalent of Twenty-Three Million, Two-Hundred and Seventy-Three Thousand, Two-Hundred and Thirty-Two Naira (NGN 23,273, 232) while the total cost of for ESMP capacity building is estimated at Eleven thousand five hundred and three Dollars ($11,503) equivalent of Four million, nine hundred thousand Naira Only (NGN 4,900,000). The total estimated cost for implementing the ESMP is Seventy-Two Thousand, Seven-Hundred and Forty-Eight Dollars ($72,748.00) which is equivalent of Thirty Million, Nine-Hundred and Ninety Thousand, Six-Hundred and Forty-Six Naira (NGN **30,990,646.2**0) inclusive of 10% contingency. See Table 3 as follows.

Table 3: Cost Estimates for ESMP Implementation and Monitoring

S/N	Item	Responsibility	Estimated Cost (NGN)	Estimated Cost (USD)
1	Mitigation	Contractor	12,921,006.00	30,331.00
2	Monitoring	TRIMING PMU Safeguards, SMEnv, GOPESA, SMWR etc.	10,352,226.00	24,301.00
		Sub-total	**23,273,232.00**	**54,632.00**
3	Capacity Building	TRIMING PMU, other relevant MDAs	4,900,000.00	11,503.00
		Sub-total	**28,173,232.00**	**66,135.00**
4.	Contingency	10% of Sub-Total	2,817,323.00	6,613.00
TOTAL			**30,990,646.20**	**72,748.00**

Note: *USD to Naira exchange rates as at September, 2022 (1 USD = 426 Naira) was applied and figures rounded up.*

The ESMP mitigation costs will be included in the biding documents for the contractor, to enable the successful enterprise, implement rehabilitation works in the Dam consistent with environmental and social requirements of this ESMP, and the document will be disclosed accordingly as described in Table 4.

Table 4: ESMP Disclosure

S/N	Action	Remarks

1	Disclosure in National Newspapers	The PMU will disclose the ESMP and review procedures
2	Disclosure in local newspapers	The PMU will disclose the ESMP and review procedures
3	Disclosure in FMWR, SMWR, FMEnv	The PMU will disclose the ESMP and review procedures
4	Disclosure at the TRIMING office	The PMU will disclose the ESMP and review procedures
5	Disclosure at the Local Government Offices both in English and Hausa	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures
6	Disclosure on the World Bank external website or infoshop	The ESMP will be disclosed according to the World Bank Disclosure Policy- OP/BP 17.50

ES 8: Stakeholder Engagement

The consultation processes were conducted between August 24th and September 1st 2022. In these consultations, special care was taken to ensure the appropriate participation of women and young people within the project areas and to understand and appreciate their views. Traditional rulers were visited in Hinna and Duriya while a stakeholders' engagement meeting was held to gain a broader view of environmental and social issues as stakeholders interact. Participant were Ministry of Water Resources, Ministry of Environment, Upper Benue River Basin Development Authority (UBRBDA) Staff including the dam manager and the dam management team, TRIMING Environmental Safeguard Specialist, TRIMING Safeguards in Dadin Kowa, TRIMING Security Consultant, Community Chiefs, District Heads, Community Elders, Women Groups, Youth representatives, WUA Chairman and other representatives, representatives of the Cottage Hospital Hinna, and the general public.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

The Transforming Irrigation Management in Nigeria (TRIMING) project, which is co-financed by the World Bank, is being implemented by the Federal Government of Nigeria (FGN). The Project Development Objective (PDO) of the TRIMING Project is to improve access to irrigation and drainage services and to strengthen institutional arrangements for integrated water resources management, with the overall aim to support agricultural productivity improvement in selected large-scale public schemes in Northern Nigeria including Sokoto-Rima (Bakolori Irrigation Scheme) Hadejia-Jama'are (Kano River Irrigation Scheme and Hadejia Valley Irrigation Scheme) and the Upper Benue (Dadin Kowa Irrigation scheme). The focus of the proposed ESMP is the Dadin Kowa Irrigation Scheme (DKIS). DKIS is located within the Yamaltu-Deba Local Government Area in Gombe State, Nigeria. The scheme is managed and operated by the Upper Benue River Basin Development Authority (UBRBDA). The Dadin-Kowa dam, was constructed over 30 years ago, it serves as both a flood control dam and also as a facility to reduce the erosive forces of the fast-flowing Gongola River as it flows downstream to join the Benue River. The dam was intended to develop irrigated agriculture at its immediate downstream, and accordingly some major structures were facilitated to it for the same purpose.

The dam was built for other purposes apart from irrigation development, the dam was designed for electricity power generation and drinking water supply to the scheme areas and Gombe town. However, it only served for the water supply part of the purposes implemented for. It must be noted that the TRIMING project triggered five (5) World Bank safeguard policies, namely, Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), Physical Cultural Resources (OP 4.11), Safety of Dams (OP 4.37), Involuntary Resettlement (OP 4.12), Pest Management (OP 4.09), and Projects on International Waterways (OP 7.50) (ESMF, 2013).

The implication of the triggered policies is that the project is bound to have some environmental and social based impacts at some point throughout its implementation. These impacts can be positive or negative ones, emanating from various aspects of intervention works by contractors under the TRIMING project. A safeguard instrument known as the Environmental and Social Management Plan (ESMP) is a document that is put in place to identify, assess, and provide preventive or mitigation measures for such inherent project risks or impact.

Based upon this, the proposed intervention works at the Dadin Kowa Dam call for thorough site-specific environmental and social investigations in an attempt to forestall the environmental and social risks that are almost certainly bound to arise before, during, and after the project. This justifies the preparation of an (ESMP) for the proposed rehabilitation of Dadin Kowa Irrigation scheme. The activities that could trigger environmental and social issues during the implementation of the rehabilitation works are listed under the project component.

1.1.1 The Nigerian Water Resource Sector Overview

The Nigerian Ministry of Water Resources was established in order to address the cultural and socioeconomic needs of Nigerians for a safe and adequate water supply in a way that will

improve public health, food security, and poverty reduction while preserving the integrity of the country's freshwater ecosystem. The following is part of the Ministry's additional mandate:

Development and support of irrigated agriculture for food security; formulation and execution of a water resources policy programme;

- gathering, preserving, analysing, and sharing hydro-meteorological and hydrological data;
- Project and programme evaluation and monitoring to ensure successful performance;
- Availability of sufficient, drinkable water for both household and commercial use;
- Ensuring proper sanitation and maintaining water quality
- Exploration and development of the nation's underground and surface water resources.
- Exploration and development of the nation's underground and surface water resources. Formulation and periodic review of the country's water laws.
- Liaison with all pertinent national and international agencies on all issues relating to the development of water resources.
- Support for studies and research on the potential of the nation's underground and surface water resources.

1.2 Rationale for the Rehabilitation Works

In an effort to diversify the Nigerian economy, due to the continuous dwindling in oil prices, the agricultural sector is considered a more viable alternative source of both internal and external generated revenues. Existing challenges, nevertheless, limit proliferation in the sector. Some of these challenges include; dependence on rain-fed agriculture to sustain the economy, low optimization of existing large-scale dam and irrigation infrastructure, insufficiency in the development and utilization of Agricultural value chains, limited access to the necessary productivity-enhancing inputs (due to the inadequate investment in agricultural research and development), limited private investment, insufficient availability of improved technologies to farmers, etc.

The FGN in the bid to enhance the agricultural sector through optimizing existing large-scale dam and irrigation infrastructure set up the TRIMING Project under the FMWR. The FGN has received credits from World Bank (WB) to support the TRIMING project. The PDO of the TRIMING Project is to improve access to irrigation and drainage services and to strengthen institutional arrangements for integrated water resources management, with the overall aim to support agricultural productivity improvement in selected large-scale public schemes in Northern Nigeria. Specifically, the rehabilitation works in Dadin Kowa dam is focused on dam and reservoir repairs to improve capacity of the facility and also improve dam safety.

1.3 Objectives and Rationale for the ESMP

The objective of the study was to prepare an ESMP for the Dam rehabilitation works on the Dadin Kowa dam. The preparation of the ESMP is predicated on identifying environmental and social risks that may emanate from the dam rehabilitation works while identifying sets of mitigations, monitoring, and institutional actions to be taken before and during rehabilitation to forestall negative environmental and social impacts, offset them, or reduce them to acceptable levels while enhancing the positive impacts of the project. The ESMP is specific to the dam works and will capture mitigation measures for the pre-construction phase, the construction phase, as well as the post-construction phase to ensure that the project does not impact the people or the environment adversely throughout the project life.

1.4 Benefits of the Proposed Rehabilitation Works

1.4.1 Environmental Aspects

The civil works in the project are bound to yield some positive dividends for the people of Dadin Kowa in the short and long run, some of which are either directly or indirectly gleaned from project activities. The main potential positive impacts of the project are listed below:

- Reduced impacts from flooding
- Dam safety
- Afforestation where required
- Preservation of aquatic and terrestrial life/ecological protection
- Proper and effective waste management

1.4.2 Social Aspects

- Employment creation
- Increased water supply and reliability.
- Improved on-farm productivity
- Improved financial returns from farming.
- Livelihood enhancement (fishery, cattle rearing, crop production)
- Strengthened collaboration among stakeholders

CHAPTER TWO
LEGAL AND REGULATORY FRAMEWORK

Legislation has a crucial role in encouraging thoughtful attitudes and actions toward the environment. Legislation is a useful tool for planning, preventing, and controlling pollution as well as protecting the environment (ELRI, 2021) . Following is some of the applicable Nigerian legislation on the environment.

- The Constitution of the Federal Republic of Nigeria (1999)
- National Environmental Standards and Regulations Enforcement Agency (NESREA)
- Environmental Impact Assessment Act
- The Land Use Act
- Harmful Waste (Special Criminal Provisions) Act
- Sea Fisheries Act
- River Basins Development Authority Act
- Water Resources Act

2.1 Constitution of the Federal Republic of Nigeria (1999)

The national legislative framework, the constitution, recognises the significance of enhancing and safeguarding the environment and includes provisions for it. These sections are pertinent:

- The improvement and preservation of Nigeria's air, land, water, forest, and wildlife are stated as objectives of the Nigerian State in Section 20.
- Although not explicitly stated, Section 12 states that any foreign agreements signed by the National Assembly should be adopted as law in Nigeria. This includes agreements relating to the environment.
- It has also been suggested that Sections 33 and 34, which protect the fundamental human rights to life and human dignity, are related to the requirement for a safe and healthy environment in order to give these rights effect.

2.2 Federal Ministry of Water Resources (FMWR)

The Water Resources Decree No. 101 of 1993 gives the FMWR significant power to control and coordinate activities for proper watershed management and resources protection and for public administration of water resources. It confers to the FMWR the responsibility to make proper provision for adequate supplies of suitable water for, amongst others, agricultural purposes in general and irrigation in particular.

2.3 River Basins Development Authority Act, Cap R9, LFN 2004

- The River Basins Development Authority is charged with controlling erosion and floods as well as developing water resources for domestic, industrial, and other applications.

2.4 Water Resources Act, CAP W2, LFN 2004

- The goal of the Water Resources Act is to increase both the quantity and quality of water resources. The sections listed below are relevant:
- For the protection of fisheries, flora, and animals, Sections 5 and 6 grant authorities to create pollution prevention plans and laws.
- According to Section 18, violators are subject to a fine of no more than N2,000 or a six-month jail sentence. Additionally, he would be required to pay a N100 daily fee for the duration of the offence.

2.5 Federal Ministry of Environment (FMEnv) Regulations and Guidelines

The following are the applicable regulations, guidelines and standards of the FMEnv that may be applicable in the project:

- National Environmental (Noise Standards and Control) Regulations, (2009)
- National Environmental (Ozone Layer Protection) Regulations, (2009)
- National Environmental (Sanitation and Wastes Control) Regulations, (2009)
- National Environmental (Soil Erosion and Flood Control) regulations (2011)
- National Environmental (Surface water and Groundwater Quality Control) Regulations (2011)
- National guidelines for Environmental Impact Assessment (EIA) Act 86 of 1992: Sectoral Guideline for Mining (2013)
- National Policy on the Environment, (2016)

2.6 National Environmental Standards and Regulation Enforcement Agency (NESREA) Act 2007

The National Environment Standards and Regulation Enforcement Agency (NESREA) Act of 2007 replaced the Federal Environmental Protection Agency (FEPA) Act and is overseen by the Ministry of Environment. It represents the laws and rules aimed at safeguarding the environment and its natural resources and promoting sustainable exploitation. Notable sections include the following: -

- The authority to ensure compliance with local and international environmental regulations on environmental cleanliness and pollution prevention and control is provided by Section 7 through regulatory and monitoring procedures.
- The Agency is given the authority to create and revise laws on air and water quality, effluent limitations, the control of dangerous substances and other types of environmental pollution, as well as sanitation, under Section 8 (1)(K).
- Without a valid permit, Section 27 forbids the release of dangerous substances into the environment. According to this clause, this offence carries a maximum fine of N1,000,000 (One Million Naira) and a maximum 5-year prison sentence. For each day the offence continues, a corporation is subject to an extra fine of N50,000.

2.7 Environmental Impact Assessment (EIA) ACT. CAP E12, LFN 2004

- An EIA evaluates the potential effects of a proposed project on the environment, including both positive and negative effects:
- The Environmental Impact Assessment Act, as it is colloquially known, deals with the evaluation of environmental impact for both public and commercial undertakings.
- Section 2 (1) of the EIA mandates an evaluation of public or private initiatives likely to have a major (unfavourable) impact on the environment, which is crucial to environmental emergency prevention.
- Before beginning projects, Section 2(4) mandates submitting a written application to the Agency for the Agency to conduct an environmental assessment to determine approval.
- Cases in which an EIA is necessary are defined in Section 13 and
- Any violation of a provision results in legal liability under Section 60.

2.8 Applicable International Treaties/Agreements/Conventions

- Bamako Convention on Ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991)
- Basel Convention on the control of Transboundary Movement of Hazardous Wastes and their Disposal (1991)
- Protocol on Water and Health (1999)
- The Rights to Water (2002)
- United Nation World Summit on Sustainable Development, (2002)
- United Nations Framework Convention on Climate Change (UNFCCC), (1992)

2.9 Gender-Based Violence – Relevance, Legal and Policy Importance in Nigeria

2.9.1 *Nigeria Legal and Regulatory Framework on GBV*

In spite of growing global advocacy for and protection of human rights, GBV, is one issue that has persisted in Nigeria. In a lot of places around the world, including Nigeria, women are still not considered as having the same dignity as men. Numerous women in Nigeria continue to experience GBV, despite the fact that the 2018 Demography and Health Survey claims there has been a little improvement in how they are currently handled. Women are more likely to experience violence than men due to the vulnerability in a male-dominated society. That is why the issue of GBV should be met with strong indignation.

The Federal Ministry of Women Affairs and Social Development (FMWASD) is the institutional advocate for women's and children's rights and GBV concerns within the government. However, it has little impact on sectoral ministries that are responsible for enforcing policy due to low institutional and budgetary resources.

2.10 Other National Legal Instruments in the Project

i. **The National Council of Water Resources (NCWR) -** the most important water resources policy formulating body.
ii. **The National Technical Committee on Water Resources (NTCWR)** - a sub-committee of the NCWR. The NTCWR has five specialist sub-committees that are important for information exchanges between federal and state level agencies: dams, water supply, irrigation and drainage, hydrology and hydrogeology, manpower.
iii. **The Federal Ministry of Agriculture and Rural Development (FMARD**) was involved in irrigation development in the past as it funded, with World Bank support, a series of state-run ADPs, including the promotion of irrigation owned and managed by farmers, particularly in *FADAMA* areas, and the provision of extension services to the public sector irrigation schemes of the RBDAs and the State Irrigation Departments.
iv. **The River Basin Development Authorities (RBDAs**) are the main bodies in charge of administering and developing Nigeria's water resources and are responsible for public sector irrigation at the federal level. Their functions are defined in the RBDA Act No. 35 of 1986. They were established in the mid-1970s and the areas of operation are determined by the extent of the river basins they serve.

2.11 State Legislation - Gombe State

A. **Gombe State Ministry of Water Resources:** The Ministry is in control of potable drinking water and irrigation facilities in the State.
B. **Gombe State Ministry of Environment and Forest Resources:** The Gombe state

ministry of environment and forest resources is saddled with the responsible for protecting, preserving and improving the state environment and forest areas. This Ministry is responsible for designing and executing programs that will help in the control of environmental disasters such as flooding, erosion, desertification and management of forests Resources.

C. **Gombe State Environmental Sanitation and Protection Agency (GOSEPA).** This agency is responsible for all environmental related issues in the state. Responsibilities include planning and development of urban centres, provision of amenities, infrastructures and other functions necessary for healthy and orderly urban growth.

2.11.1 Administrative Structure for Water Resources Sector in Gombe State

The main institutions responsible for environmental management, protection, sanitation, and waste management services in the Project State are:

- Gombe State Ministry of Water Resources & Environment, Gombe
- Gombe State Environmental Sanitation & Protection Agency, Gombe

CHAPTER THREE

PRELIMINARY DESCRIPTION OF THE PROJECT ACTIVITIES AND PROJECT ENVIRONMENT

3.2 Project Physical Environment

Water from River Gongola was impounded by a rock fill dam 5 kilometers to the Northwest of Dadin Kowa in 1987 to create a reservoir with a live and maximum storage capacity of 1.77 and 2.8 billion billion cubic meters respectively. The 300 km^2 reservoir has Bima hills on the left and plains of Diffa, Kinifa on the right. The dam is located at 37 km from Gombe town in Yamatu-Deba L.G.A of Gombe state and it lies between latitudes 10° 19' N and10° 45' N and longitudes 11° 22' 30" and 11° 45'E).

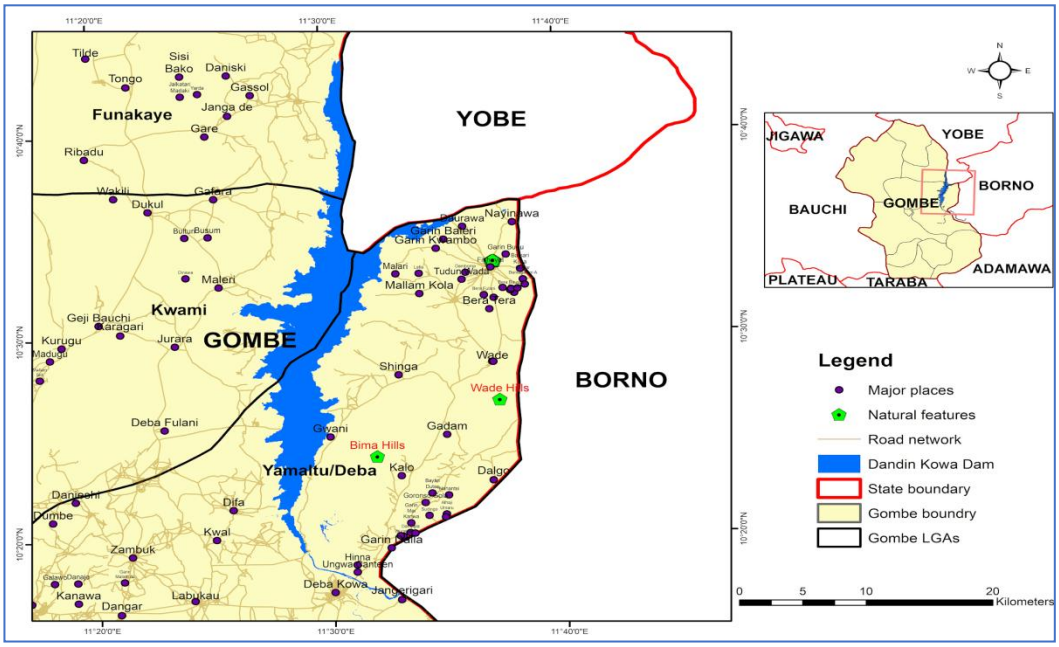


Fig. 2: ***Map of Dadin Kowa Dam and surrounding Features***

The 520m long main dam is 42m high above its deepest foundation; it has a gated spillway chute flip bucket and plunge pool that is required for the safe passage of flood discharge at1100 m^3/s. The dam also has an irrigation outlet conduit with an intake tower to release water to a lined canal of 1m^3/s capacity. It has the potential of irrigating 44,000 hectares of land and rural water supply for domestic use in Dadin Kowa and Guyuk as well as a power outlet of the capacity of 65m^3/s to produce 2 x 20MW.

3.2.1 Climate

The area is influenced by the inter-tropical convergence zone, characterized by two distinct seasons; six months of dry spell, alternating with another six months of rains. As typical of savanna ecosystem, the rainfall distribution is triggered by a seasonal shift of the inter-tropical Convergence Zone (ITCZ). The wet season begins in April/May and ends in September/October while from November to April are the dry period.

3.3.2 Rainfall

The typical average annual rainfall over ten years ranges from 55 mm to 185 mm. The

rainfall stabilises in May and peaks in July/ August. Most of the rains are received between July and September, thus defining the agricultural season of the area. In, August/September when rainfall is at its peak, crops are not expected to experience any moisture stress since evapotranspiration is balanced out by rainfall as a result, most annual and short season crops could be successfully cultivated at this period.

3.3.3 Temperature

The area records high ambient temperatures from the first half of the year. The months of January to May could record over 40^{0}C. Temperatures begin to drop with onset of the rains; mean minimum temperatures sometimes could drop to 10 ^{0}C as harmattan sets in from November. The minimum temperature is in December favours crops such as wheat and some vegetables.

3.3.4 Relative Humidity

The relative humidity is highest in the peak of raining season. It could reach 88% in the moths of July and September, but it begins to reduce as rainfall reduces and evaporation increases.

3.3.5 Evapotranspiration

Highest rate of Evapotranspiration is recorded during the months of March, April, and May while the lowest is in December. The number of hours of clear sky determines the sunshine hours and this is usually at the peak of dry season in February or sometimes in October before the hazy dust of harmattan from the desert sets in.

3.3.6 Soil

The soil around the dam is of four types as described in the map in figure 3 below. To the north-west of the dam is Luvisol_vertisol the south-west of the dam is Fluvisol; very young aerated soils with weak horizon differentiation (predominantly brown colour). To the east-central and south-eastern end of the dam (by the Bima hills) are Regosol and Leptosol respectively. Regosol is a deep, well drained, medium textured non-differentiated mineral soil, and Leptosol; young soils with a very shallow profile depth (indicating little influence of soil-forming processes), often overlain by grasses and containing large amounts of gravels.

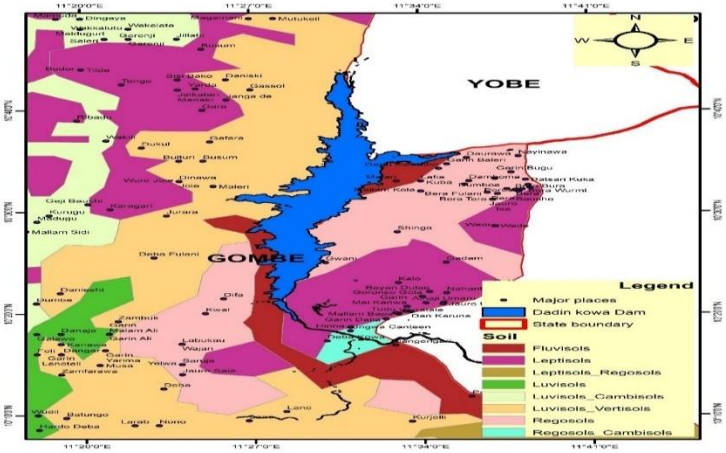


Fig. 3: Soil Distribution around Dadin Kowa Dam

3.3.7 Geological Formation of the Dam Area

Gombe State consists of fourteen (14) geological units: (i) Alluvium (ii) Basalt (iii) Coarse Porphyritic Homblende Granite (iv) Undifferentiated Granite, Migmatite & Granite Gneis (v) Migmatite and Granite Gneis (vi) Porphyritic Granite (vii) Coarse Porphyritic Biotite (viii) Shale and Minor Sandstone (ix) Older Basalt (x) Shale Sandstone and Limestone (xi) Sandstone, Siltstone and Shale (xii) Shale, Limestone and Sandstone (xiii) Shale and Mudstone (xiv) Sandstone, Siltstone, Shale, Coal and Ironstone. The dam location is mainly Sandstone, Siltstone and Shale with alluvium as shown in the map in figure 4 below.

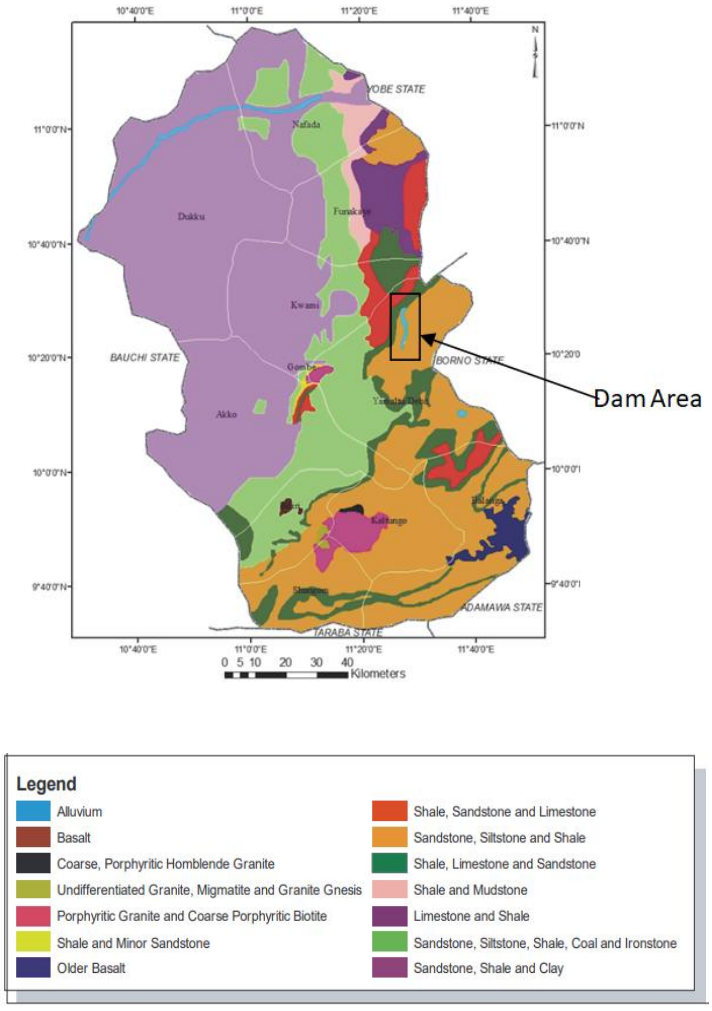


Fig. 4: The Geologic Units in Gombe State

3.3.8 Topography and Land use/Land cover

The topography of the area consists of flat to nearly flat plains on one side and steeply on other directions; particularly north to south. The Right side of the reservoir is the Bima Hills.

The left side of the dam has a slope of up to 1.5% in the West-East direction but up to 10% in the North south direction. The area is generally characterized by undulating terrain sandwiched between residual Bima sandstone hills. These hills are surrounded by pediments that slope and merge imperceptibly into the river Gongola floodplains. The pediments terminate abruptly at the base of these steep hill slopes, dissect by first and second order streams. These ephemeral streams are the common features referred to as rills and gullies. They are the agents of fluvial erosion that dissect and degrade the landscape through severe cases known as Badlands, a phenomenon developing rapidly in some parts of the scheme area. The land use and land cover around the area as presented in figure 5 shows three categories namely; Farmland/bare grounds, Shrubs and natural grassland as well as the mountainous shrublands. The other distinct land use type is the built-up area (villages or settlements).

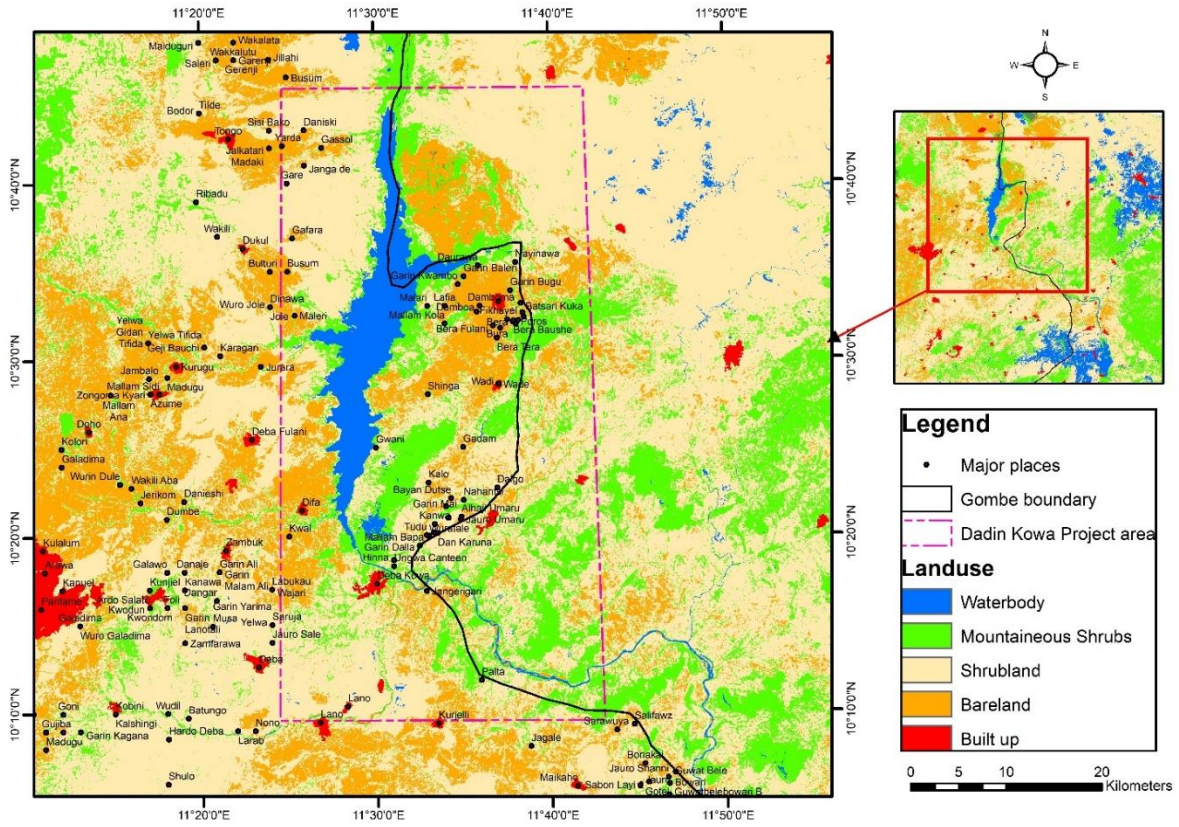


Fig.5: Land Use Within Dadin Kowa Project Area

3.4 Environmental Baseline Studies

3.4.1 Soil Sampling

Soil and water samples were collected at the upstream and downstream sections of the dam area. To analyse samples and determine the values of parameters, a total of ten water samples and ten soil samples were taken at different points upstream and downstream. All samples were properly preserved before they were taken to the laboratory for the analysis. Air quality analysis was carried out using a Testo 350XL. Measurements were taken in close proximity

to settlements close to the dam. Noise levels were also collected in a similar manner using a Testo 815 Noise meter.

The levels for pH, conductivity, TOC, SOM and Phosphate were all within their respective FMEnv Limits respectively. The result of microbiological analysis of soil samples collected however, showed that soil samples contained varying mean levels of heterotrophic bacteria count ranging from 0.16 x 103cfu/ml to 0.37 x 103cfu/ml and for fungi ranged from 0.38 x 103 to 0.48 x 103cfu/ml. The predominant bacteria were Bacillus Spp., Pseudomonas Spp. and Salmonella Spp. this may be attributed to the high livestock rearing which excretes their wastes in farmlands proximal to wet lands.

3.4.2 Surface Water

Surface water samples were collected using sterile dark coloured100ml bijour bottles. Samples for heavy metals and physiochemical studies were also collected in their respective coded plastic containers and stored in ice-packed coolers. Samples were preserved in refrigerators at 4°C prior to laboratory analyses. Fast changing physiochemical parameters such as Temperature, pH, Dissolved Oxygen (DO), Conductivity, and Total Dissolved Solids (TDS) etc. were measured in-situ using an in-situ water analyzer.

From the physiochemical analysis, all values of analyzed samples are within the FMEnv limits.

3.4.3 Air Quality

Air quality was measured using a Testo 350 XL. Measurements were taken at different locations around the project area. A total of ten sampling points were established at different areas around the dam.

Locations sampled showed results are within FMEnv permissible limits.

3.4.4 Noise Level

Noise levels were measured in settlements where livelihood activities were going on such as farming and livestock rearing that were in close proximity to the project area using a Testo 815 Noise meter and were within permissible limits. Noise samples were collected with the corresponding coordinates as those for air samples.

The noise level in the area falls below 80 Decibels permissible limit, with construction works however, the noise levels may increase and requiring that PPEs such as ear plugs be provided for equipment operators on site.

3.5 Socio-economics Baseline Study

A Stratified Random Sampling Survey was carried out within the communities in the Project Area. Copies of Questionnaire were administered to a total of three hundred (300) individuals who might be directly affected by the project, the composition of the respondents based on the strata included the traditional rulers, chiefs, Water Users Association (WUA), women and youth groups. Result of the socio-economic baseline study shows that most (82.5%) of the respondents are within the age bracket of 25 – 35 which indicates that the population of the potential project affected persons within Dadin Kowa is mostly comprised of young people.

This is expected as many are engaged in some farming occupation which demands that this set of people should be in their productive age.

3.5.1 Sex

Results reveal that most (87.9%) of the respondents were males while only (12.1%) were females. This may be adduced to the socio-cultural and religious practice in Northern Nigeria where the women rarely mix up with men especially in certain rigorous activities such as lowland farming. Decisions are mostly made by men who take charge of their respective households thereby leading to a resultant low female representation.

3.5.2 Marital Status

The respondents in the study were predominantly married as this group constitutes 85.0% of the sampled population. This is expected as early marriage is a common practice in the North. This result can also be adduced to the fact that most of the respondents were of marriageable age. The marriage institution is also believed to confer maturity and a sense of responsibility among this population just like elsewhere, it is therefore not surprising that most of the respondents are married.

3.5.3 Religion

According to the result of the baseline study, most (94.5%) of the respondents indicated that they are Muslims while only 5.5% were Christians. A large number of the Northern population are Muslims, and this is reflected in this result, implying that Dadin Kowa is not an exemption.

3.5.4 Occupation

Majority (70.0%) of the respondents' occupation is crop farming, 15.0% are into fishing, while 10.0% keeps livestock. while others are traders, security and labourers. This result is expected because of the outlier effect that must have come to play due to the high number of WUA members in the sampling pool.

3.5.5 Income

Furthermore, majority (67.0%) of the respondents are those that earn between₦100,101 and ₦500,000 per annum, while only 33.0% earns between ₦500,101 and ₦1,000,000 per annum. Many of the respondents further indicated in the comments section of this aspect of the questionnaire that a significant drop was witnessed in their income levels over the course of the last few years. This may be attributed to the ever-increasing input cost, security challenges, and flooding.

3.5.6 Education

According to the result, half (50.0%) have primary education, 19.0% have secondary education, 25.0% had no formal education, while only 6.0% had tertiary education.

3.5.7 Security

Given the current security instability in the country, and the need for a secured project environment, respondents were asked about their opinion on security realities within Dadin Kowa. About half (53.0%) of the respondents feel safe. This implies that the community is safe, although it is best to nonetheless approach security proactively to further guarantee the safety of workers and the community.

3.5.8 Conflict and Grievance Redress Mechanism (GRM)

Majority (77.0%) of the respondents indicated that the grievance redress option known to them is seeking redress through the traditional rulers, 18.6% indicated elders, while only 4.4% indicated law enforcement agents as their mode of seeking redress. This implies that majority of the respondents are familiar with the traditional leadership prowess in resolving conflicts and they may be more likely to explore the option than not. Result has revealed that majority (71.0%) of the respondents indicated that the major source of conflict in the community is resource overkill, where farmers and herders compete for agricultural land. Many comments that were given in the questionnaire response reveals that herders graze on farmers' cultivated fields in the dry season and this is the source of conflict between herders and farmers.

3.5.9 Health

Majority (76.0%) indicated that they make use of pit latrine 24.0% indicated that they practice open defecation (bush). This implies that there may be impending health crises such as cholera in the area. This may be exacerbated by the influx of migrant workers into the area. Results further reveal that most (77.0%) of the respondents burn their refuse while 23.0% practice open dumping of wastes in their respective settlements. This implies that the population need to be sensitized on proper waste management to improve environmental care, hygiene, and health status. Majority (68.7%) indicated that they do not have access to potable water, mostly relying on stream and well water. This will adversely impact the health of the people in Dadin Kowa settlements. Some (55.0%) of the respondents visit the hospital occasionally while 45% never visits the hospital not because they never get ill but because they rely on traditional means of treating themselves or their family members. The prevalent health challenges among the people include Chest pain, Cough, Stomach pain, Diarrhoea, and typhoid. Some of the factors contributing to the prevalence of these health issues include; Poor Sanitary Conditions/Mosquito bites, Lack of potable water supply and Lack of good food/poor dietary intake.

Description of Project Intervention

The proposed rehabilitation works on the Dadin Kowa Dam and Reservoir is a TRIMING intervention programme which is part of the project's efforts to improve access to irrigation and drainage services, and to strengthen institutional arrangements for integrated water resources management and agriculture service delivery in selected large-scale public schemes in Northern Nigeria (TRIMING, 2014). The proposed works broadly comprises of five major components which are; Rehabilitation of dam; Rehabilitation of main spillway; Rehabilitation of instrumentation; Rehabilitation of Electrical and mechanical works; and Construction of Flume Bridge and Fourd. The specific activities that make up the intervention include; Crest road overlay with bitumen/asphalt; Fixing of ripraps that have moved down the slope;

Clearing of vegetation on the slope; Clearance of clogged drains in spillway gallery; Provision of lighting in the gallery; Provision of additional rocky material in plunge pool to re-establish design condition; Installation of warning system for flood alert; Gantry crane installation; Rehabilitation of seepage measuring weir in the dam; Maintenance of all outlet valves; Maintenance of leakage at the bypass pipeline valves; Installation of downstream seepage monitoring V-notch weir etc. (See ES 3). These activities essentially fall under mechanical, electrical, and civil works whose executions are expected to have social, health, environmental, and safety ramifications during the pre-construction, construction, and post-construction phases of the project. Positive and negative social and environmental impacts are anticipated from the execution of these activities as will be identified in chapter four of this report. The envisaged negative impacts could take a toll on the health of workers, there could be trips and falls, inhaling of dust, cuts, blindness from excessive dusts in the eyes, drowning, heat stress, road accidents, deafness, electrocution or even loss of life from fatalities. Negative environmental impacts may include soil, air, and water pollution, disturbance to biodiversity, deforestation, open defecation etc., these demands a thorough evaluation of activities to determine social and environmental impacts that may have negative ramifications on the people (site workers, locals and other actors) as well as the environment. Following a thorough analysis of project activities on a phase-by-phase basis, this report provides a succinct breakdown of project impacts (negative) in chapter five.

CHAPTER FOUR

IDENTIFICATION OF POTENTIAL ADVERSE PROJECT IMPACTS AND ASSESSMENT

4.1 Impacts Identification

Dadin Kowa Dam rehabilitation project will lead to potential impacts on the environmental and socio-economic status of the members of Dadin Kowa community both in the short and

long term. The impact is divided into positive or beneficial impacts and negative or adverse impacts. This ESMP is predicated on enhancing or optimizing the positive impacts and reducing or mitigating the negative impacts in the project. Some of the positive impacts include job creation, improved livelihood, dam safety, reduced flooding etc. Some of the negative impacts are conflicts, labour influx, road and occupational accidents, sexual exploitation and abuse etc. This chapter presents a summary of the identified potentially beneficial and adverse environmental and social impacts associated with the project.

4.2 Identified Potential Environmental and Social Impacts

It was observed that the project has a number of negative impacts both at during the construction and operation stages. Some of the negative impacts at construction are dust, noise, health challenges and increase in vices; while during operation we may have water logging, increase in insect vectors, sedimentation of receiving water body, etc. However, the positive impacts of the project which includes three season farming, employment generation, economic improvement and utilizing the vast stored water resources, far outweigh the negative impacts. Suggestions for environmental management to reduce the impact of the negative impacts, as well as monitoring of the mitigation measures during construction and operation would make the project sustainable. Potential adverse impacts will be addressed in Chapter 5 (ESMP) of this report. Table 9 shows the Identified Potential beneficial and adverse Environmental and Social Impacts by Project Phases.

Table 5: Identified Positive and Negative Social Impacts

Social Impacts			
Positive	**Impacts**	**Impacts Description**	**Applicable Project Phase**
	Employment Creation	The project will offer job opportunities for unskilled, semi-skilled, and skilled/expert labour. It is believed that Dadin Kowa has individuals who may fall into any of these categories hence, benefiting from project execution. This is a realistic impact because it does not make economic or business sense for the contractor to mobilize all their workforce from their head office considering cost of transportation and other logistics. Additionally, it is Bank policy that locals be integrated into contractor's workforce. The aforementioned avails members of Dadin Kowa community to benefit from the job openings offered by the project in the short term (majorly in the construction phase) while the project lasts.	Construction phase
	Security	Based on assessment of the dam area during site visit, it is noteworthy that the project area has security presence of about four armed personnel, however, this can be improved or upgraded given the large size of the area and the expected population surge (constituted by locals and migrant workers). This is an opportunity to provide employment opportunity for security personnel. This is expected of the contractor for the safety of their personnel and also for the success and timely completion of the project by avoiding unnecessary interference by security threats that are unforeseeable.	Construction phase
	Capacity Building	Stakeholders in this project are presented with the opportunity for self and institutional improvement/development as the project has multifaceted areas of capacity building such as occupational health and safety (OHS) Code of Conduct, adverse impacts mitigation and monitoring etc. This will improve personal and institutional capacities deplorable in future projects whilst improving employability of individuals.	Pre-construction/construction phase
	Business Growth	There are existing businesses in the host community that can experience significant growth as a result of the dam rehabilitation project. The rationale behind this	Construction phase

		projection is the increase in population within the community which can be translated to wider business coverage and increased service delivery. Some common business categories that may experience this unprecedented growth are food businesses (vendors) laundry, clothing, car wash, home cleaning services etc.	
	Livelihood enhancement (fishery, cattle rearing, crop production)	One key benefit of the dam works is livelihood enhancement as it relates to farmers, fishers, and herders. Crop farmers more specifically can see their farming business transformed in a great way as a result of the dam and reservoir repair. This is not far-fetched as the reservoir is obviously linked with the irrigation (main) canals which feeds/supplies farmers' fields with irrigation water.	Post-construction phase
	Improved financial returns from farming.	Similar to the above, there is an interlink between the dam sector and the irrigation sector which by extension largely influence financial returns from farming activities. This is expected because amongst other positive factors, more farmlands can be cultivated if more water can be conveniently supplied from the reservoir to the irrigation lands. This is a huge benefit that the project can offer because it outlives the current project and places a good number of the agrarian population on the path to financial prosperity over time.	Post-construction phase
	Possible Corporate Social Responsibility (CSR)	The stakeholders in the community have already identified pressing issues/challenges that need to be solved. Some may be presented to the contractor by the community for CSR consideration. Pursuing such is left to the discretion of the contractor upon further consultations with all relevant stakeholders. One issue of interest is the Black Flies Infestation of farmers' fields which has been reported by community members to cause blindness among victims. The project benefit of a CSR is enormous as there is no limit to the type of project (s) that can be undertaken, the people will also participate in the process of selecting a project which makes for a people-centric approach thereby achieving desirable outcomes from the process.	Construction/Post-construction phase
Negative	Conflicts	conflicts are bound to arise when groups of people come together, especially when they are from different geographical locations, and with diverse backgrounds, life experiences, and expectations. The dam rehabilitation works in Dadin kowa Gombe State will bring about influx of migrant workers to the community which may be a	Construction/Post-construction phase

		source of acculturation for host and guest, however, conflicts may ensue in the process due to the divergent views shared by both parties. Conflict can also arise from a number of sources in the project such as; poor/inhumane treatment of workers, non-payment of wages, poor working conditions, side-lining the host community from project-based employment opportunities, underperformance by the contractor, neglect of Corporate Social Responsibility by contractor etc.	
	Labour Influx	Labour influx is plagued with some impacts that cannot be discarded, some of these impacts include; introduction or exacerbation of crime, prostitution, illicit drug use etc., it can also result to resource overdependent or overkill e.g., medical facilities, housing, transportation etc., which could adversely affect quality of life amongst members of the host community.	Pre-construction/construction phase
	Community Health and Safety and OHS	Accidents may happen along project transportation corridor due to reckless driving, pot holes, fatigue from excessive driving. Accidents may also take place while operating equipment and machinery.	Pre-construction/construction phase
	Risk of crime and other social vices	Migrant workers due to their low level of accountability and because of the fact that they are not well known by the locals may resort to crime perpetuations in the community. This will affect the social stability of the community and may affect project implementation.	Pre-construction/construction phase
	Sexual Exploitation and Abuse/Sexual Harassment	Women and girls (within and outside the premises) may be exposed to sexual exploitation, abuse and harassment as a result of interactions with construction workers. Also, females engaged in near-site petty businesses may suffer abuse from their benefactors.	Pre-construction/construction phase
	Violence Against Children (VAC)	The increased opportunity for the surrounding residents, hawkers and petty trading shops to sell goods and services to construction workers may increase child labour and temporarily affect school attendance. Children may be exposed to various forms of violence from construction workers and overbearing parents who may send them hawking at the project sites/facilities.	Construction phase
	Loss of Employment	Contractors, sub-contractors and personnel engaged during the construction phase will be relieved of their duties at the commencement of the operational phase.	Post-construction phase

Table 6: Identified Positive and Negative Environmental Impacts

Environmental Impacts			
Positive	**Impacts**	**Impacts Description**	**Applicable Project Phase**
	Dam Safety	A safe dam means everything to the environment, livelihoods, food production, and continued existence of life around the project location. This is the most important benefit that this project offers from the socio-economic perspective, it provides the rationale for the rehabilitation works in the first place and outweighs any negative impacts posed by the project (especially since most of them can be avoided or minimized).	Post-construction phase
	Reduced Impact of Flooding	the dam rehabilitation works when completed will help in better controlling flood which will consequently improve the income and livelihood of farmers since their farming activities can potentially become less interrupted by flooding thereby maximizing their production and optimizing revenue.	Post-construction phase
	Reforestation/Revegetation	The project provides an avenue for the contractor to be environmentally friendly by paying close attention (high sensitivity) to vegetations that could be re-established or tree planting within and around the project area. This will support the ecosystem and bear good fruits in a matter of a few years, especially given the high rate of deforestation (logging) going on around the dam area.	Pre-construction/construction phase
Negative	Water pollution	Water pollution (or aquatic pollution) is the contamination of water bodies, usually as a result of human activities, so it negatively affects its uses. Water pollution can also lead to water-borne diseases for people using polluted water for drinking, bathing, washing or irrigation. Water pollution reduces the ability of the body of water to provide the ecosystem services (such as drinking water) that it would otherwise provide (Sperling, 2007). This will	All phases of the project

		have far-reaching consequences on the people of Dadin Kowa since their livelihood and environment is largely dependent on the use of the dam water.	
	Contamination of soil	Slurry from civil works and paint residue amongst other harmful contaminants will be generated in the project and will pose a threat to the soil if not properly managed. The contaminants will not only affect the soil (topsoil) but also the beneficial soil flora and fauna and consequently plant growth and ground water quality. Oil and fuel leakages from equipment and machinery are also examples of soil contaminant. Used oil may be disposed indiscriminately after project closure, this means that soil contamination is possible throughout the project life; but this must be prevented by all means possible.	All phases of the project
	Air pollution	During the pre-construction, construction, and post-construction phases, negligible or minor air pollution from exhaust fumes of vehicles and equipment moving into work areas is expected. Civil works will cause changes in the baseline air and atmospheric conditions of the project area and surrounding environment. Cement dusts, machinery exhaust fumes (nitrogen oxides (NO_X), carbon monoxide (CO), sulphur oxides (SOx), hydrocarbons and suspended particulates) and dusts from rehabilitation and other activities will impact negatively on air-quality.	All phases of the project
	Removal of vegetation and trees	Removal of vegetation contributes to the obliterating effect of climate change and global warming while driving wildlife and beneficial organisms and also threatened species from civilization. This will most likely take place in the project.	Pre-construction/construction phase

4.2.1 Positive Environmental and Social Impacts

The works at the Dadin Kowa Dam has tremendous environmental benefits such as continued function of collecting, storing, and managing water needed to sustain ecology, vegetations and aquatic life across a vast geographical catchment as well as flood prevention. Socially, Dadin Kowa dam rehabilitation works promises enormous benefits to the Dadin Kowa people in terms of employment generation, skills acquisition and capacity building, improved economic life through increased service provision such as selling of food, clothing, beverages, stationaries etc., meaningful collaborations with relevant stakeholders, improved livelihood (fishing, irrigation-based farming, livestock rearing etc.) by obtaining domestic and irrigation water from stored and effectively channelled water through dam and reservoir optimisation and safety. Another notable impact includes improved energy generation for hydropower which can potentially serve Gombe State and neighbouring States.

Regarding the health of workers, the rehabilitation project will take a proactive approach to the health component of the dam works by taking note of pre-existing health issues of all workers directly and indirectly associated with the works. This will serve a groundwork for the project to build on by tailoring its health program to the prevalent health issues among workers whilst addressing any consequential outliers such as HIV AIDS. This is a positive impact as the project and the contractor will not leave health issues unchecked to compromise the potential wellness and vigour of workers and the sprawling communities at large. Implementation of the above is expected to include free medical check-ups for workers and the corresponding follow-up by beneficiaries. The contractor may also consider other pressing community health needs uptake as CSR during the project, this will add immense benefits to the community.

CHAPTER FIVE

EMVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

5.1 Overview

The range of potential environmental, social, and occupational health and safety issues associated with the rehabilitation works of Dadin Kowa dam under the TRIMING project are described in a matrix table format for the Environmental and Social Management Plan (ESMP). The table also includes a column for Monitoring Indicators and Monitoring Frequencies. It outlines the corresponding mitigation measures for potential adverse environmental and social impacts including Occupational Health and Safety, Community Health and Safety, Waste Management, labour influx, SH, SEA and VAC issues that may ensue from the project implementation. The rehabilitation works are very specific to the dam area; thus, it is expected that most of the adverse environmental, social, and occupational hazards are bound to arise during the construction phase of the works on the dam. The ESMP further covers potential impacts as they may arise during the pre-construction/rehabilitation phase and the post-construction/rehabilitation phase. Table 11 present the Environmental and Social Mitigation and Monitoring Plan for the Rehabilitation Works on Dadin Kowa Dam.

Note: All conversions were done using the Central Bank of Nigeria (CBN) current exchange rate of 1USD = 426 NGN as at September, 2022.

ESMP - PRE-CONSTRUCTION PHASE

Table 7: Environmental and Social Mitigation and Monitoring Plan – Dadin Kowa Dam and Reservoir

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
A	**ENVIRONMENTAL IMPACTS**										
1	Mobilization of workers, equipment and other materials into the work areas	Air pollution from exhaust fumes of vehicles and equipment moving into the Dadin Kowa Dam Area.	Ensure that vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES) before they are allowed in the project. Replace older	Contractor	939 (400,000)	GHG Emissions – Carbon Monoxide Gaseous Pollutants such as SO_2, NO_2, CO_2, CO, VOCs, H2S, TSP	In-situ Air Quality Measurement Visual observation	Air quality parameters are within permissible Limits Contractors' compliance to VET and VES	Along transportation corridors	One-off	PMU Safeguards GOSEPA 1,409 (600,000)

			vehicles and equipment								
2	Same as A1	Localized soil compaction	Limit zone of vehicle and equipment weight impacts (designate areas for vehicle drive-through, parking and stacking equipment);	Contractor	470 (200,000)	Soil quality parameters (Especially particle size, geotechnical properties)	In-situ Soil Quality Measurement	Soil quality parameters are within FMEnv permissible Limits	Vehicle drive-through, parking and stacking equipment spots/areas	One-off	GOSEPA 470 (200,000)

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring

3	Land Clearing/ preparation of onsite offices and workers camp/ staging area for equipment	Removal of some vegetation	Limit land clearing to specific zones for accommodation of onsite offices and workers' camp/staging area/equipment store.	Contractor	470 (200,000)	Amount of cleared vegetation	Site inspection	Contractors' compliance	Areas marked for Contractor's worker's camp and staging equipment	During land clearing activity One-off	PMU Safeguards GOSEPA 470 (200,000)
	Sub-total cost				**1,879** **(800,454)**						2,349 (1,000,674)
B.	**SOCIAL IMPACTS**										
4	Mobilization of workers, equipment and other materials into the work areas	Increased risk of illicit behaviour and crime (such as theft and substance abuse) attributable to labour influx.	Community consultation/HIV sensitization Ensure to have/obtain a baseline data on HIV prevalence Distribution of condoms Sensitization and awareness	Contractor NGOs	3,521 (1,500,000)	Sensitization record sheets Baseline HIV/STI data Distribution records Sensitization record sheets	Checks and reviews Surveys and interviews	Feedback frequencies Changes in data Rate of collection Number of COVID-19 suspected	Project site and proximal settlements Project site and proximal settlement	Monthly	GBV Specialist TRIMING Safeguards Supervising Consultant 2,347 (1,000,000)

		Covid-19 transmission	Procurement of Covid-prevention materials		1,878 (800,000)	COVID-19 Sensitization report		cases	s		TRIMING Safeguards 470 (200,000)

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
5	Same as above	Impacts on community health and safety such as accidents or "hit and run"	Train and sensitize drivers on road safety and traffic regulations Ensure Earth moving vehicles (class "H") accreditation for heavy duty vehicle drivers Mount visible signages	Contractor Contractor's ESHS officers	1,878 (800,000)	Number of accidents recorded	Checking health log (incidence reporting)	Number of erected signages at strategic point Low accident incidents	Along transportation corridors	Twice	FRSC 704 (300,000)

	Sub-total cost				7,277 (3,100,002)					**3,521** **(1,499,946)**
C.	**OCCUPATIONAL HEALTH & SAFETY**									
6	Mobilization of workers into the work areas	Risk of accidents and injuries Noise Pollution Exposure to minor noise pollution during movement of equipment to work areas.	Implement project specific Occupational Health and Safety Management Plan (OHSMP)	Contractor	939 (400,000)	Compliance with OHSMP - Number of workers Trained Number of accidents & Injuries	Visual Observation Interviews	Compliance to mitigation measures Increase/ decrease in Lost Time Injuries (LTI). Near Misses or accidents; Reports on unsafe acts or conditions	Project site	weekly	Supervising consultant 704 (300,000)
	Sub-total cost				939 (400,000)					704 (300,000)
					10,095 (4,300,470)					6,574 (2,800,524)

ESMP - CONSTRUCTION PHASE

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
D.	**ENVIRONMENTAL IMPACTS**										
7	Crest road overlay with bitumen/asphalt	Accidental spillage of lubricants, fuels and overspray of bitumen/asphalt into vegetative areas and into the reservoir overflow into adjoining watercourse, wetlands or canals.	prevent overspray or flow of bitumen products into vegetative areas, the reservoir, adjoining watercourse, wetlands or canals. Ensure proper pegging of crest (road) margins during application of	Contractor	470 (200,000)	Condition of the soil and water bodies	Visual observation	Compliance to mitigation measures proffered;	Crest and access road	During the period of crest road overlay	GOSEPA Supervising Consultant 939 (400,000)

			bitumen/asphalt.								
8	Fixing of ripraps that have moved down the slope	Damage of vegetation and or topsoil/ compacting of soil as a result of heaping of rocks (for ripraps) on the ground for long before use.	Deposited or supplied rock materials for ripraps should be used as quickly as possible. Provide a designated area for materials supply	Contractor	235 (100,000)	Condition of topsoil	Visual observation	Adherence to mitigation Communication materials	Portion allocated for material dumping	Throughout civil works	Same as above

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
9	Supply and deposition of sand, laterite and other materials	Disturbance to soil fauna/microorganisms due to deposit over low vegetation or topsoil	Provide a designated area for depositing materials and maintain appropriately	Contractor	937 (400,000)	Condition of vegetation and topsoil	Visual observation	Adherence to mitigation	Portion allocated for material dumping	Throughout civil works	Supervising Consultant Ministry of Environment 1,409 (600,000)

10	Cement dust	Air pollution due to debagging of cement	Debagging of cement should be done in an enclosed place. Use of PPEs	Contractor	Same as above	Air quality	Air sample analysis	Air quality parameters within permissible limits	Work areas	During civil works	Same as above
11	Clearing of vegetation	Air pollution from bush burning	Only specific areas earmarked for use should be cleared. Discourage burning	Contractor	Same as above	Amount of cleared vegetation	Observation of cleared areas	Contractor's compliance	Vegetative areas of the dam	Monthly	Same as No. 9
12	Felling of trees	Deforestation Disturbance to soil flora/fauna	Tree planting	Contractor	2,347 (1,000,000)	Number of trees felled	Visual observations	Number of trees planted	Project area	Twice	Supervising Consultant Ministry of

											Environment 939 (400,000)

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
13	Waste Management	Littering Burning of waste Dumping waste in course	Implement Waste management plan (WMP)	Contractor	1,174 (500,000)	Waste management	Visual observation	Compliance with WMP	Work areas	Monthly	Supervising Consultant Ministry of Environment 2,347 (1,000,000)
14	Provision of additional rocky material in plunge pool to re-	Damage to vegetation and or topsoil/ compacting of soil	A designated area should be mapped out for this purpose before any	Contractor	117 (50,000)	Condition of topsoil	Visual observation	Stable topsoil in good condition	Material stacking area	Every two months	Supervising Consultant 282 (120,000)

	establish design condition	as a result of heaping of rocks (for plunge pool) on the ground for long before use.	initial supply of material.								
15	General rehabilitation works by the contractor, workers, and supervising consultants	Open defecation	Prohibit open defecation through use of signage Provision & management of mobile toilets	Contractor	3,521 (1,500,000)	Mode of defecation Availability of mobile toilets	Site inspection Visual observations	Number of mobile toilets on site	Work areas	Quarterly	Supervising Consultant TRIMING Safeguards 1,409 (600,000)
	Sub-total cost				8,801 (3,749,226)						7,325 (3,120,450)

S/	Activity	Potential	Mitigation	Responsibili	Cost of	Paramete	Method of	Performance	Sampli	Frequenc	Responsibili

N		Impacts	Measures	ty for mitigation	mitigation USD (Naira)	rs to be measured	measurement	Indicator	ng Location	y of monitoring	ty and Cost of Monitoring
E	**SOCIAL IMPACTS**										
16	Rehabilitation Works	Failure to capture locals in workforce Forced labour	Include locals in workforce Forced labour is prohibited	Contractor	282 (120,000)	Employment rate of locals in the project	Number of locals employed in the project	High level of involvement of locals	Project site	Twice	TRIMING PMU Safeguards 470 (200,000)
17	Supply of sand, laterite and other materials	Failure to do business with established local businesses	Implement GRM and align with TRIMING GRM Collaborations with host community	Contractor	470 (200,000)	Conflict management	Number of conflicts recorded	Effective GRM	Project site	Quarterly	TRIMING PMU Safeguards 939 (400,000)
18	Clearing of vegetation	Complaints by UBRBDA over failure to re-vegetate	Only specific areas earmarked for use should be cleared. Revegetate	Contractor	(150,000)	Sustenance of vegetation and protection of soil beneficial organisms	Visual observation Amount of cleared vegetation	Reforestation (Implementation of reforestation plan)	Project site	During vegetation clearing	GOSEPA Supervising Consultant 141 (60,000)
19	Rehabilitation works	Conflict over	Stick to ToR	Contractor	Same as No. 17	Conflict manageme	Number of conflicts	Effective	Project site	Quarterly	Same as No. 17

		quality and speed of work	Implement GRM and align with TRIMING GRM			nt	recorded	GRM			

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
20	Same as above	Late payment of wages/poor welfare	Pay wages as and when due. Implement GRM and align with TRIMING GRM	Contractor	Same as No. 17	Workers' wages	Evidence of payment by contractor	No or minimal complaints	Workers' group	Monthly	Supervising Consultant
21	Illicit drug use	Violent conflicts	Prohibition of drug and alcohol. Signing of CoC.	Contractor	939 (400,000)	Workers	Visual observation	Drug-free site Signed CoC	Project site	Weekly	Supervising Consultant 1,221 (520,000)

			Presence of security operatives on site								
	Sub-total cost				1,691 (720,366)						2,630 (1,120,380)
F	**OHS IMPACTS**										
22	Rehabilitation Works	Accidents and injuries arising from the use of equipment and machinery.	Train workers on OHS. Frequent toolbox trainings Stocked first aid box. Functional site clinic Retainership hospital.	Contractor	4,695 (2,000,000)	Rate of road accidents	Interviews Incident logbook	Low occurrence of accidents during crest road overlay	Project site	Weekly	Supervising Consultant 1,221 (520,000)

			Staff induction								
23	Same as above	Slips, trip and fall hazards	Pep talks before work	Contractor	Same as No. 22	Efficacy of OHS plan	Number of slips, trips, and falls.	Training on OHS	Dam embarkment	Weekly	Same as No. 22
24	Fixing of ripraps and other activities in the rehabilitation	physical injuries Disturbance to soil fauna/microorganisms, the soil beneficial organisms.	Use of PPEs, OHS training, compliance with OHS guidance	Contractor	Same as above	Personnel safety	Interviews Incident logbook Physical observation	Low occurrence of physical injuries Commitment to and implementation of vegetation regrowth	Work areas	Monthly	Same as above

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
25	Dust	Eye problems including blindness	Use protective goggles	Contractor	Same as above	Personnel health and safety	Physical observation Interviews	Low occurrence of eye problems/Compliance	Work Areas	Weekly	Same as No. 22
26	Work at	Fall	Train	Contractor	Same as	Work at	Number of	Adherence to	Heights	Weekly	Supervising

	Height	from height	personnel Organize workers' induction		No. 22	height SOP and compliance with safety plans	falls from height	work at height plans Use PPEs			Consultant Same as No. 22
27	Rehabilitation works	Heat stress	Sensitization on the workers Hydration	Contractor	Same as above	Exhaustion and dehydration levels	Health log	Non-prevalence of heat stress/stroke	Project site/work areas	Weekly	Same as above
28	Same as above	Drowning	Organize water safety training/ Use Life jackets	Contractor	939 (400,000)	Water safety	Incidence of drowning	No incidence of drowning	Reservoir	Weekly	Supervising Consultant 470 (200,000)
29	Conveying and lifting heavy equipment	Collapse, injuries, death	JHA/PHA; Safe Work Practices	Contractor	Same as F22	Safe work standard	Visual; Documented evidence	Contractors' Compliance	Work Areas	Weekly	Supervising Consultant
30	Working near roads or crest	Road accident	Mount speed limit and caution signage.	Contractor	235 (100,000)	Road safety for pedestrians	Physical observation Mounted signages	Accident-free operations	Along transportation corridor	Weekly	FRSC 1,409 (600,000)

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring
31	Noise	Exposure to Noise resulting in induced hearing loss.	Retrofit vehicle exhausts with proofing devices. Service equipment & machinery. Use ear muffs/ ear plugs.	Contractor	587 (250,000)	No of Complaints from affected communities	In-Situ Measurement of noise level	Number of vehicles retrofitted with sound proof	Along transportation corridor	Weekly	Supervising Consultant GOSEPA 1,221 (520,000)
32	Toxic Wastes and Chemicals	Irritation problems and other health challenge due to exposure	Train workers on handing of toxic materials Use PPEs	Contractor	470 (200,000)	Number of workers trained	Physical observation Training attendance	Number of chemical handling accident	Site/work areas	Weekly	Supervising Consultant 1,221 (520,000)
33	High voltage exposure	Skin burn, injury and even death of	Re-train electricians & train	Contractor	939 (400,000)	OHS Plan - Complianc	Interviews Incidence	Low/no cases Compliance with	Electrical work areas	Weekly	Supervising Consultant

34	Fire Outbreak	worker due to contact with life cables	other workers Use PPEs Conduct fire drill Use fire-fighting equipment			e - Number of workers trained Number of electrocution incidents Number of fire incidence	log	fire prevention plan Availability of functional firefighting equipment	Fire-prone zones/project site		Same as above
35	Road accident involving workers or pedestrians	Physical/ traumatic brain injuries/death	Training drivers on road safety and regulations.	Contractor	Same as B5	Rate of road accidents	Interviews Incident logbook	Low occurrence of road accident	Along transportation corridor	Weekly	Same as F30
	Sub-total cost				**7,630** **(3,250,380)**						5,542 (2,360,892)
					18,122 **(7,719,972)**						15,497 (6,601,722)

ESMP - POST-CONSTRUCTION PHASE

S/N	Activity	Potential Impacts	Mitigation Measures	Responsibility for mitigation	Cost of mitigation USD (Naira)	Parameters to be measured	Method of measurement	Performance Indicator	Sampling Location	Frequency of monitoring	Responsibility and Cost of Monitoring

G	**ENVIRONMENTAL & OHS IMPACTS**									
36	Project Completion	Environmental pollution from improper disposal of wastes generated on site.	Gathering and disposing site wastes in designated government approved dumpsite collaboratively with GOPESA	Contractor	939 (400,000)	Presence of wastes on the site after rehabilitation works	Site inspection, soil and water quality testing	Good housekeeping Absence of pollutants in the soil and water.	The dam environment	One-off	GOSEPA 235 (100,000)
37	Project Completion	Loss of employment for workers from within Dadin Kowa	Clear terms of engagement Use GRM	Contractor	470 (200,000)	Terms of engagement Associated grievances	Engagement contracts Grievance reports	Absence of associated grievances	Project site Use of Questionnaire copies	One-off	Community Leaders 939 (400,000)
38	Same as above	Accidents and injuries from movement of equipment and machinery out of the site.	Strict compliance with OHS site plan for project completion phase.	Contractor	235 (100,000)	Number of near-misses, injuries, and accidents	Health log ESHS report	Level of incidence	Project site and Dadin Kowa community	One-off	Supervising Consultant 117 (50,000)
39	Testing	Exposure to	Implement	Contractor	470	Number of	Visual	Complianc	Project site	One-off	PMU

	running of efficacy of rehabilitation works at the dam	injuries, accidents or death	on-site OHS plan; Train staff on OHS; PPEs		(200,000)	persons trained Number of accidents & Injuries	Observation Training attendance list	e levels			Staff and Management of UBRBDA 939 (400,000)
	Sub-total cost				2,114 (900,564)						2,230 (949,980)
	GRAND TOTAL				30,331 (12,921,006)						24,301 (10,352,226)

5.2 Environmental and Social Monitoring Organization and Institution

The successful implementation of the monitoring program is hinged on the expertise and commitment that the TRIMING Project Management Unit (PMU) offers which zooms in on the Project Coordinator, Environmental and Social Safeguards of the project as well as project Engineers. Third party institutions such as the Cottage Hospital in Hinna are also instrumental to a successful and effective monitoring program. The roles and responsibilities of those that will be involved in the implementation, monitoring and review of this ESMP are discussed in Table 8.

Table 8: Roles and Responsibilities of Institutions for Monitoring

S/N	Institution	Roles & Responsibilities
1	Federal Ministry of Water Resources	• Overall monitoring of the TRIMING Projects • Liaise directly with relevant ministries such as the ministry of environment and the ministry of health • Lead role – in the review of draft ESMP report, public disclosure of the ESMP report, receiving of comments from stakeholders, monitoring and evaluation process.
2	Federal Ministry of Environment	• Participate in the review of draft ESMP report, public disclosure of the ESMP report, receiving of comments from stakeholders, monitoring and evaluation process.
3	Federal Ministry of Environment	• Participate in the review of draft ESMP report, public disclosure of the ESMP report, receiving of comments from stakeholders, monitoring and evaluation process.
4	TRIMING PMU	• Overall oversight of project implementation • Liaise closely with the UBRBDA management and relevant stakeholders • Liaise directly with the Ministry of Water Resources on all matters regarding the TRIMING Project • Liaise with the various Ministries at state level that are critical to the project implementation including the State Ministry of Environment • Safeguards due diligence
5	TRIMING PMU Safeguard Unit (Environmental and Social)	Environmental Safeguards • Collate environmental and social baseline data on relevant environmental characteristics of the project location • Analyze project's potential environmental impacts • Ensure that project activities that are implemented will be in accordance to best practices and guidelines set out in the ESMP • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. • Work closely with the Supervising Consultant to ensure that contractors comply in the implementation of the mitigation measured and ESHS-MSIP and Code of Conduct.

		Social Safeguards • Develop, coordinate and ensures the implementation of the social aspects of the ESMP • Identify and liaise with all stakeholders involved in social related issues in the project; • Conduct impact evaluation and beneficiary's assessment; and • Establish partnerships and liaise with organizations, Community Based Organizations (CBOs) and Civil Society Organizations (CSOs)
6	Contractor	• Implement ESMP during project implementation • Adherence to the signed code of conduct and mitigation measures • Implementation of code of conduct for all staff • Formulation of detailed environmental management plans e.g., WMP • Preparation of work plans for environmental and social management in line with the ESMP • Report and maintain records of environmental and social incidents as well as corrective and preventive actions taken • Supervision of implementation of all the measures and preparation of required monitoring report
7	GOPESA	• Inspection of project areas in order to ensure strict compliance with sanitation and waste management practices in the state. • Collaboration with other MDAs at the State and Federal level, NGOs and Donor Agencies in environmental protection and management especially in areas of waste recycling/management etc. • Collaboration with UBRBDA and the successful contractor for the provision of designated project waste disposal areas
8	Community Leadership, Traditional Rulers etc	• Assist in coordinating and ensuring the implementation of the social components of the ESMP • Undertake oversight function for ESMP compliance in Dadin kowa communities • Promote environmental awareness. • Review environmental and social performance report made available by TRIMING PMU. • Provide comments, advice and/or complaints on issues of non-compliance • Attend public meetings organized by the TRIMING PMU to disseminate information and receive feedback. • Ensure community participation by mobilizing, sensitizing community members;
9	World Bank	• Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening the management framework and implementation performance.

		• Review of monthly/quarterly reports on ESMP implementation and monitoring
10	Others/General Public	• Identify issues that could derail the project and support projects impacts mitigation through case reporting to concerned authorities such as TRIMING safeguards in Dadin Kowa, UBRBDA managers, contractor, traditional rulers etc.
11	Cottage Hospital Hinna	• Undertake medical test for site workers, check-ups, record of health incidence and treatment of injured personnel, training support of contractor, assist in sourcing for credible and competent first aider for contractor, special training on protection against black flies which causes blindness in people etc
12	WUA Leadership including women and youth leaders	• Monitoring of percentage in-take of locals (youths) in the project from communities upstream and downstream of the dam • Observing and monitoring implementation of mitigation measures for adverse social and environmental impacts on the people and the dam area, including communities • Organise unskilled labour and semi-skilled labour concertedly with traditional rulers and recommend to the contractor • Support the contractor to ensure that the highest compliance with the ESMP is attained
13	UBRBDA Area Office Dadin Kowa	• Largely constituted by the Area Manager, Dam Manager, and all relevant department within the dam management team, the UBRBDA will monitor rehabilitation works as they understand the dam behaviour, safety works that needs to be done and the rationale, the terrain and so on • Observing and monitoring implementation of mitigation measures for adverse social and environmental impacts on the people and the environment of the dam area
14	TRIMING security consultant	• Review security reports and give recommendations accordingly

5.2.1 Training Need and Competence

Generally, the TRIMING PMU possess the technical capacity to implement and supervise its projects. Nonetheless, for this ESMP it is recommended that the PMU undergoes training to enhance its capacity in ESMP implementation and monitoring. Training is essential for ensuring that the ESMP provisions are implemented efficiently and effectively. The PMU shall therefore ensure that all institutions or groups that have roles to play in the implementation and monitoring of the ESMP are competent with requisite education, training and experience. Similarly, the successful contractor for the rehabilitation works shall be required to undertake general OHS awareness training for their project workforce and specific training for those whose work may significantly have adverse impact on the environment (e.g., the crest road overlay works). This is to ensure that they are fully aware of the relevant aspects of the ESMP and are able to fulfil their roles and functions. As a minimum, the contractor shall ensure that the following trainings are provided to their personnel:

I. General Awareness in Occupational Health and Safety (OHS) Training;

- OHS/HSE Induction/Orientation Course for all workers to include (site safety rules, PPE requirements, JHA, Hazard identification and Control);
- Daily tool box talks for workers at the start of each day's job;
- Refresher OHS Courses as and when required.

II. Project Specific Occupational Health and Safety (OHS) Training

- Work at height
- First Aid Training (for Site First Aiders)
- Safe Driving Techniques (for drivers)

The contractor will be required to forward internal OHS training and procedures to the PMU for approval before commencement of the dam and reservoir rehabilitation works. Based on the assessment of the institutional capacities of the different agencies that will be involved in the implementation of the ESMP, two broad areas of capacity building have been identified and recommended for effective implementation of the ESMP. The training costs for ESMP implementation and Monitoring plan are provided in Tables 9 and 10 respectively.

Table 9: Training Cost for ESMP

Training Module	Who to train	Duration	Cost (USD)	Cost (NGN)
Costs and Budget Management for ESMP Implementation	TRIMING PMU	1 day	1,888	800,000
Occupational Health and Safety Management	TRIMING PMU and Management of UBRBDA as well as other key actors	1 day	1,174	500,000
Site Waste Management	UBRBDA management, Safeguards, and contractor	1 day	704	300,000
SH/SEA Awareness	Coomunity reps Contractor's staff and site workers	1 day	1,174	500,000
Code of Conduct	Contractor's staff and site workers	1 day	704	300,000
Code of Conduct Training	Community reps	1 day	939	400,000
TOTAL			**6,573**	**2,800,000**

Table 10: Training Cost for Monitoring Plan

S/N	Training Module	Who to train	Duration	Cost (USD)	Cost (NGN)
1	Monitoring and Evaluation Basics – Establishing Monitoring Indicators and Evaluating Performance	TRIMING PMU SMEnv GOPESA TRIMING M&E	1 day	1,888	800,000
2	Communication Management	TRIMING PMU	1 day	704	300,000
3	GRM Implementation and Monitoring	Grievance Redress Committees (GRC)	1 day	1,174	500,000
4	ESHS Performance Monitoring	TRIMING PMU Safeguards Unit	1 day	1,174	500,000
	TOTAL			**4,930**	**2,100,000**

The total cost for ESMP Mitigation and Monitoring Program capacity building is estimated at Eleven thousand five hundred and three Dollars ($11,503) equivalent to Four million, nine hundred thousand Naira Only (NGN 4,900,000).

5.2.2 Monitoring and Reporting

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in Table 11 below. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 11: Monitoring Plan

Monitoring	Action	Responsibility	Period	Deliverables
Internal Monitoring	Regular site visit (to ensure that the mitigation measures and actions specified in the monitoring plan and as bound by the contract is satisfactorily implemented).	Environmental and Social Safeguard Officers from the TRIMING PMU	During post construction and construction phases	Monitoring Reports and relevant documentation
External	Regular site visits to	FMWR, SMWR,	During post	Inspect

Monitoring	ensure project is implemented in an environmentally and socially sustainable manner using the monitoring indicators specified in the monitoring plan and other national and international environmental guidelines/laws	FMEnv, SMEnv Community heads, WUA, UBRBDA area management Dadin Kowa	construction and construction phases	monitoring reports from Safeguard units and provide feedback and Enforce corrective actions where required.

5.2.3 Reporting Procedures

The reporting procedures presented in Table 12 have been developed in order to ensure that the PMU is able to receive feedback from the implementation of the ESMP on an ongoing basis and to take rapid corrective actions if there are issues of non-compliance.

Table 12: Reporting Procedure

Phase	Responsibility	Deliverables	Accountability
Pre-construction	Safeguard Unit	Report of monitoring activities including any specific events	TRIMING PMU FMWR on request
Construction	Safeguard Unit	Additional Reports according to specific conditions e.g., Accidents, serious environmental/social impacts	TRIMING PMU FMWR on request
Post-construction	Safeguard Unit	Final Monitoring Report including all monitoring activities throughout project Implementation	TRIMING PMU. Report will be archived and made available to the World bank & FMWR on request.

5.2.4 Record Keeping and Control

The Contractor is required to keep records detailing evidence of ongoing- mitigation activities. Such records may include site monitoring plan, OHS Policy, Site Specific OHS Plan, Emergency response and preparedness procedures, site instructions, training records, complaints records, incident report, health log etc. These documents should be made available to the TRIMING Safeguards Unit upon request.

The TRIMING Safeguard Unit is also required to keep records to provide evidence of monitoring activities and effectiveness of the monitoring plan. The site monitoring Plan, identified problems/corrective actions and monitoring Reports are to be kept by the Safeguard unit and be made available to relevant regulators upon request. In addition, all significant communications with FMWR, SMWR, FMEnv, SMEnv, and other relevant authorities should be documented and kept. These documents are required to track performance to achieve and demonstrate compliance with the monitoring plan and applicable regulatory requirements.

Implementation Schedule

A tentative ESMP implementation plan schedule is presented in the following Gantt Chart.

Tentative ESMP Implementation Schedule

S/N	Activity Description	Responsibility	Pre-Rehabilitation (Week)				Rehabilitation (Weeks)						Post-Rehabilitation
			1	2	3	4	1	2	3	4	5	6	
1	Clearance & Disclosure of ESMP	TRIMING PMU											
2	Inclusion of Environmental & Social Requirements in Bid Documents	TRIMING PMU											
3	Allocating Budget for ESMP	TRIMING PMU											
4	Environmental and Social Training	TRIMING PMU/Consultant											
5	Appointing Support Staff for ESMP	TRIMING PMU											
8	Mobilization to site	Contractor											
9	Commencement of rehabilitation works	Contractor											
10	Implementation of Mitigation Measures	Contractor											
11	Supervising ESMP Implementation	TRIMING PMU											
12	Monitoring &	TRIMING											

S/N	Activity Description	Responsibility	Pre-Rehabilitation (Week)				Rehabilitation (Weeks)						Post-Rehabilitation
			1	2	3	4	1	2	3	4	5	6	
	Reporting on ESMP Implementation	PMU/Relevant MDAs											
13	Monitoring & Reporting on ESMP Implementation after project completion	TRIMING PMU / Consultant											

5.3 Contractual Measures

Most of the mitigation measures are the obligation of the Contractor during all phases of the project. Consequently, the successful contractor will have to prepare their proposals considering the measures as well as the detailed general environmental and social management conditions during rehabilitation works. Table 13 presents the Contractual Measures.

Table 13: Contractual Measures

Action	Remarks
The measures as described in this ESMP should be included in the tender documents with appropriate flexibility to adjust these measures to site circumstances, and that the potential consultant will have to prepare their proposals considering these measures.	The non-inclusion of these measures in the proposal will lead to a disqualification of the proponent; The contract with the successful bids should contain these environmental and social management measures as firm conditions to be complied with.
Specifically, the measures should be translated into a suite of environmental and social specification that are written in the same language style and format as the rest of the contract document	This approach will ensure that the environmental and social controls integrate seamlessly into the tender document and are presented in a familiar form to the Consultant
Cost of mitigation measures of USD **72,748.00**Only be added to the cost of the contractual document as provisional sum	The contactor must consider and put the cost for the environmental and social mitigation requirements specified in the ESMP.
Consultant's Code of Conduct – Preventing GBV and Violence Against Child (VAC): A Contractor's Code of Conduct should be prepared by the Contractor and signed; and forms part of the bids/contract agreement. To a minimum, the Code of Conduct should address: Standards of Conduct such as (a) Conflicts of interest (b) quality of products and	The Code of conduct indicates the consultant's commitment to be of best behaviour and comply professionally with the requirements of its contract and Bank's safeguards.

services, (c) health and safety- reporting injuries and unsafe conditions (d) workplace violence, labour and human rights, ethics, customer relations, reporting violations, I sex with any person under 18 is prohibited etc.	
Individual Code of Conduct Preventing SH/SEA and Violence Against Child (VAC): To a minimum, the individual code of conduct should spell out acceptable behaviour, consequence of violation, the routes for resolution of conflicts in any instance where personal interests conflict general interests regarding to the project work, outside work conduct, due diligence in providing required services, individual commitment to sustainable environmental practice during project implementation activities, etc.	The Individual Code of Conduct indicates the site personnel's commitment to be of best behaviour and comply professionally with the requirements of the CoC.
Manager's Code of Conduct Preventing SH/SEA and Violence Against Child (VAC): The Manager's Code of Conduct should to a minimum, will address: Manager's obligations to workers which include i) worker's welfare plan, ii) resolution of conflict among workers (iv) workers' health care (v) general communication protocol (vi) disciplinary procedures etc.	The Manager's Code of Conduct indicates the Manager's commitment to employee welfare and work procedures and ethics.

5.3.1 Cost Estimates

The total estimated cost for implementing the ESMP (mitigation and monitoring) is Fifty-Four Thousand, Six Hundred and Thirty-Two Dollars ($54,632) equivalent of Twenty-Three Million, Two-Hundred and Seventy-Three Thousand, Two-Hundred and Thirty-Two Naira (NGN 23,273, 232) while the total cost of for ESMP capacity building is estimated at Eleven thousand five hundred and three Dollars ($11,503) equivalent of Four million, nine hundred thousand Naira Only (NGN 4,900,000). The total estimated cost for implementing the ESMP is Seventy-Two Thousand, Seven-Hundred and Forty-Eight Dollars ($72,748.00) which is equivalent of Thirty Million, Nine-Hundred and Ninety Thousand, Six-Hundred and Forty-Six Naira (NGN **30,990,646.2**0) inclusive of 10% contingency.

See breakdown in Table 14 as follows.

Table 14: Overall Estimate of ESMP Implementation Cost

S/N	Item	Responsibility	Estimated Cost (NGN)	Estimated Cost (USD)
1	Mitigation	Contractor	12,921,006.00	30,331.00
2	Monitoring	TRIMING PMU	10,352,226.00	24,301.00

		Safeguards, SMEnv, GOPESA, SMWR etc.		
		Sub-total	**23,273,232.00**	**54,632.00**
3	Capacity Building	TRIMING PMU, other relevant MDAs	4,900,000.00	11,503.00
		Sub-total	**28,173,232.00**	**66,135.00**
4.	Contingency	10% of Sub-Total	2,817,323.00	6,613.00
TOTAL			**30,990,646.20**	**72,748.00**

Note: *USD to Naira exchange rates as at September, 2022 (1 USD = 426 Naira) was applied and figures rounded up.*

5.3.2 ESMP Disclosure

After the ESMP review and clearance by the World Bank, the following below describes the process of disclosure as shown in Table 16.

Table 15: ESMP Disclosure Process

S/N	Action	Remarks
1	Disclosure in Newspapers peculiar to Gombe State	The PMU will disclose the ESMP and review procedures
2	Disclosure in local newspapers	The PMU will disclose the ESMP and review procedures
3	Disclosure in FMWR, SMWR, FMEnv	The PMU will disclose the ESMP and review procedures
4	Disclosure at the TRIMING office	The PMU will disclose the ESMP and review procedures
5	Disclosure at the Local Government Offices	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures
6	Disclosure on the World Bank external website or infoshop	The ESMP will be disclosed according to the World Bank Disclosure Policy-OP/BP 17.50

CHAPTER SIX
STAKEHOLDER IDENTIFICATION AND ENGAGEMENT

The Consultant is committed to direct engagement of critical stakeholders in a timely, participatory and meaningful process of consultations, especially for those who are likely to be affected by the development and implementation of the ESMP. The stakeholder engagement process in this ESMP study will inform and add value to the proposed intervention works as the views and observations of project stakeholders are addressed, documented, and prioritized, strengthen relationships among stakeholders, improve the long-term sustainability of anticipated project results, and ensure successful project implementation. The Consultant will ensure to capture useful suggestions as given during the engagements. The reports of all stakeholder engagements will be attached in the annex of the ESMP draft and final reports.

6.1 Stakeholders Profiling

The stakeholder mapping was done and documented in the ESIA study for DKIS (DKIS ESIA, 2020). This will be built upon in this present ESMP study by consolidating current field data and findings with findings from desktop literature review. As documented in the ESIA document for DKIS, the profiled potentially affected parties are in two categories namely:

1. Directly affected parties as *Primary Stakeholders*.
2. Indirectly affected parties including organizations that may have interest or influence on the project as *Secondary Stakeholders.*

6.1.1 Primary Stakeholders

a) **Farmers / Water Users Association (WUA):** These encompass all farmers that use water from the scheme whether members or non-members of WUA. The mandate of the WUA is to procure and supply agricultural inputs, collect fees, market produce, resolve conflicts and water management. Consultations with farmers provided substantial information for the ESMP development and the overall project management.

b) **Herders/Pastoralists:** Pastoralism constitutes a huge economic activity and livelihood for many of the Fulani herdsmen within the project area. It was also noted that activities and interests of pastoralists and farmers often clash due to the poor control and invasion of cattle into the farms. Therefore, this group is economically important in decisions that affect the project, and therefore, consultation with them is considered helpful to ensure adequate social remedies to the issues that could adversely impact them and other stakeholders.

c) **Fishermen:** From the ESIA survey, it was deduced that fishing activities are done solely in Gongola River and River Nono. Fishermen create ponds along the river to ease their fishing activities however conflicts arise due to some engaging in illegal fish farming activities. Engagement with the group revealed that the type of fishes found in the area includes *Latis spp*, *Clarias spp* (cat fish), *Heterobranchus, Libios Calaglausis*, Tiger fish, Tilapia and Bagridi. Instruments used in fishing include Arrow (Marsh), Calabash (Gora) and Nets.

d) **Vulnerable groups:** These are persons and groups that will be more adversely affected than others by the project activities as a result of physical disability, gender or age. In this case, mitigation measures tailored in addressing adverse impacts at broad levels may either not

adequately restore their livelihood or they may be denied of the mitigation measures due to their state of vulnerability. The study identified women, youth and widow farmers as likely vulnerable groups; and engaged them in consultations separately across the project areas.

6.1.2 Secondary Stakeholders

This constitutes groups, agencies and public institutions that will be affected or may have interest in the project. The following secondary stakeholders were identified:

a. Federal Ministry of Water Resources
b. Federal Ministry of Environment
c. Federal Ministry of Agriculture and Rural Development
d. Federal Ministry of Power, Housing and Works
e. Gombe State Ministry of Water Resources
f. Gombe State Ministry of Environment
g. Gombe State Environmental Protection Agencies
h. Gombe State Water Board
i. Nigerian Erosion and Watershed Management Project
j. NEWMAP Gombe State
k. Federal College of Horticulture, Dadin Kowa
l. Women Associations
m. Youth Development Groups
n. Villages and Wards Heads
o. Community-Based Organizations
p. Non-Governmental Organizations (NGOs)
q. Federal Road Safety Corps

Table 16: Stakeholder Engagement Plan

Phase According to Consultants Work Plan	Key Stakeholder Engagement Activities	Stakeholders Identified	Influence on the Project
Pre-field Consultations	Given the wealth of experience of the Environmental and Social Safeguards of the PMU, the consultant will arrange for a consultation with the unit as this ought to be the first point of call in the consultation process. Operational and technical aspects of the assignment shall be discussed in order for the consultant to gain deeper insight into the assignment, as well as develop better work rapport.	PMU Environmental and Social Safeguards	Oversight Function

Preliminary Survey Key Stakeholder Engagement Activities	Desktop study of project area Mapping of primary stakeholders in and around the project location Initial identification of stakeholders in synergy with the TRIMING PMU Safeguards Unit Introductory meetings with Community Associations, GRC, and informants to explain the proposed project and importance of the ESMP, and obtain initial feedback on relevant local issues, including Gender Based Violence and opinions from vulnerable groups (Will be done extensively during baseline studies and assessments) Building trust and manage expectations.	Direct Project Affected Persons (PAPs) Farmers Stream users (Fulani Herdsmen and Community members. Indirect Project Affected Persons Community Leadership Level Community leaders Youth Groups Women Association GRC. Community Driven-Initiatives Community Based Organizations Faith Based Organizations Non-Governmental Organizations Government/State Agencies State Ministry of water resources.	Own farms or use water from streams Reside within a 2km radius of the project target area(s). To a certain extent, are leaders at the community level with influence on the behaviour of habitants in their domain. Operate business and deliver services within the area Provide some form of Social/Technical assistance for community driven initiatives related to livelihood, security, health and gender issues. These have the mandate of the State Government to be critical decision makers, advisory groups and provide technical assistance in terms of land delineation, provision of

			cadastral maps etc.
Baseline Studies and Field Works	Complement field activities with input from the public consultation/stakeholder engagement specialist. Detailed mapping of stakeholders and social landscape. Maintain a stakeholder log/minute (meetings, key issues raised, agreed actions, and responsibility). Plan, liaise and brainstorm with the TRIMING PMU on consultations, and outcomes. Ensure inclusion of a formal grievance mechanism as an annex in the ESMP Report.	Stakeholder Identification continues.	Will be determined once other stakeholders are identified.

The goal of the stakeholder engagement process is to foster connections and trust among the project PMU, implementing partners, contractors, consultants, and all other stakeholders. The consultant hopes to accomplish the following during consultations by working with the PMU, which is important.

- Outlining potential negative social and environmental effects to stakeholders, along with prevention and reversal measures.
- Avoid making commitments that are impossible to keep or are not meant to be kept.
- Ensuring that the reasonable and workable options put forth by stakeholders are taken into account and included into the project design and execution.

6.2 Security Plan

During consultations and engagement with stakeholders as well as observations made in the study area, it was observed and also gathered from traditional rulers and members of the community that the security status of the Dadin Kowa Dam and environ is healthy with minimal or no security challenges in recent times.

6.3 Fundamentals of Stakeholder Engagement Approach for Implementation

Consultations: The objectives of consultations for the ESMP for the Dadin Kowa Dam rehabilitation included firstly bringing greater awareness of the ESMP to the primary and secondary stakeholders of the project. The consultations with various stakeholder groups zoomed in to collecting vital primary information from the people as regards potential environmental and social impacts that the project may generate and how to prevent or reduce the negative impacts while enhancing or optimising the positive ones to ensure positive project outcomes and sustainability.

Collaboration: Collaboration was established with identified stakeholders to allow for effective decision-making processes so as to make decisions more responsive to stakeholder needs and improve the sustainability of program and project outcomes through increased participation by stakeholders.

Collecting, Recording, and Reporting on Inputs from Stakeholders: Stakeholder feedback on various dimensions of project implementation especially environmental and social issues will be collected periodically through the TRIMING PMU Safeguards and Communication Specialist.

Stakeholders-led Monitoring: Involving stakeholders in monitoring services and products delivery, revenues, budget execution, procurement, contract awards, and reform policies will increase transparency, improve efficiency of service delivery or budget execution, and reduce opportunities for corruption. Additional entry points for stakeholder's engagement in monitoring will include collaboration with local CBOs/NGOs, communities, academia, or think-tanks in gathering results data and conducting joint evaluations of project results after project completion (including the preparation of project Implementation Completion Reports).

Vulnerable Groups

Vulnerable Groups were identified at the level of consultations**.** The criteria utilized were based on establishing members of the project area of influence likely to be at the most risk of the adverse impacts of the proposed intervention works. This is with regards to: (*i) easy predisposition to SH and SEA, contracting STIs and STDs or unwanted pregnancies (social vulnerability) (ii) people living with disabilities (physical vulnerability) (iii) elderly persons (social and probably, economic vulnerability) etc.* In line with the criteria above, these include:

- **Teenage and Adolescent Females:** This group stand the risk of suffering SH, SEA, contracting STIs, STDs or unwanted and/or early pregnancies caused by migrant workers at the pre-construction and construction phases of the rehabilitation works.
- **Women and Children:** This group includes women and children that may be involved in petty trading services within project site. This set of people can be cheated easily as workers may take advantage of them or short change them by refusing to pay for trade services or decide not to pay in full. The women may be sexually harassed or exploited sexually either as trader, food vendors etc. or as site job seekers.
- **Persons with Disabilities:** It has been documented that disability and poverty feeds each other, and the realities of persons living with disabilities include poverty, lack of access to education and job opportunities. To ensure equity, the contractor is enjoined to have considerations for individuals with disability such that project impact is less felt by them and that the project support those in close proximity to the project site in any way feasible.
- **Elderly Persons:** This group of vulnerable people tend to be predominant in Hinna and Duriya communities of Dadin Kowa. They are more susceptible to project impacts therefore the contractor should endeavour to do all within reasonable limits to reduce project impact on them.

6.4 Stakeholders' Engagement Summary

Participants: Ministry of Water Resources, Ministry of Environment, UBRBDA Staff including the dam manager and the dam management team, TRIMING Environmental Safeguard Specialist, TRIMING Safeguards in Dadin Kowa, TRIMING Security Consultant, Community Chiefs,

District Heads, Community Elders, Women Groups, Youth representatives, WUA Chairman and other representatives, representatives of the Cottage Hospital Hinna etc.

The highlight of the stakeholders' engagement is given below:

i. The ESMP Consultants explained the scope of dam rehabilitation works as well as the purpose of the ESMP to the stakeholders. The Consultant enquired about their cultural and socioeconomic activities and urged them to express their opinions as regards the project.
ii. They appreciated the idea of the intervention and expressed their optimism on the development it can bring to their communities while enhancing their livelihoods in the end. They therefore assured the of their full assistance and cooperation in the course of the engagement and upon commencement of rehabilitation works.
iii. The community members raised the issue of the contractor whose contract was terminated for the irrigation project. They expressed their concerns about the level of commitment that will be brought by the successful contractor for the dam rehabilitation works. They also inquired about the current state of the project procurement process.
iv. The TRIMING Environmental Safeguard specialist responded by assuring the people that the project has their interest at heart and that this will be demonstrated through top quality service delivery though the project that is underway. He also assured that the project will definitely kick-off while stating that the preparation of the ESMP is clear proof that the project will start in Dadin Kowa dam.
v. The cottage hospital representative pleaded and suggested that the incoming contractor should consider including black flies project in their corporate social responsibility (CSR) project for the community farmers and WUA groups in Dadin Kowa.
vi. A partnership between the contractor and the Cottage Hospital Hinna was suggested by stakeholders during the meeting. This is in view of making quality health care accessible to locals and migrant workers who will come into the community with the contractor while strengthening institutional capacity of the hospital and facilitating inclusiveness in the project.
vii. Security issues were raised by stakeholders regarding the security of dam operators due to the easy accessibility to the dam and its porosity.
viii. The community members are in hopes that the project will create employment opportunities
ix. In order not to raise the hopes of community members who had in the past benefitted from one form of RAP or the other, the TRIMING Safeguard specialist made a point that according to the scope of work for the intervention, RAP may not be in the picture.

CHAPTER SEVEN

GRIEVANCE REDRESS MECHANISM (GRM)

7.0 Introduction

In every process involving many people, there is the likelihood that some persons will feel aggrieved or dissatisfied. This Chapter reflects the adoption of TRIMING's step-by-step process considered credible for registering and addressing grievances. It provides specific details regarding a cost-free process for registering complaints, response time, and communication modes. It also describes the mechanism for appeal and the provisions for approaching civil courts if all options fail.

7.1 The Need for GRM

The Grievance Redress Mechanism (GRM) can be described as the process by which people affected by the project can bring their grievances to the project management in a culturally appropriate manner, for consideration and redress. It is regarded as dispute resolution and conflict management mechanism and in practice, it is seen as one of the social accountability mechanisms.

It is understood that effective organizational design and coordination substantially decrease the probability of problems in implementation. Nevertheless, some affected persons are still likely to believe they have been treated inadequately or unfairly. Providing an accessible and credible means for PAPs to pursue any grievances may decrease the likelihood of overt resistance to the project or of protracted judicial proceedings that can halt implementation.

Specifically, the grievance resolution mechanism has the following objectives:

- Preventing and addressing community concerns,
- Providing an effective avenue for expressing concerns and achieving remedies for the communities,
- Promoting a mutually constructive relationship.
- Providing a way to reducing risk for the project,
- Assisting larger processes that create positive social change.

The Grievance mechanisms designed herewith is aimed at solving disputes at the earliest possible time, which is in the interest of all parties concerned. It clearly discourages referring such matters to the law courts for resolution, which is time consuming. As much as possible, clear procedures for filing and resolving grievances from the affected population have been designed. The mechanism provides an affordable and accessible procedure for third-party settlement of disputes arising from rehabilitation. This mechanism is localized as much as possible with the active involvement of the traditional rulers, local chiefs, DKIS project office, women leaders and representative of the WUA leadership.

7.2 Benefits of GRM to the Project

- Provides information about project implementation

- Provides an avenue to comply with government policies
- Provides a forum for resolving grievances and disputes at the lowest level
- Resolves disputes relatively quickly before they escalate to an unmanageable level
- Facilitates effective communication between the project and
- Helps win the trust and confidence of community members in the project and creates productive relationships between the parties
- Ensures equitable and fair distribution of benefits, costs, and risks
- Mitigates or prevents adverse impacts of the project on communities and produces appropriate corrective or preventive action
- Helps avoid project delays and cost increases, and improves quality of work.

7.3 Benefits of GRM to the stakeholders

- Provides a cost-effective method to report their grievances and complaints
- Establishes a forum and a structure to report their grievances with dignity, and access to a fair hearing and remedy
- Provides access to negotiate and influence decisions and policies of the project that might adversely affect them
- Facilitates access to information

7.4 Potential Grievances Related to the Dam Rehabilitation Works

Potential areas that grievances may arise as a result of the dam rehabilitation works include but not limited to the following:

- Delay in execution of project leading to breakdown of trust
- Failure to generate opportunities for employment, training, supply or community development
- Failure to follow-through on commitments in a given timeframe
- Disruption to amenities, utilities and lifestyle
- Loss of livelihood
- Violation of human rights
- Blockage of access routes and consequent traffic congestion on adjoining roads;
- Heavy equipment movement and operation in public areas,
- Major preventable accidents or injuries to locals due to the dam works
- Poor treatment of workers
- Sexual Exploitation and Abuse/Sexual Harassment of locals as a result of labour influx etc.

7.5 Interest Groups

The key interest groups in this regard are:

- Community leaders (emirs)
- Community based influencers supporting the project who are liable to be accused of benefit capture, exclusion and marginalization
- Touts seeking employment, extortion and robbery opportunities; capable of starting unprovoked conflict
- Local vigilantes, police, sanitation and other enforcement corps
- Women groups

- Trade Unions
- Persons whose livelihoods might be impacted by project activities
- Project employed labour
- Youth groups

Disadvantaged or Vulnerable Groups

Key disadvantaged or vulnerable groups identified were:

- Teenage and adolescent females
- Women and Children
- Persons living with disabilities
- Elderly people

7.6 Grievance Redress Process

There is no ideal model or one-size-fits-all approach to grievance resolution. The best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs and project conditions and scale. Therefore, for simplicity, accessibility, affordability, and accountability, the following components make for a good grievance mechanism:

- Establishment of the mechanism for hearing a complaint
- Receiving and registering a complaint.
- Screening and assessing the complaint.
- Formulating a response.
- Selecting a resolution approach.
- Implementing the approach.
- Settling the issue
- Announcing the result.
- Tracking and evaluating the results.
- Learning from the experience and communicate back to all parties involved.
- Preparing a timely report to management on the nature and resolution of grievances.

Table 17: Grievance Procedures Steps

Step	Category	Activities
1.	Establishing Channels for Receiving Grievances	• Choosing offices, departments where Desk are to be established • Publishing the designated offices and officers responsible • Channels for receiving grievances including in-person, suggestion box, etc
2	Reception and registration	• PAP will file complaints or grievances about any aspect of the project verbally, in writing or through a representative in English or local language. • The PAP first instance where to complaint is the “unit WUA”. If the Unit WUA cannot resolve the complaint, then the Unit WUA will bring it up to the block WUA. If the grievance can be solved at ‘Block WUA level”, then it stops at that level. If the grievance is not resolved at the “Block WUA level”, then the “Social and

		Environmental officer" of the scheme would be notified. • Complaint recorded by the implementing agency with the name of the aggrieved person, address and location information, the nature of the grievance and the resolution desired. • Grievance made must be acknowledged within 48 hours of receipt by an official authorized to receive grievances
3	Resolution	• All grievances referred to the appropriate party for resolution • Resolution must be made within 15 days after receipt of grievance. • If additional information is needed, project management can authorize additional 15 days for resolution. • Results of grievances disclosed to the aggrieved persons in writing with an explanation of the basis of the decision. • The resolution of the grievances will be handled by the "Social and Environmental officer" with the support of the rest of "RBDA Scheme Management team", the Local Authorities and the Social Safeguards of TRIMING PMU.
4	Appeals	• Aggrieved persons dissatisfied with the response to their grievance may file an appeal. • In such cases, the responsible authority assembles "the PMU" (Project Coordinator) to hear such cases including at least one disinterested party from outside the agency responsible for the resettlement project. • There will be no further redress available outside the resettlement project. In such cases, grievances would need to be pursued through the legal system.
5	Monitoring	• During project implementation and for at least 3 months following the conclusion of the project, monthly reports will be prepared by the scheme safeguards officer regarding the number and nature of grievances filed and made available to project management.

As the first point of call for resolving grievances, a compliant desk to collate petitions, complaints, etc. from aggrieved parties should be opened at the Dadin Kowa Irrigation project office manned by the TRIMING scheme environmental and social officer. S/He refers all the issues to the PMU safeguards team who ensures appropriate channel of resolution of such grievances are reached with a view to resolving the issues.

The judicial system will be the last resort to redress the issues if informal conciliation fails. This admittedly is a costly and time-consuming procedure. Nevertheless, affected persons will be exempted from administrative and legal fees incurred pursuant to this grievance redress procedure. Besides, such grievances requiring higher level resolution will be facilitated by the scheme level safeguards officer.

CHAPTER EIGHT

SUMMARY AND RECOMMENDATIONS

Based on the findings from the ESMP, the potential negative impacts can be mitigated/managed with strict adherence to the measures stated in this ESMP. The ESMP and the mitigation costs will need to be embedded in the BOQ for the rehabilitation works to ensure implementation costs are adequately budgeted for. Additionally, the TRIMING PMU will ensure that the agencies involved in the monitoring activities are adequately trained in line with the capacity building plan in the report, which has budgetary allocations.

The following recommendations are provided:

i. Priority should be given to local workers from within the Dadin Kowa community during project implementation to stimulate local socioeconomic activities, improve livelihood and poverty reduction in the project area.
ii. The Safeguard Unit of the PMU including the PMU M&E Specialist and Supervising Consultant should ensure active monitoring so that the contractor adheres strictly to the requirements of this ESMP especially in the application of mitigation measures during project implementation.
iii. The locals who have very high and some that appears to be unrealistic expectations of the project should be adequately communicated to, so they can have a true and correct picture of the rehabilitation works and the benefits that may directly come to them such as employment opportunities for skilled and semi-skilled labour. This is vital so that the project can be properly assessed without bias or sentiment after completion.
iv. Although there are no security threats at the dam area in Dadin Kowa as at the time of this report, the current state of insecurity in many parts of the country calls for proactive measures in the project location, especially since migrant workers will join the project, and also because a major (project) activity is about to be flagged off.
v. For effective waste management, on site, the GOPESA should be in control of proper collection and disposal of construction wastes Furthermore, the Contractor should implement the waste management plan during the period of project implementation.
vi. Construction Safety signs boards and work area lightening should be installed to protect workers and the public around the work areas.
vii. Inclusiveness of local and community-based monitoring of some mitigation measures should be encouraged. For example, the Cottage Hospital in Hinna can play a major role in strengthening health frameworks in the project.
viii. Sharing of Information Education and Communication (IEC) materials to contractors for mitigation measure during the rehabilitation works is recommended. Examples are as shown below.

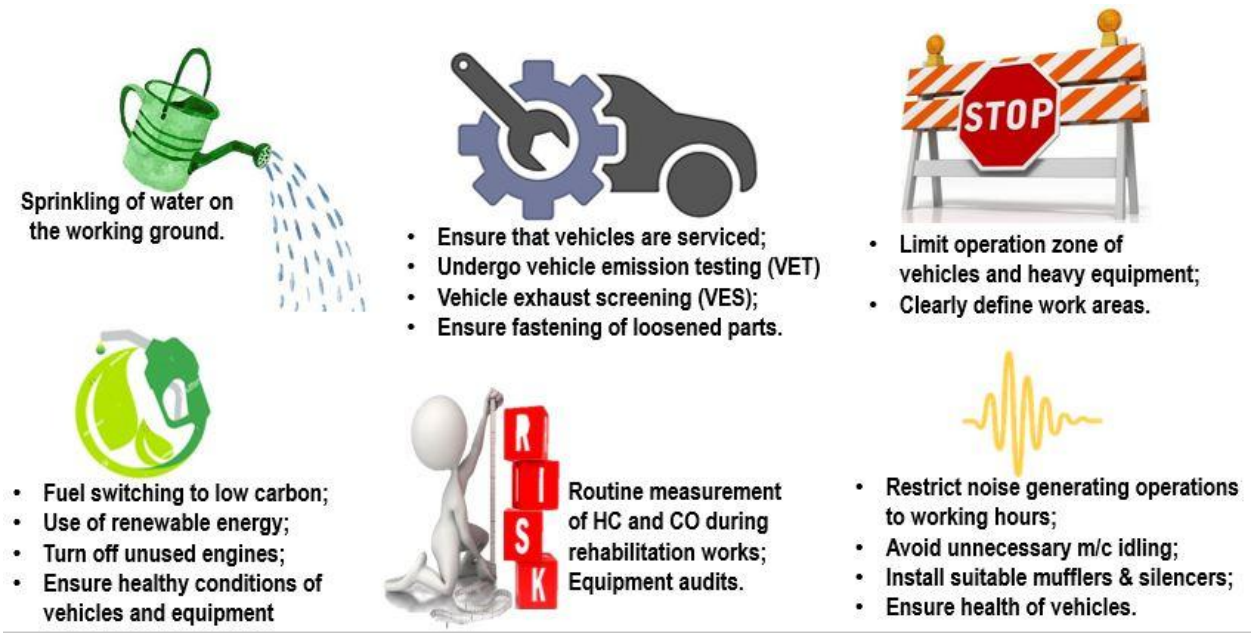


Figure 6: Recommended IEC Materials for Contractors and Construction Personnel

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Annex 1: Terms of Reference

FEDERAL REPUBLIC OF NIGERIA

TRANSFORMING IRRIGATION MANAGEMENT IN NIGERIA (TRIMING) PROJECT

FOR THE ENGAGEMENT OF A CONSULTANT FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE REHABILITATION OF DADIN KOWA DAM, GOMBE STATE

1.0 INTRODUCTION

The Transforming Irrigation Management in Nigeria (TRIMING) Project is a World Bank financed project in collaboration with the Federal Government of Nigeria under the Federal Ministry of Water Resources. The TRIMING intervention Project is on the rehabilitation of the Dadin Kowa Dam which was constructed in the 1980s, though the impoundment of the reservoir commenced on 1st April 1987. This Dam, which is owned and operated by Upper Benue River Basin Development Authority was however somewhat dormant until December 2020 when power production commenced. The project also proposes to rehabilitate the main spillway, the electrical and mechanical works, the instrumentation, construct an auxiliary spillway as well as construct a flume bridge and Fourd. The dam is owned and operated by Upper Benue River Basin Development Authority.

The Dadin Kowa Dam is located 5km North of Dadin-Kowa village (about 37km from Gombe town along Gombe – Biu road) in Yamaltu-Deba Local Government Area of Gombe State on River Gongola. The Dadin Kowa dam which started impounding in 1987 was commissioned in 1988 with a maximum storage capacity of 2.8 billion cubic meters (bm3) to provide water on a sustainable basis for irrigation, domestic water supply, fishing, power generation and flood control. The dam has its hydropower component and irrigation infrastructures uncompleted for onward of twenty-seven years, thus the reservoir is yearly near the minimum operation level of 239.0mamsl at the beginning of raining season each year. In 2001 an unusual flood occurred in the Gongola River Basin and at the site of the Dadin Kowa dam the flood caused the reservoir water level to rise as much as 247.806m amsl which was repeated in 2012 when the reservoir recorded the second highest post construction reservoir water level of 247.126m amsl with a much higher inflow and lesser outflow of 3,339.73m3/sec and 876.70m3/sec respectively compared to inflow of 2,598.21m3/sec and outflow of 995.65m3/sec recorded in 2001. The designed maximum flood level of the reservoir 249m amsl corresponding to a designed peak inflow and outflow of 3,160 m3/s and1, 110 m3/sec respectively. Consequently, it can be said that the dam has experienced a near maximum probable flood event in 2001. The Salient features of the dam and reservoir are presented in Table 3.1

Table 1.1: Salient Features of Dadin Kowa Dam and Reservoir

DAM	
Type	Earth & Rock Fill (1x109m3)
Height	42 meters above deepest foundation
Length at Crest	520m
Width at Crest	8m

Width at Base	230m approximately
U/S Slope	1:2,5
D/S Slope	1:2,2
SPILLWAY	
Location	Left Abutment
Type	Gated Overflow Crest Open Chute-Flip Bucket
Design Discharge	1,110m3/sec @ reservoir flood level EL 249m
Gates	3 Radial Gates 6m x 8m (high)
FLOOD	
Peak Inflow	3,160m3/sec
Peak Outflow	1,110m3/sec
POWER-HOUSE	
Location	Left Bank
Installed Capacity	2 x 17MW
Types of Turbines	Francis
Generators	Vertical Shaft Umbrella Type
Generator Rating	22 MVA at 0.85 Power Factor
Discharge at Full Load	65m3/sec
IRRIGATION	
Outlet	One on Right Bank
Inlet Invert Level	EL 233.5m
Designed Discharge	10m3/sec
Canal Type, Length	Trapezoidal Concrete Lined 2.5km long
RESERVOIR	
Maximum Flood Level	EL249m
Live Storage Capacity	1.77X109m3
Surface Area at Elevation 247	300Km2

2.0 Project Development Objectives

The TRIMING Project Development Objective is to improve access to irrigation and drainage services and to strengthen institutional arrangements for integrated water resources management and agricultural service delivery in selected large-scale public schemes in Northern Nigeria. Highlights of the Project location is captured under section 3.1.

3. 0 Project Components

The Project's objective will be achieved through the implementation of four components, the design of which responds to the reality that water infrastructure (dams and irrigation systems), the farmers who use the water and irrigation lands, and the input and output markets for agricultural services and products are all interrelated in a larger connected system of technical, economic and social relationships. The project components and main activities under each component are tabulated as follows.

Table 1: TRIMING Project Components

Project Components	Main Activities
Component 1: Water Resources Management and Dam Operation Improvement	
Subcomponent 1.1: Support to Integrated Water Resources Management	The *piloting* of anticipated provisions for separation of government regulatory and operational powers and responsibilities for integrated water resources management (IWRM) of basin-wide allocation, control, and river channel maintenance for sustainable public irrigation scheme functioning.
Subcomponent 1.2: Dam Operations Improvement and Safety	Investments for sustainable operational safety, improved operational practices and increased dam safety of selected dams and reservoirs including: Bakolori, Zobe, Goronyo, Tiga, Challawa Gorge and Dadin Kowa dams (i.e., 6 dams), and Ruwan Kanya operational reservoir and Hadejia Barrage.
Component 2: Irrigation Development and Management	
Subcomponent 2.1: Irrigation Infrastructure Investments	Rehabilitation of 27,000 ha to improve the performance of a total of 50,000 ha irrigation area in five schemes downstream of the existing storage reservoirs and major investment in irrigation civil works and related studies.
Subcomponent 2.2: Improving Irrigation Management at Scheme Level	Aims to ensure the long-term viability of the irrigation and drainage services delivered on public irrigation schemes by implementing a progressive management transfer to Water Users Associations (WUAs) and to autonomous professional operators, either public or private.
Component 3: Enhancing Agricultural Productivity and Support to Value Chain Development	

Subcomponent 3.1: Support to agricultural productivity and market linkages	Provide resources to enhance farmers' productivity in the rehabilitated schemes and improve their participation in value chains through a matching grant mechanism; and the establishment of Farmers' Management and Service Delivery Centers on each scheme, supported by extension and marketing agribusiness professionals.
Subcomponent 3.2: Support to Innovation and R&D	Technical assistance for farmers, water schools, applied research such as improving irrigated agronomy, and introduction of innovations such as new crops or production techniques as part of emerging commercial partnerships.
Component 4: Institutional Development and Project Management	
Subcomponent 4.1: Institutional Development and Governance	This subcomponent includes five activities: capacity building and training of FMWR staff; support to RBDAs; consensus building and supporting the change process; generation, feedback, and dissemination of data, and strengthening supervision and accountability in the sector.
Subcomponent 4.2: Project Management and M&E	The activities here will support the establishment of the Project Management Unit and other key coordination institutions within Government, and will provide guidance on change management processes. The M&E activities will develop an Information System for project purposes, studies and analytical work and a records and document management system.

3.1 RATIONALE OF STUDY

Dadin Kowa Dam was completed about 34 years ago, however, its utilization has been minimum. Currently, the Dam provides water for irrigating less than 120ha of land only, in addition to being the main supplier of water for Gombe Metropolis. Recently, there was an attempt to maximize its utilization by serving as source of electricity (40MW) and water for additional irrigation (2,000ha). These new projects demand a change in the operations of the Dam, as more water is required at the reservoir for turning turbines and supporting expansion of the irrigation. Thus, this is not without some risks and potential impacts both positive and negative. Therefore, the concern with safety on site becomes necessary, equally important is the impact that this project may have on Dadin Kowa community and its people, as regarding their livelihood, health and safety, physical and socio-environmental clime. This has necessitated a thoroughly executed social and environmental analysis of the site, sprawling into the community with a view to taking into consideration people and environmental protection before, during, and after the project has been delivered; this will ensure that the rights and safety of the people are not trampled upon as a result of the project intervention, instead, seeking out how the people may be left better off.

3.2 Description of sub-project activities

The implementation of Components 1 and 2 of the intervention has recorded significant progress with the completion of all studies and design as well as signing of all construction as well as construction supervision contracts for five (5) large scale irrigation schemes. Construction works have since commenced and at various levels of progress as presented below:

Sokoto Rima Sub-basin

Rehabilitation of 7,449ha of the existing gravity irrigation system (Lot I) at Bakolori Irrigation Scheme (BIS), in Sokoto-Rima River basin. Although about 1,909ha have been completed and handed over to the beneficiaries while about 1,834ha are now ready for handover. The overall progress is about 56.50% while the lapsed contract period is about 120%. Extension of the period loss of 334 days due to suspension and Force Majeure has been considered and granted by the Client.

Conversion of about 5,556ha of the abandoned sprinkler system to gravity (Lot II) at BIS, in Sokoto-Rima River basin. The first set of completed sectors are expected to be handed over in the next quarter. The overall progress is currently about 48.94% at a financial progress of 27.13% with a lapsed contract period of about 83%.

The procurement of the works contracts for Bakolori & Zobe Dams (Lot 1) and Goronyo Dam & River Training works (Lot 2) are now completed. The contracts with Messrs Ric Rock for Bakolori & Zobe Dams as well as with Messrs Sinohydro Corporation for Goronyo Dam & River Training works, being the successful candidates have been signed.

The Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) for Bakolori Irrigation; Middle Rima Valley Irrigation Schemes have been prepared and disclosed. The implementation of the Environmental and Social Management Plan (ESMP) and Resettlement Action Plan for Bakolori Irrigation Scheme is currently on-going. Furthermore, the Environmental and Social Impact Assessment for Dadin Kowa Dam have been prepared and disclosed.

Hadejia Jama'are Sub-basin

Rehabilitation and improvement of Kano River Irrigation Scheme (about 15,000ha) including Dam Safety Remedial works for Tiga dam, Challawa Gorge dam and Ruwan-Kanya Reservoir (LOT I) in Hadejia-Jama'are basin. About 958ha have been completed and handed over to the beneficiaries, while the overall progress is currently at about 38% at a financial progress of about 29% (old contract) and 0% (addendum contract) with a lapsed contract period of about 50.00% and financial progress of about 23%.

Rehabilitation and improvement of HVIS including Dam Safety Remedial works for Hadejia Barrage (LOT II). About 1,747ha from eight sectors (four sectors with full complements of TCs) have been completed and handed over to the beneficiaries. The overall progress is currently at about 66% at a financial progress of about 41% (old contract) and 0% (addendum contract) with a lapsed contract period of about 70%.

River Training and Flood protection contract (Lot 3) is ongoing. The overall progress is about 37% with time lapsed of 70%. The financial progress of 24%.

The construction contracts for Tiga and Challawa Dams as well as Ruwan-Kanya Reservoir are ongoing, the contractor took possession of the sites again on 22nd July, 2020 and commenced works in Ruwan Kanya reservoir. Likewise, Rehabilitation and improvement of Hadejia Valley Irrigation Scheme including Dam Safety Remedial works for Hadejia Barrage (LOT II), this contract was signed on 6th July, 2018 with a completion period of 36 months

The Environmental and Social Impact Assessment (ESIA) for the Hadejia Jama'are River Sub-Basin with the Kano River Irrigation Scheme (KRIS) and Hadejia Valley Irrigation Scheme (HVIS) and the associated Cumulative Impacts as well as the Resettlement Action Plan for both schemes have been prepared and disclosed. Implementation is on-going.

Gongola Sub-basin

Construction Works of Dadin Kowa Irrigation Scheme (DKIS) 2,000ha Gravity Portion (Quick-win Area) has been awarded and ongoing. Progress is of the starting stage at about2% as at the end of March, 2021.

Dadin Kowa Irrigation Scheme (DKIS) in Gombe and Borno states. This is a scheme with 5,000ha in total including 2,000ha that can be commanded by gravity. Primary infrastructure including main canal and inverted siphon are in place. The Environmental and Social Impact Assessment and the Resettlement Action Plan reports have both been prepared and disclosed. Implementation of these instruments commenced third quarter of 2020.

Contract for Consultancy services for Dam Safety Studies and Design of Dadin Kowa Dam in Upper Benue River Basin was signed on 20th May 2020 with JV Enviplan International Ltd & Water Works Design and Supervision Enterprise (WWD &SE). This assignment is on-going. Intervention activity considered during this exercise include: -

- Rehabilitation of dam
- Rehabilitation of main spillway
- Rehabilitation of instrumentation
- Construction of auxiliary spillway (This is under contention)
- Rehabilitation of Electrical and mechanical works
- Construction of Flume Bridge and Fourd

4.0 Objective of the Consultancy

The objective of the study is to prepare an Environmental and Social Management Plan (ESMP) for the Dam safety work on the Dadin Kowa dam. The ESMP should consist of a well-documented set of mitigation, monitoring, and institutional actions to be taken before and during rehabilitation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. It should also include the measures needed to implement these actions, addressing the adequacy of the monitoring and institutional arrangements at the permanent office site. Tables, Pictures and Maps are important, these could be embedded within the body of the plan or attached in the appendix section.

Terms of reference of the ESMP are to:

Describe the measures required to implement the construction of the Dadin Kowa Dam and related management and mitigation commitments;

Describe specific additional measures required to implement contract related to international best practices, and approval conditions stipulated by the World Bank Safeguard Standards, Nigeria's Federal Ministry of Environment and NESREA requirements along with the appropriate intuitional laws/policies.

Identify the roles and responsibilities of the environmental and social management stakeholders of the project; and

Communicate the environmental and social expectations and requirements throughout the project tenure.

While all contractors and subcontractors shall comply with and apply the ESMP requirements as applicable to the tasks they are employed to undertake, some of the measures and procedures

outlined in this proposal are commitments made by Project Management of TRIMING, and therefore remain responsible for their implementation. It should however be recognized that practical implementation of many of the measures may rest with contractors and subcontractors and consequently supervised by the PMU of TRIMING Project.

4.1 Scope of Work

The ESMP Consultant will work in close collaboration with the design engineers or consultants as well as the TRIMING project team. S/he will have to consider the technical variants of the proposed activities and in return, inform the technical design consultants of any major constraint and recommend his/her professional advice if any issues or challenges are observed due to the social and environmental situation on ground.

The Consultant will consider the proposed civil, water management resources, electrical, river channels, irrigation and drainage routes, engineering designs, remodelling [if any] and other activities that would be carried out within the project location. The consultant will assess natural resources such as the trees and infrastructure [if any] that might be potentially affected during project implementation and operation and select the management strategies needed to mitigate any environmental and social risks/impacts. The Consultant would also consider the institutional capacity and training needs, supervision measures and feedback mechanism.

The core tasks of the ESMP shall include:

Review existing documentation of the TRIMING Project, all relevant safeguards documents and the PAD, ESMF, PIM and Environmental and Social Impact Assessment prepared for the Dadin Kowa Irrigation Scheme, Gombe and Borno states.

Review Environmental and Social Safeguards policies of the World Bank especially the applicable polices triggered on the project i.e., Environmental Assessment OP/BP 4.01; Natural Habitats OP/BP 4.04; Pest Management OP 4.09; Physical Cultural Resources OP/BP 4.11; Involuntary Resettlement OP/BP 4.12; Safety of Dams OP/BP 4.37; Projects on International Waterways OP/BP 7.50.

Describe the proposed project by providing a systematic description of the project relevant components and presenting plans, maps (proposed works, base camps, environmental and social sensitivities, staging areas, alternative routes etc with details of XY coordinates), figures and tables.

Identify and summarize the policy, legal and administrative framework relevant to the project.

Define and justify the proposed project study area for the assessment and management of environmental and social risks and impacts.

Describe and analyse the environmental, social, physical, biological, Occupational Health and Safety conditions in the study area before project implementation. This analysis shall include a mapping of the project area of influence as well as discussions on the interrelations between environmental and social components and the importance that the society and local populations attach to these components.

Identify and assess the risk of labour influx and GBV/SEA/SH on the subproject as well as recommend mitigation measures in managing the risks and potential adverse impacts associated with labour influx and GBV. Define stakeholders' identification criteria, carry out stakeholders' mapping and categorization. Carry out consultations with primary and secondary stakeholders in

order to obtain their views on and perception about the project. These consultations shall identify key environmental and social risks and impacts, and obtain comments from stakeholders on the proposed mitigation/enhancement measures.

Define the potential environmental and social impacts and risks resulting from proposed project activities and appropriate measures to prevent, minimize, mitigate or ameliorate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and costs applicable to actual mitigation and subsequently to monitoring exercise.

Define community health broadly, and also as related to STDs such as HIV/AIDS and other STIs, VAC, child labour, and forced labour. Ensure that awareness creation on the aforementioned is captured to include responsibility for implementation such as prevention and mitigation as well as monitoring of progress.

Review institutional framework for environmental and social management. Use the outcome of this review to identifying responsibilities and actors for the implementation of proposed mitigation measures. By extension assess the capacity available across all relevant actors to implement the proposed mitigation measures, and suggest recommendation in terms of training and capacity building, and applicable budget.

Discuss other salient related concerns that could be triggered as a result of project development.

Prepare an ESMP matrix table which could include cells for activities, potential risks/impacts, mitigation measures, responsibility for mitigation, cost of mitigation, parameters to be measured, KPIs, monitoring frequency and responsibility and costs.

The ESMP should capture:

- The potential environmental and social impacts resulting from project activities including an assessment of Environmental, Social, Occupational Health and Safety (ESHS) risks
- The proposed mitigation measures;
- The institutional responsibilities for implementation of mitigation and enhancement measures;
- The monitoring indicators;
- The institutional responsibilities for monitoring the implementation of mitigation and enhancement measures;
- The costs of mitigation and enhancement activities; and sources of funds
- A calendar for implementation.
- Develop an environmental and social monitoring program, including indicators, institutional responsibilities and associated costs.
- As appropriate, prepare an Occupational health and safety hazard plan including an analysis of the risk of accident, the identification of appropriate security measures and the development of a preliminary contingency plan.
- Based on the outcome of the consultation with stakeholders, the consultant should provide a summary of key indicators of community support for the project, as well as perceived benefits from the project expressed by different stakeholder groups.
- Participate in the finalization of the detailed designs for the project intervention for the Dadin Kowa community.
- Consultations- the ESMP Consultant would carry out consultations with identified primary and secondary stakeholders to obtain their views/opinions about the sub-project.

These consultations shall occur during the preparation of the ESMP. The ESMP results and the proposed mitigation measures will be discussed with relevant stakeholders directly involved by the rehabilitation activities. Recommendations from this consultation will be included in the final ESMP report.

4.2 Socio-Economic Baseline Report

As part of diligent efforts to understand the current situation of inhabitants of Dadin Kowa community and the possible inter-relationship between them and the project, it is important that TRIMING identifies these people so as to be guided in tailoring the ESMP to suit the reality of the people as the introduction of the project in their community is concerned. What is the estimated population of residents, what percentage are male and female, how much children are in this community (including vulnerable groups), what's their primary occupation, are there prevalent cultural beliefs that shape their way of life and so on? The consultant should carry out a socio-economic baseline study in order to report a detailed characteristic of the people, which will be relevant in preparing site-specific safeguard instruments such as ESMP, GRM, HIV/AIDs, GBV/SEA/SH prevention and mitigation action plan etc. Correct reportage of socio-economics is crucial as it will be used to make very important decisions, the consultant should take note of this.

5.3 Stakeholders Identification and Engagement

This section shall summarize the actions undertaken to consult all the various groups that are likely to be affected by the invention Project. Consultation here would be highly inclusive in getting the requisite feedbacks from the project beneficiaries about the Project, understanding their economic, social cultural life style [in assessing how these might affect the Project Intervention] and the Project Team responses so as to manage the expectations beneficiaries' might have for the Project. an in-depth stakeholders' analysis is required as part of this consulting. The analysis will include identification of all relevant persons, groups, organizations while zooming in on the vulnerable, women, girls and children, the elderly, persons with disabilities and project affected persons such as those likely to be displaced as a result of the intervention works, those whose livelihoods are threatened or directly affected by the project etc. The detailed record of the consultation meetings shall be presented in annex to the ESMP. Mitigation and adaptation measures should be planned against Covid-19 Pandemic during stakeholder engagements

5.4 Uptake of In-depth Analysis of Gender Based Violence and Consultations

Prevention of GBV and related incidences such as SEA/SH/VAC is of utmost importance in the project. In a bid to reduce risks associated with daily work routine within project intervention areas and around the site as a result of the project implementation, the consultant should explore this concern exhaustively, especially by consulting with women groups so as to understand current realities of GBV and related cases as guided by inputs of women during consultations. This may not be a one-off assignment; consultations should be carried out as necessary until satisfactory outcomes are attained. Data such as frequency of occurrence, coping mechanisms, reportage and punishment systems etc can be discussed at a great depth. Relevant legal provisions for such cases in the Nigerian law and other relevant documents should be reviewed so as to aid design of incidence prevention, uptake, and resolution in the event of such incidence, although prevention is the most important factor here.

5.5 Ethical Requirements

Before undertaking any activity, the team will make sure that it understands all ethical considerations related to working on GRM, GBV, SEA, SH and VAC. The consultant should not collect any primary data or conduct interviews or research using GBV/SEA survivors as case studies; consultant will only make use of secondary data in this regard. Furthermore, the consultant shall ensure that the consultation process is in line with NCDC protocol and WB COVID-19 guidelines.

6.0 Content of the Environmental and Social Management Plan

The typical content of an ESMP is presented below. It shall be noted that the presentation of the report may be modified depending on the nature and specific requirements of the project.

Preliminary pages

Cover page

Table of contents

List of acronyms and their definitions

Executive Summary

Chapter 1: Introduction

Background information

Beneficiaries of the proposed work

Description of the proposed intervention

Objectives of the ESMP

Rationale of the ESMP. This shall include scope, methodology and review of relevant literature and project documents

Relevant Maps

Chapter 2: Policy Legal and Administrative Framework

This should include policy framework, National Regulatory Framework, Institutional Framework and World Bank Safeguard Policies

Chapter 3: Environmental and Social Baseline

Description of the environmental baseline conditions. (To include a description of the physical environment and political administration of the study area)

Description of socio-economic baseline conditions. (To include population, ethnicity, employment, disability etc.)

Description of Biophysical Environment

Chapter 4: Assessment of Potential Adverse Impacts and Analysis of Alternatives

Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project

Discussion of alternatives to the current project and reasons for their rejection, including short description of likely future scenario without intervention;

Discussion of the potentially significant adverse environmental and social impacts of the proposed project.

Chapter 5: Environmental and Social Management Plan (including):

Discussion of the potential adverse environmental and social impacts of the proposed sub-projects including the impact of COVID 19 Pandemic

Proposed mitigation measures and institutional responsibilities for Implementation including cost estimates;

Environmental and Social Monitoring programs and instructional responsibilities for implementation including cost estimates;

ESMP Training requirements

Implementation schedule

Contractual measures

Indicative budget for ESMP implementation

ESMP disclosure

Chapter 6: Stakeholder Consultation

This chapter shall summarize the actions undertaken to consult the groups affected by the project, as well as other concerned key stakeholders including Civil Society Organizations. The detailed record of the consultation meetings shall be presented in the annex to the ESMP. Documentation under this chapter should also include measures taken to mitigate against COVID 19 during the consultation

Chapter 7: Grievance Redress Mechanism (GRM)

In addition to the GRM structure already on ground, the chapter should Develop a mitigating GRM template for grievances and complaints that may arise from the project stating the GRM procedures, the value chain, persons responsible [GRM Focal persons] and the levels of the GRM structures. This chapter should contain reporting of the establishment of an active Grievance Redress Mechanism within the participating communities.

Chapter 8: Conclusion and Recommendations

Annexes

Annex 1: Terms of Reference

Annex 2: List of Persons met with pictures

Annex 3: Summary of World Bank Safeguard Policies triggered by this project.

Annex 4: Records of Inter Agency and Public/NGO Communications including photos

Annex 5: List of participants in consultations and summaries of consultations

Annex 6: General Environmental and Social Management Conditions for Construction Contracts

Annex 7: Occupational Health and Safety (OHS) Plan

Annex 8: Sample of Questionnaire for socio-economics

Annex 9: Waste Management Plan

Annex 10: Environmental and Social Performance Monitoring Checklist

Annex 11: Traffic Management Plan

Annex 12: Workers Code of Conduct for both contractors and supervision consultants

Annex 13: Labor Influx Management Plan to include salient aspects such as Gender Based Violence (GBV)/ Sexual Exploitation and Abuse (SEA)

Annex 14: Workers Camp Site Management Plan

Annex 15: Sample Content of Contractor Environmental and Social Management Plan

Annex 16: Sample Borrow pit management plan

Annex 17: COVID 19 prevention and active response plan

Annex 18: Pest Management Plan. This should be captured in the body of the report and Executive summary succinctly

7.0 Required Qualification and Experience of the Consultant

The candidate shall have expertise and an advanced degree earned in relevant field including any of the following: civil/environmental engineering, environmental sciences, or the social sciences.

The candidate shall have not less than eight (8) years of experience with a minimum specific experience of four (4) years in planning related to infrastructure development or disaster response.

Experience in the design and preparation of an Environmental and Social Management Plan (ESMP) for infrastructure projects.

Competency and documented experience in social and environmental scientific analysis and development of operational action plans.

Working knowledge of World Bank operational safeguards policies gained through hands-on experience in the preparation and implementation of environmental and social management plans in Northern Nigeria.

8.0 Duration of work:

This assignment is expected to be completed within a period of twelve (12) weeks commencing immediately after contract signing. It should be noted that the success of the assignment during this period largely revolves around adequate consultations with all relevant stakeholders. The successful consultant is expected to spend considerable time in the project site to gather all necessary salient primary information.

9.0 Reporting

The consultant shall report to the National Project Coordinator through the Environmental and Social Safeguards Specialists.

10.0 Responsibilities of the Client

In addition to the project supervisory and other responsibilities contained in this assignment, the proponent shall provide the consultant with the following project documents:

Project Appraisal Document

Environmental and Social Management Framework (ESMF) for the TRIMING Project

Resettlement Policy Framework (RPF) for the TRIMING Project

Feasibility study report and subsequently, the Engineering designs

Disclosed Environmental and Social Impact Assessment report for the Dadin Kowa Irrigation Scheme

Grievance Redress Mechanism report and Communication strategy report for the TRIMING Project

Reports on the TRIMING Project's Integrated Pest Management and safe use of chemicals approaches

Other relevant Safeguard instruments prepared for the TRIMING Project

11.0 Deliverables:

A comprehensive and fully referenced report including detailed ESMP table and implementation process must be submitted by the consultant at the end of the assignment.

Inception Report: Expected in two weeks after the date of contract signing. This should include methodology and work plan with clearly defined community entry strategy that ensures free prior and informed consent. Consultant shall submit (3) hard copies and a soft copy of the inception report.

Draft Report: Expected in six (6) weeks after contract signing, detailing out findings from desk reviews, fieldwork, environmental and socioeconomic characteristics and stakeholders' engagement/consultation, etc which will be circulated for comments and relevant recommendation. Consultant shall submit (6) hard copies and a soft copy of the draft report.

Draft Final Report: Expected in ten (10) weeks after contract signing, after all comments and inputs from the PMU and the World Bank have been addressed and incorporated in the report. Consultant shall submit (6) hard copies and a soft copy of the draft final report to the PMU.

Final Report: Expected in twelve (12) weeks after contract signing, detailing all relevant information and addressed comments. Consultant shall submit (8) hard copies and a soft copy of the final draft report to the PMU.

12.0 Renumeration and Payment Schedule

The consultant shall be paid on a lump sum all-inclusive basis in four (4) instalments upon acceptance of deliverables of the reports as stipulated in the scope of work:

(i) Upon acceptance of Inception Report	10% of the agreed sum
(ii) Upon acceptance of Draft Report	40% of the agreed lump sum.
(iii) Upon acceptance of Draft final report	35%of the agreed lump sum
(iv) Upon acceptance of Final report	15% of the agreed lump sum

All Reports Shall Be in English and Presented in Hard and Soft Copies, however, for the purpose of workshops and the final report submissions, the adviser is to produce the executive summary in English language and in the local language of the target community. The adviser will prepare high quality PowerPoints. All submission shall be made to the National Project Coordinator, TRIMING.

All information pertaining to this programme as well as outputs produced under this contract shall remain the property of the FMWR who shall have exclusive rights over their use. Except for purposes of this assignment, the products shall not be disclosed to the public nor used in any format without written permission of FMWR and TRIMING in line with the national and International Copyright Laws applicable.

THE CONSULTANT WILL SIGN A CONFIDENTIALITY and NON-DISCLOSURE AGREEMENT WITH THE PMU. Noncompliance will subject to legal penalties not inferior to the Full Cost of the Contract.

13.0 SELECTION METHOD

The Adviser will be selected through the World Bank Individual Consultancy (IC) selection method.

Annex 2: List of Persons met with pictures

1. Ministry of Water Resources Representative
2. Ministry of Environment Representative
3. Ministry of Health Representative
4. Traditional Rulers
5. Water Users Association
6. Hinna Community
7. Duriya Community
8. Cottage Hospital
9. Women Group
10. Dam Manager UBRBDA
11. Dam Management Team
12. Area Manager UBRBDA

Annex 3: Summary of World Bank Safeguard Policies triggered by this project

The World Bank has 10 + 2 Safeguard Policies to reduce or eliminate the negative environmental and social impacts of potential projects, and improve decision making. The World Bank Safeguard operational policies triggered by the Dam Rehabilitation Works under TRIMING Project are presented in the Table below:

S/N	Tiggered Safeguards Policy	Justification
1	Environmental Assessment (OP 4.01)	The World Bank's Operational Policy on Environmental Assessment OP 4.01 is triggered by the activities proposed under the dam rehabilitation works because they are likely to have some negative environmental and social effects.
2	OP 4.37 - Safety of Dams	The dam needs to be well-maintained, restored to optimal operating conditions, and the reservoir must be safely managed given the socioeconomic importance of the Dam to the Dadin Kowa community. This has implications as surrounding areas and downstream communities must be protected while ensuring that the dam safety management ensures the dam investment delivers its intended services for its anticipated lifespan.
3	OP 7.50 Projects on International Waterways	This policy is triggered because the Gongola River is a tributary of the river Benue catchment, which is an International Waterway.

Annex 5: List of participants in consultations and summaries of consultations

1. Ministry of Water Resources Representative
2. Ministry of Environment Representative
3. Ministry of Health Representative
4. Traditional Rulers
5. Water Users Association
6. Hinna Community
7. Duriya Community
8. Cottage Hospital
9. Women Group
10. Dam Manager UBRBDA
11. Dam Management Team
12. Area Manager UBRBDA

Annex 6: General Environmental and Social Management Conditions for Construction Contracts

General

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

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

a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g., excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
d) Prevent oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid

creating possible breeding grounds for mosquitoes.

e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long-distance transportation.
k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of rehabilitation works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Annex 7: Occupational Health and Safety (OHS) Plan

Potential Hazards	Recommended Actions	Responsibility
"Unsafe behaviours" and "Unsafe conditions" will pose a serious occupational health and safety risk. Hazardous conditions or practices likely to impact on occupational health and safety will include: • Electromechanical works • Conveying and lifting of	TRIMING has a responsibility to ensure the health and safety of all persons working on the TIMING Project including, their own employees, contractors, subcontractors and agency employees. • In this regard, the TRIMING shall: Define systems of work and	TRIMING

heavy equipment • Use and exposure to hazardous energy i.e., Arc welding and electrical works	requirements for the contractor and subcontractors, to ensure their health and safety on the site. This means that TRIMING will require the contractor and subcontractors to follow safe systems of work, meet statutory and other requirements (Nigeria and International), and audit their capability to safely manage work performed by project staff • Provide information needed by the contractors to document and carry out work in a safe manner • Provision of first aid and first aiders • TRIMING should provide information on hazards and their associated risks while working on any specific part of the construction site. This will enable contractor's document their procedures for managing work around hazardous conditions, and to ensure they are aware of these hazards. TRIMING will do this by providing a set of requirements and safe work procedures through the Terms of Reference (ToR) in the contractor's contract document. It should also highlight Risk and Control Assessments, Work Control Permit etc. • Review Contractors' **Safe Work Method Statement** to ensure they comply with the Bank's Environmental and Social safeguards and statutory HSE Requirements. • Any Safe Work Method Statements submitted at tender should be reviewed to ensure safety and environmental requirements have been fully met. • Ensure that the contractor follows all safety and environmental	

	requirements. TRIMING should monitor health and safety during construction works. Pre-start checks, inspections and audits will be conducted while on- site. These checks will look at work practices and methods, equipment conditions and suitability, and competency of people through checking the permits, licenses etc. Individuals are not permitted to bring, use or be under the influence of alcohol or non-prescribed drugs on site.	
Compensation claims, (MEEPS) M: Materials (Hazardous) E: Environment (Workplace) E: Equipment P: Personnel and other persons in the workplace S: System (the work system exposing workers and others to the hazard)	• The contractor is responsible for ensuring that their work methods consider and incorporate best practice and Construction safety requirements. • The contractor is responsible for ensuring that safety and health hazards associated with the work they are performing, are satisfactorily controlled and do not pose a risk. In the process of carrying out their work the Contractor may introduce other hazards. The identification and control of these hazards is the responsibility of the Contractor. These hazards and controls identified by the Contractor must be considered in the **Safe Work Method Statements**. • The contractor is responsible for ensuring the health and safety of their employees including Sub-Contractors. This means that the Contractor is responsible for ensuring that: a) their employees and subcontractors are adequately trained and competent in performing their tasks, and in basic safety procedures. b) Are provided information about processes and materials which are hazardous. c) Are issued with appropriate safety equipment and have appropriate	Contractor

	instruction in its use. d) Have safe work methods and are adequately supervised to ensure safe work. e) Workplace safety inspections are regularly carried out. f) There is access to first aid equipment and trained persons.	

The contractor is responsible for ensuring their plants and equipment is safe. This means that Contractor's plant and equipment whether theirs or hired is a) in a serviceable condition with regular maintenance and inspections. b) Suitable for the task it is to perform and c) meets TRIMING requirements. The primary concerns of plants are that:

- All guards are in place and secure
- Relevant safety equipment is fitted and working
- Operating controls (indicators, brakes, steering etc.) are working properly b) possible safety or environmental risk items are satisfactory. (Hydraulic hoses, mufflers, exhaust emissions, fluid leaks etc.).

The contractor should be responsible for ensuring that:

- Caution signs are in place
- Dust reduction methods are carried out; and
- Noise reduction methods are in place

Annex 8: Sample of Questionnaire for Socio-economics

SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITY MEMBERS

1. Name of Village _____

2. Average household size _____

3. Are you a household head (breadwinner)?

A. Yes ☐
B. No ☐

4. Sex

A. Male ☐
B. Female ☐

5. Religion

A. Christianity ☐
B. Islam ☐
C. Traditionist ☐

6. Age _____

7. Level of Education

☐

A. Tertiary
B. Secondary
C. Primary
D. No formal education

8. Marital Status

A. Married
B. Single
C. Separated/Divorced
D. Widowed

9. Number of wives _____

10. Number of children _____

11. Occupation _____

A. Fishing
B. Livestock
C. Trading
D. Labourer
E. Security
F. Others specify

12. Is your environment safe and free of major security threats?

A. Yes
B. No

13. Have you had any instances of men beating women or children in your community?

A. Yes
B. No

14. How do you seek redress when there is a grievance among people in this community?

A. Traditional rulers
B. Law enforcement agents
C. Elders

15. Have you ever faced conflict with neigbouring farmers because of using irrigation?

A. Yes
B. No

16a. What are the problems or sources of the conflict? (Rank)

……

16b. What measures were taken to resolve the conflict?

……

17b. Do you see the intervention as improving the status of your community socio-economically?

A. Yes ☐ B. No ☐

17b. Whether yes or no to Q 13, why do you so answer? ……
……

18. What support do you think members of your community can give to the proposed civil works in your area? ……..

19. Is there any other issue that is not mentioned in this questionnaire that you consider relevant to mention, please add……

SECTION B: HEALTH, SANITATION AND ENVIRONMENTAL ISSUES (Kindly tick all that apply)

1. What type of toilet facility do you use?

A. Pit latrine ☐
B. Bush ☐
C. Water Closet ☐
D. VIP latrine ☐
E. River ☐
F. Others (Specify) ☐
G. All of the above ☐

2. How do you dispose of your household refuse?

A. Borrow pit ☐
B. Water ways or drainage ☐
C. Burying ☐
D. Bush ☐
E. Burning ☐
F. Municipal Waste Vendor ☐
G. Open Dump ☐

3. How often do you visit the health clinic?

A. Never ☐
B. Frequently ☐
C. Occasionally ☐

4. Where do you get drinking water for your house?

A. Municipal tap ☐
B. Borehole ☐
C. Well ☐
D. Stream ☐

E. Reservoir

5. Do you agree that the activity should be encouraged in this area? () Yes () No

a) If yes, please give reasons…….....

b) If no, please give reasons…….

6a. Do you think the activities of the small works in this location will impact on the environment? () Yes () No

6b. If yes, how?

7. Please, outline the problems that could emanate from this kind of activity that you know…… ……

8. What is the major health, safety and environmental issues/threats associated with this kind of activity that you know? ……

9. What solution can you proffer to solve the above-identified problems?.....…… ……

10. What are the most important things in your community that you want protected in the course of the proposed project?

S/N	Important things for protection	Yes	No
1	Shrine		
2	Mosque/church		
3	Water/River		
4	Personal Properties e.g., homes, ponds etc.,		
5	Farmland		
6	People		
7	Nothing		
8	Others (road, etc.)		

11. What are the common health problems occurring in this area that you know?

S/N	Symptoms/conditions	Regular	Not regular	Don't have
1	Weakness			

2	Muscle cramp			

S/N	CAUSES OF ILLNESS	Yes	No
1	Poor Sanitary Conditions/Mosquito bites		
2	Lack of basic infrastructure e.g., good roads electricity etc		
3	Lack of potable water supply		

3	Headache			
4	Nausea/vomiting			
5	Blurred vision			
6	Chest pain			
7	Cough			
8	Tremor/seizures			
9	Eye irritation			
10	Skin irritation/ itching			
11	Stomach pain			
12	Anemia			
13	Night blindness			
14	Diarrhea			
15	Jaundice			
16	Skin rashes			
17	Dysentery			
18	Asthma			
19	Loss of appetite			
20	Bloat (excess gas)			
21	Cholera			
22	Chicken Pox/ Small Pox			
23	Typhoid			
24	Yellow fever			

12. What do you think are the likely cause of the various health problems?

4	Bad weather condition		
5	Hard work in farm/stress		
6	Lack of good drainage/bad roads		
7	Lack of good food/poor dietary intake		
8	Poor ventilation in homes		
9	Cigarette & Hemp smoking habits		
10	No response/Don't know		

13. How do you take care of your health problems or that of your relations?

S/N	Steps Taken	Yes	No
1	Visit to Hospital		
2	Self-medication		
3	Nothing done		
4	Other (Traditional means)		
5	No response		

Annex 9: Waste Management Plan

Potential Source	Waste Streams	Waste Type	Recommended Measures	Responsibility
Food wastes from Onsite food vendors; Plastic wastes	Municipal Solid Waste / Biodegradable Wastes	General Waste	Provide and encourage the use of waste collection bins at specific locations within the project site for proper disposal of waste. This practice should be continuously encouraged throughout the project implementation phase.	Contractor
Vegetation Clearing		Plant waste/shrubs etc	Use vegetation clearing methods that ensures minimal dispersal of vegetation during vegetation clearing activities. Careful piling of plant wastes from vegetation clearing for proper collection and disposal in a manner that will avoid residual plant wastes, or dispersal into nearby watercourses.	Contractor

			Proper sorting, temporal onsite storage and stockpiling of all collected wastes including all organic and inorganic wastes until final disposal.	
Human faecal excretion from Mobile Toilets		Sewage	Procurement of mobile toilets and ensures contractor strictly adhere to the use of the mobile toilets for defaecation Waste water from mobile toilets should be properly disposed of in a manner that avoids re-entry into any nearby watercourses. Grossly discourage indiscriminate waste disposal practices such as disposal into drainages All waste designated "Combustible" shall be gotten rid of in collaboration with the State Waste Management Agency. Wastes otherwise designated as "Recyclable" shall be disposed of in any designated dumpsite in the State.	

Potential Source	**Waste Streams**	**Waste Type**	**Recommended Measures**	**Responsibility**
Leakages from vehicles and oil containers	Hazardous Waste	Hydrocarbons and Chemical Wastes	Tighten loosed oil valves; Ensure regular checks and maintenance of vehicles and equipment; Turn off engine during idling, and ensure use of impermeable membrane to avoid direct contact of oil spillage with the soil, and consequently, nearby watercourses	Contractor
Accidental spillage of oil, fuels, chemicals, paints, cement			Designate stacking point for heavy vehicles and other project equipment; Limit zone of vehicle and equipment to stacking point. Install impermeable surface at the limit zone to contain potential leakages.	
Construction Wastewater			Collect sludge and other construction wastes into designated	

			containers; label appropriately and decontaminate prior to final disposal. Ensure that all oil containers are properly trashed in designated waste collection containers after use. Ensure proper stockpiling of all solid construction waste materials.	
Construction and Rehabilitation Works			Avoid dispersal of cement dust and particles of cement, concrete and sand mixtures during mixing or transportation activities of these solid materials Proper hipping of sand, concrete and stones that are not in use. Mixtures should be specific to what must be consumed within a given period of construction activities to avoid remnant of such materials, constituting undesired wastes.	

Potential Source	Waste Streams	Waste Type	Recommended Measures	Responsibility
Electrical Works Mechanical Works	E wastes PVC Pipes	Waste wires, switches, screws; PVC Pipes	Segregate and store e-wastes separately from other waste streams. Identify e-wastes that can be reused or repaired Collect and safely dispose of all PVC pipes and plumbing valves that are removed/replaced Reuse all PVC pipes and valves that are reusable Ensure proper final disposal of all e-wastes and PVC pipe wastes in accordance and collaboration with the State Waste Management Agency	Contractor

Annex 10: Environmental and Social Performance Monitoring Checklist

This form is designed for site inspection use and may not be exhaustive. Modifications and additions may be necessary to suit current/emerging situations on-site to address specific environmental issues and associated mitigation measures.

Project: .....
.....

Site
Location: .....

Construction Stage: Pre-Construction ☐ Construction ☐ Operation ☐

Activities: .....
.....

Inspection Date: ..... Inspection
Time: .....

Inspected
by: .....

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
1. Air Pollution Control								
1.1. Are the construction sites watered to minimize dust generated?								
1.2. Are all vehicles carrying dusty loads to and from site covered?								
1.3. Are vehicles, plant and equipment well maintained? (Any black smoke observed, please indicate the plant/equipment and location)								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
1.4. Are drivers/ workers trained on proper operation of vehicles and equipment especially on fuel efficiency and anti-idling techniques?								
1.5. Are speed control measures applied to reduce dust generation on unpaved surfaces? (e.g., speed limit sign)								
1.6. Others (please specify)								
2. Water and Soil Pollution Control								
2.1. Is any water quality parameter (Mn, Fe, Cu, Zn, Cd, Pb, **PO_4^3**, **NO_3^-**, **SO_4^{2-}**, **TDS, TSS, BOD, DO**) above baseline level?								
2.2. Is any soil quality parameter (pH, Ca, Mg, K, Na, Mn, Fe, Cu, Zn, P) above baseline level?								
2.3. Is off-site storm and floodwater controlled before it reaches areas being excavated to prevent run-off								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
of sediment?								
2.4. Are measures provided to prevent run-off of sediments to surface water? (e.g., silt fences)								
2.5. Are sedimentation traps free of silt and sediment?								
2.6. Are there measures to ensure fuel storage tanks are leak proof and installed with a bund?								
2.7. Others (please specify)								
3. Noise Control								
3.1. Does construction noise exceed 90dB(A)								
3.2. Does any haulage and noise generating activity take place outside working hours?								
3.3. Are idle vehicles/equipment turned off or throttled down?								
3.4. Are hearing protection devices								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
used (ear plugs/muffs)?								
3.5. Any noise mitigation measures adopted (e.g., mufflers on engine exhausts, use of noise barrier etc.)?								
3.6. Is silenced equipment utilized?								
3.7. Others (please specify)								
4. Waste Management								
4.1. Is there a site-specific waste management plan being implemented?								
4.2. Is there site-specific Asbestos waste management plan being implemented?								
4.3. Are excavated materials reused as fill materials?								
4.4. Is the site kept clean and tidy? (e.g., litter free, good								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
housekeeping)								
4.5. Are stockpile & disposal area stable and protected against erosion?								
4.6. Are separated labelled containers / areas provided for facilitating recycling and waste segregation?								
4.7. Are construction wastes / recyclable wastes and general refuse removed off site regularly?								
4.8. Are construction wastes collected and disposed of properly by licensed collectors?								
4.9. Are chemical wastes, if any, collected and disposed of properly by licensed collectors?								
4.10. Are oil drums and plants/equipment provided with drip trays/ bunds?								
4.11. Are drip trays/ bunds free of oil and water?								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
4.12. Is there any oil spillage? Clean-up the contaminated soil immediately?								
4.13. Others (please specify)								
5. **Storage of Oils, Chemicals and Hazardous Materials**								
5.1. Are oils/chemicals/ hazardous materials securely stored and labelled properly?								
5.2. Is there any spillage or contamination observed on site?								
5.3. Are there proper measures to control oil/ chemical spillage? (e.g., provide bunds)								
5.4. Are spill kits / sand / saw dust used for absorbing chemical spillage readily accessible?								
5.5. Others (please specify)								
6. **Protection of Flora, Fauna and Historical Heritage**								
6.1. Are disturbance to terrestrial flora								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
minimized/ limited to area of need?								
6.2. Are disturbance to terrestrial fauna minimized/ limited to area of need?								
6.3. Any historical heritage exists on site? If yes, is appropriate measures taken to preserve it?								
6.4. Others (please specify)								
7. **Protection of Public Utility/ Community Infrastructure**								
7.1. Is there any damage to underground public utility cables/pipes?								
7.2. Is there any disruption to public utility services?								
7.3. In case of disruption, was service swiftly restored?								
7.4. Are grievances/ complaints received and documented?								
7.5. Are aggrieved parties adequately carried along in the Grievance								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
Redress process?								
7.6. Others (please specify)								
8. **Protection of Community Culture, Safety and Security**								
8.1. Does workers' Code of Conduct meet the requirements of ESMP and best practice?								
8.2. Does the Code of Conduct prohibit VAC, GBV, SEA, prostitution, social vices, use of illegal drugs etc?								
8.3. Does the Code of Conduct highlights penalties and punishments for offences								
8.4. Rate the level of awareness of workers to local cultures, traditions and lifestyles								
8.5. Is there any underage worker on site?								
8.6. Are there local workers on site? What is the percentage of local workforce to the total workforce?								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
8.7. Are there competent security personnel on site?								
8.8. Others (please specify)								
9. **Protection of Community Health**								
9.1. Is there any HIV prevention program implemented (peer education, condom distribution etc)?								
9.2. Is there any health awareness and education initiatives on STDs amongst workers and in nearby communities?								
9.3. Are the drivers trained on defensive driving techniques, haulage & pedestrian safety?								
9.4. Are there speed control devises on vehicles?								
9.5. Are there traffic signs on the roads?								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
10. **Protection of Workers' Health**								
10.1. Is there a site-specific Occupational Health and Safety (OHS) Plan being implemented?								
10.2. Does the OHS Plan meet the requirements of ESMP and best practice?								
10.3. Is there a trained First Aider and fully equipped First Aid box on site?								
10.4. Are workers using the right Personal Protective Equipment (PPE)?								
10.5. Are workers observing basic safe working practices?								
10.6. Are there illicit drugs or alcohol on site?								
10.7. Others (please specify)								
11. **Emergency Preparedness and Response**								

Inspection Parameter	Implemented?			Rating (If yes)				Remarks: (specify location, good practices, problem observed, possible cause of non-conformity and/or proposed corrective /preventative actions)
	Yes	No	N/A	1	2	3	4	
11.1. Are there emergency contingency plan in place for accident, fire, spillage?								
11.2. Are accidents and incidents reported and reviewed, and corrective & preventive actions identified and recorded?								
11.3. Others (please specify)								

Key	Rating	Definition
N/A	-	Not Applicable
1	Unsatisfactory	Performance consistently fails to meet the minimum requirements or expectation.
2	Moderately Satisfactory	Performance meets some but not all of the requirements or expectation.
3	Satisfactory	Performance is consistent with requirements or expectation.
4	Highly Satisfactory	Performance is consistent and frequently exceeds requirements or expectation.

Annex 11: Traffic Management Plan

In general, a Traffic Management Plan is required for all projects that could have an impact on:

- MOBILITY - including interruptions to pedestrians, cyclists and vehicular traffic; and
- COMMUNITY - including interruptions to surrounding businesses and residents from construction activity and worker parking needs.

The objective of this TMP is to guide traffic control operations or procedures of the Contractors during the rehabilitation works in Dadin Kowa.

Components of the Traffic Management Plan

The proposed TMP for the rehabilitation of Dadin Kowa Dam should to a minimum address the following:

The Contractor should designate a TMP Supervisor who will oversee traffic management for the proposed project.

Traffic Management Plan for the project will address the following:

a) **Safety Signage:** Safety signage will be put up at strategic points. This would inform motorists that there might be increased vehicular movement during the pre-construction phase, partially during the execution of rehabilitation works and also during the post-construction phase. These signages will indicate that there are "Men at Work" "Heavy Equipment" "Slow Down" or a diversion where necessary complementing the signage with traffic cones. Caution is most required by motorists, cyclist and pedestrians plying the road leading to the dam.
b) Communication: The Contractor with support from the PMU, will prepare a communication protocol which will be shared with the communities within the project corridor. The communication protocol will provide a stepwise approach to informing residents about traffic plan alterations 48hrs before they are implemented. Communication with communities will be directly facilitated by the Contractor's Community Liaison Officer and the Secretary of each respective Landlords or Community Association. Additionally, communications should be made with the PMU, FRSC and Community associations a week prior to notifying the general populace.
c) Time of Movement: Contractor should restrict movement of equipment to a defined time. Movement of equipment could be scheduled before 6a.m or after 5p.m. Also, 24hrs notice should be given to residents prior to movement of equipment.
d) Liaisons with Government Traffic Agencies. The TMP will ensure liaisons with the FRSC. In situations where heavy traffic impacts are envisaged, the Contractor will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.

The contractor shall ensure that movement of heavy-duty vehicles are done against peak hours of the day, and also ensure that all construction activities are performed in accordance with the approved Traffic Management Plan.

Annex 12: Workers Code of Conduct for both contractors and supervision consultants

The Contractor is obliged to create and maintain an environment which prevents Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA) issues. The Consultant is also required to maintain an environment where the unacceptability of GBV and actions against children are

clearly communicated to all those involved in the project. In order to prevent GBV and SEA, the following core principles and minimum standards of behaviour will apply to all employees without exception:

1. GBV/SEA constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV/SEA including grooming are unacceptable, be it on the work site, the work site surroundings, project neighbourhoods or at worker's camps. Prosecution of those who commit GBV or SEA will be followed.
2. Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
3. Do not use inappropriate language or behaviour towards women, children and men. This includes harassing, abusive, sexually provocative, derogatory, demeaning or culturally inappropriate words, gestures or actions.
4. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.
5. Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.
6. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full **consent** by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.
7. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV/SEA Code of Conduct.
8. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and SEA Code of Conduct.
9. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and SEA activities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

FOR THE CONTRACTOR

Signed by _____

Title: _____

Date: _____

EMPLOYEE'S CODE OF CONDUCT

I, _____ *(name of employee)*, acknowledge that preventing Gender-based Violence (GBV) and Sexual Exploitation & Abuse are important. GBV/SEA activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or termination of employment. All forms of GBV or SEA are unacceptable either on the work site, neighbouring project communities, or at worker's camps. Prosecution of those who commit GBV/SEA will be followed as appropriate according to applicable laws. I also acknowledge the need to maintain peaceful relationships and interactions with residents of project areas.

Specifically, I agree that while working on the Dadin Kowa Dam Rehabilitation under Transforming Irrigation Management in Nigeria (TRIMING) project, I will:

I. Maintain conflict-free relationships with residents of project areas *when such relationships and interactions become necessary.*
II. Consent to police background check.
III. Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
IV. Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
V. Not participate in sexual activity with children—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defense.
VI. Not engage in sexual favors or other forms of humiliating, degrading or exploitative behaviour.
VII. Not have sexual interactions with members of the communities surrounding the work place and worker's camps that are not agreed to with full consent by all parties involved in the sexual act. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
VIII. Attend and actively partake in training courses related to HIV/AIDS, GBV and SEA as requested by my employer.
IX. Report through the GRM or to my manager suspected or actual GBV and/or SEA by a fellow worker, whether in my company or not, or any breaches of this code of conduct.

With regard to children under the age of 18:

i. Wherever possible, ensure that another adult is present when working in the proximity of children.

ii. Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.

iii. Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.

iv. Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes").

v. Refrain from physical punishment or discipline of children.

vi. Refrain from hiring children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.

vii. Comply with all relevant local legislation, including labour laws in relation to child labour.

Use of children's images for work related purposes
When photographing or filming a child for work related purposes, I must:

viii. Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.

ix. Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.

x. Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.

xi. Ensure images are honest representations of the context and the facts.

xii. Ensure file labels do not reveal identifying information about a child when sending images electronically.

I understand that it is my responsibility to use common sense and avoid actions or behaviour that could be construed as GBV or SEA or breach this code of conduct. I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signed by _____ (Employee)
Title: _____
Date: _____

Signed by _____ (Employer/Manager)
Title: _____
Date: _____

Annex 13: Labour Influx Plan

What is Labour Influx?

Labour influx encompasses the rapid migration of workers to and settlement in the project area, mostly in situations where labour, skills, and the goods and services needed for a project are not readily available locally.

Projects also attract speculative influx ("followers"), such as those looking for work or businesses hoping to sell goods and services to the temporary project workforce, as well as "associates" who frequently follow the first two groups to exploit opportunities for criminal or illicit behaviour (e.g., prostitution and crime) (Owen, Wagner, Dowse, Jones, & Orenstein, 2018).

Project-induced labour influx may be direct, indirect or associated, as follows:

1. Direct labour influx is the term used to describe the influx of non-local workers brought into the project area by employment just before or during the construction stage and employed or contracted directly by the project's proponent and/or major contractors.
2. Indirect labour influx: non-locals drawn to the project area by the prospect of work and hired by subcontractors and local businesses that supply goods and services to the main contactors or the mobile workforce.
3. Labour-associated influx: inflow of non-locals brought into the project area with a direct or indirect connection to the project workforce, including workers' families or relatives, sex workers, local businesses, speculative job seekers, and others.

Impacts of Labour Influx in Dadin Kowa

A labour influx can benefit a community's well-being by promoting local business, local content support (community capacity and human capital), and job opportunities for the area's residents. Labour influx is more frequently linked to detrimental effects.

S/N	Impact	Type of Impact	Monitoring

	Environmental	• Expanded use of natural resources
		  ○ Land
		  ○ Forests
		  ○ aquatic resources.
		  ○ increased deforestation
		• Impacts on biodiversity and wildlife
		  ○ increased hunting
		  ○ increased foraging
		  ○ Bush burning	

	Economic and Livelihood	• Inflationary pressures due to increases in the demand for:
		  ○ Food
		  ○ Fuel
		  ○ Housing;
		  ○ and land.
		• Market distortions capable of forcing existing suppliers out of business	

		• "Boom/bust" cycles associated with sharp growth during construction • Decline in localized economic growth due to project closure.	
	Pressure on Infrastructure, Services and Utilities	population surges can impact: • Housing • Schools • health care centres • Power • Transport • Increased pressure on freshwater resources as well as potable water, waste management and sanitation.	
	Health	Labour influx can provoke higher rates of violence	
	Social and Community Wellbeing	• An increase in labour can result in more o violent crime o injury o alcohol and drug consumption o sexually transmitted diseases	

Managing Labour Influx Risks in the Proposed Project

1. The Contractor should make an effort to use the local labour force to lessen the influx of labour

This is the most successful labour influx mitigation strategy. Ensure that the Contractor use locally recruited labour to minimize and lessen the effects of influx. It might be possible to train local workers in a reasonable amount of time to meet project requirements, depending on the needs of the sub-project and the workforce's skill level.

2. Establishing employee conduct codes

The PMU's Supervising Engineer and Safeguards Unit should make sure that contractors create a code of conduct (CoC) for their employees. The CoC will assist in reducing some of the negative social and environmental effects of the influx of labour, such as the possibility of social unrest, an increase in the likelihood of criminal activity, illegal waste disposal, etc. It will also assist in maintaining control over workers' (local and foreign) adherence to E & S regulations.

3. Organize Training

Conduct training sessions to prepare key employees, including contractors, for potential influx-related problems like the spread of HIV/AIDS, GBV, SEA, and VAC.

4. Undertake Frequent Monitoring

Throughout the course of the project cycle, the TRIMING PMU should keep an eye out for any changes in compliance with labour influx-related mitigation measures and the efficacy of those measures coming from projects and contractors. Ensure a well-documented monitoring programme keeps tabs on important social developments, issues, and outcomes periodically throughout the project's lifespan.

Annex 14: Workers Camp Site Management Plan

The plan will focus on the following broad areas

1. Security: the camp should be sited at a safe distance from hostilities, it should be fenced and be secured by trained security agents.
2. Access to Services: The camp should be connected to communication towers for ease of communication within and with the outside world. It should be connected to good access roads, drainage should be considered for health and environmental reasons, and it should have water and electricity.
3. Health care facilities: the camp should be close to well-equipped medical facilities that can cater for the camp population without hassles.
4. Ensure provision of sanitary facilities: good toilet facilities must be provided to discourage open defecation.
5. Develop and implement a site-specific Waste Management Plan (WMP)

Annex 16: Sample Borrow pit management plan

1. Proper consultation must be done with owners or custodians of the site prior to acquisition of the borrow pit area
2. All necessary compensations and documentations of acquisition of BP must be done before commencement of collection of materials
3. Welfare facilities should be provided at the borrow pit site (s)
4. Waste management at the borrow pit sites must be prioritized by the contractor
5. Security arrangements must be made for the borrow pit area
6. Mobile toilets should be installed in the area
7. The borrow pit area should be delineated by post and wire fencing to prevent access.
8. Training/induction will be undertaken for all site staff prior to working on site
9. Provision of ongoing training and review of relevant procedures with site staff throughout the contract, including through the use of toolbox talks
10. Adequate high-quality PPEs must be provided for workers
11. Transport management plan must be implemented

Annex 17: COVID 19 prevention and active response plan

Exposure Prevention, Preparedness, and Response

1. The management team of the contractor shall embrace the importance of COVID-19 and shall be dedicated to the education and safety of employees.
2. Continued and constant education are key to the success and safety of workers throughout the dam rehabilitation works
3. The contractor shall mount signage at strategic points on site

4. The contractor shall provide all necessary Covid-19 prevention kits
5. Mandatory COVID-19 trainings shall be incorporated into site works for all workers and top management staff.
6. Partitioning of healthy employees from affected and/or exposed individuals is an extreme focus.
7. Constant personal hygiene, sanitization and the provision of supplies to do so is an extreme focus.
8. Social distancing guidelines and practices are to be strictly enforced, to include 6' distancing and not working in capacity greater than 5 employee per 1000 SF.
9. Adequate provision of and requirement of additional PPE, including mandatory facial coverings and gloves.
10. Strict protocols for those affected by COVID-19 as mandated by the NCDC shall be followed.
11. The following control and preventative guidance which is applicable to all site workers, regardless of exposure risk:
12. Frequently wash your hands with soap and water for at least 20 seconds. When soap and running water are unavailable, use an alcohol-based hand rub with at least 60% alcohol.
13. Avoid touching your eyes, nose, or mouth with unwashed hands.
14. Follow appropriate respiratory etiquette, which includes covering for coughs and sneezes or sneezing into flexed elbows
15. Avoid close contact with workers who are sick.

In addition, employees must familiarize themselves with the symptoms of COVID-19, which

include the following:

Coughing; lack of taste and smell; fever; shortness of breath; difficulty breathing; early symptoms; such as chills; body aches; sore throat; headache; diarrhea; nausea; vomiting or runny nose.

If you develop a fever and symptoms of respiratory illness, such as cough or shortness of breath, DO NOT GO TO WORK, also ensure to call your supervisor and healthcare provider right away. Likewise, if you come into close contact with someone showing these symptoms, call your supervisor right away.

Annex 18: Result of Baseline Studies

Result of Soil Sample Analysis

Parameter	Upstream	Downstream	FMEnv Limit
pH	6.8	7.25	6.00 -9.00
Temperature, (°C)	33	33.8	<40
Electrical conductivity (µS/cm)	350	300	1000
Dissolved Oxygen mg/L	4.6	2.9	7.5
Turbidity (NTU)	10	4	100
Water Colour	Brown	Brown	-

Total Dissolved Solids, mg/L	105.5	82	1000
Nitrate, mg/L	5.1	2.8	20
Phosphate, (mg/L)	0.68	0.7	5
Iron (mg/L)	0.02	0.01	1.5
Copper (mg/L)	0.38	0.26	<1
Ammonia (mg/L)	0.02	0.01	<1
Potassium (mg/L)	0.1	0.4	<1
Calcium (mg/L)	21.71	33.86	150
Magnesium (mg/L)	22.61	21.86	50
Bicarbonate (mg/L)	3.1	1	200
Sodium (mg/L)	13.67	29.6	200
Chloride (mg/L)	28.78	42	250
Biochemical oxygen demand (mg/L)	20.13	18.95	30
Chemical oxygen demand (mg/L)	33.33	36.11	80
Total Coliform (Cfu/100ml)	10	34	10
Total Hardness, (mg CaCO3/L)	<1	<1	200

Result of Surface Water Analysis

Parameters Tested	Remarks
pH	The pH levels of sample concentrations were within the permissible limits.
Temperature	The temperature of water sample is acceptable.
Electrical Conductivity (EC)	The EC levels of all sampled locations were within FMEnv permissible limits.
Dissolved Oxygen	Dissolved Oxygen for all the surface water sample results were within FMEnv limits of 7.5 mg/l.
Turbidity	The turbidity of the surface water was within the permissible limits.
Total Dissolved Solids	The TDS values recorded were within the permissible limits.
Nitrate	The Nitrate concentration levels for the sampled points were within the FMEnv permissible limits.
Phosphate	Phosphate levels were within the FMEnv limit.
Iron	The Iron levels for the sampled points were within the FMEnv permissible limits.
Copper	The Copper level in surface water samples collected was within the FMEnv permissible limits.
Potassium	The Potassium level of the samples collected is above the FMEnv limits and could be attributed to run-off from contaminants from agricultural activities.

Calcium	The Calcium level falls within the FMEnv limits.
Magnesium	The concentration of Magnesium samples falls within the FMEnv permissible limits.
Carbonate/Bicarbonate (Alkalinity)	The value of total alkalinity content in the Dam environment sampling sites has falls within the permissible limits for alkalinity level.
Sodium	The Sodium levels were within the permissible limits.
Chloride	The concentration levels for chloride were all within the FMEnv permissible limits of 250mg/l.
Biological Oxygen Demand (BOD)	The BOD values for the surface water were all within the FMEnv range of 30mg/l.
Chemical Oxygen Demand (COD)	The COD level are within the FMEnv limit of 80mg/l.
Total Coliform	The total coliform levels of all water samples are above the permissible limits. This indicates contamination of surface water.
Total Hardness, mgCaCo3/L	The hardness of the water samples fell within the permissible limits.

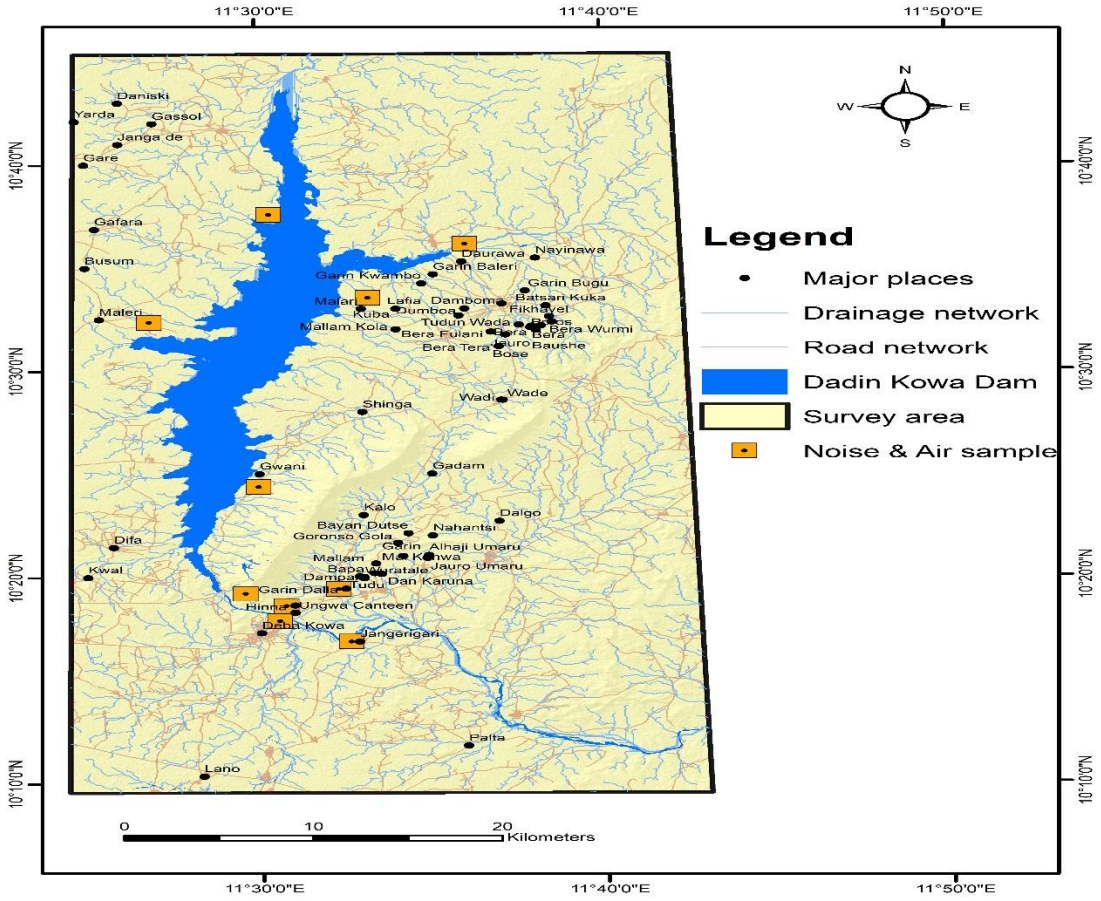
Result of Ground Water Analysis

Parameter	Upstream	Downstream	FMEnv Limit	Remarks
pH	6.70	6.93	6.50-8.50	Within Limit
Temperature, (oC)	34.00	34.30	<40	Within Limit
Electrical conductivity (µS/cm)	250	500	1000	Within Limit
Dissolved Oxygen (mg/L)	6.92	7.10	7.50	
Turbidity (NTU)	2.25	*2.00*	*5.00*	Within Limit
Colour	Clear 2.25	Clear 1.00	15.00	Within Limit
Total Dissolved Solids, (mg/L)	197.50	45.00	1000	Within Limit
Nitrate, (mg/L)	3.50	1.40	10.00	Within Limit
Phosphate, (mg/L)	0.59	0.70	5.00	Within Limit
Iron (mg/L)	0.07	0.01	1.50	Within Limit
Copper (mg/L)	0.07	0.09	0.10	Within Limit
Ammonia (mg/L)	0.02	0.02	-	
Potassium (mg/L)	12.48	4.80	-	

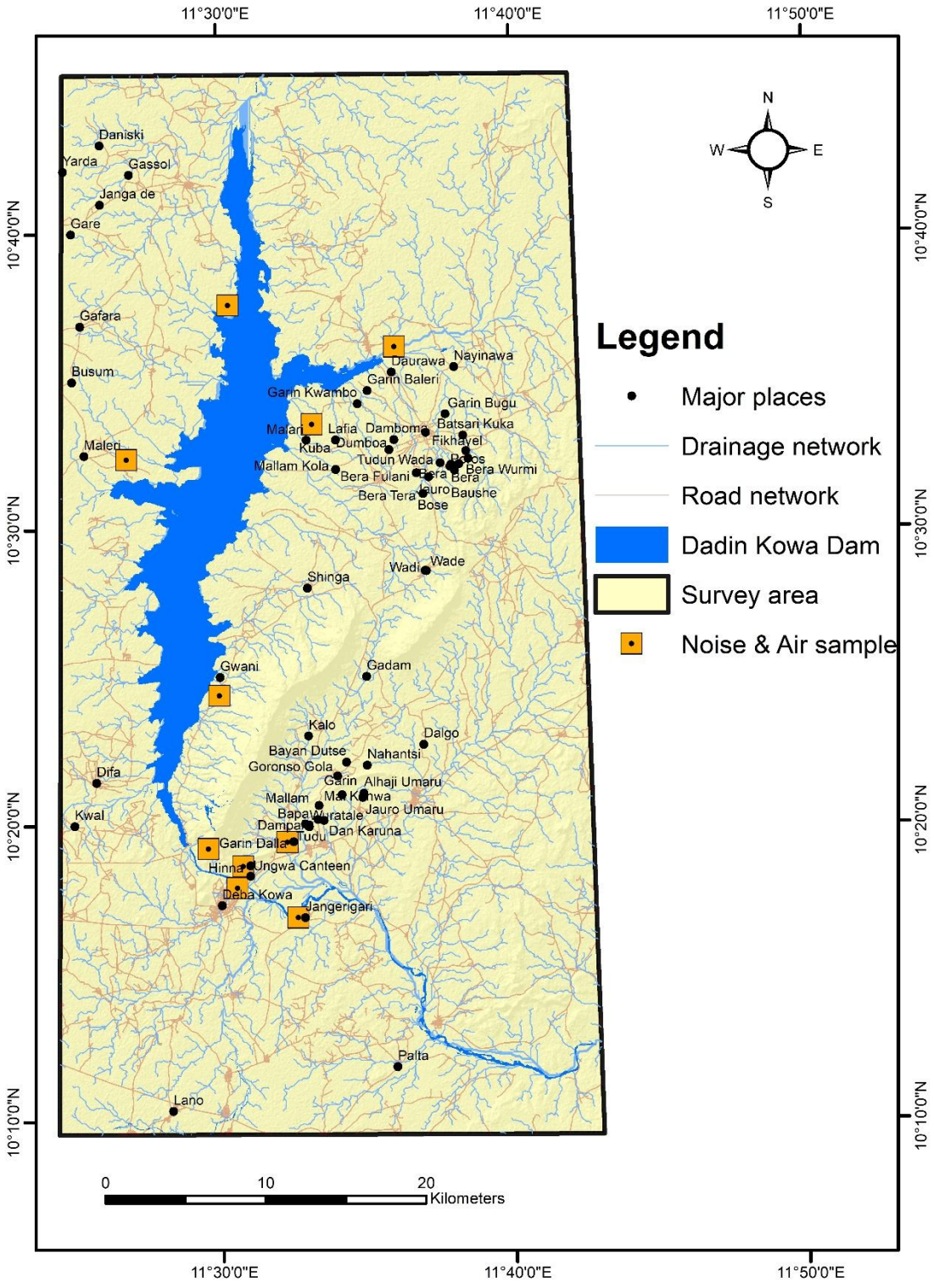
Calcium (mg/L)	28.93	2.98	150	Within Limit
Magnesium (mg/L)	18.09	1.72	50	Within Limit
Bicarbonate (mg/L)	2.85	0.76	200	Within Limit
Sodium (mg/L)	27.60	1.93	-	
Chloride (mg/L)	37.45	62.86	250	Within Limit
Biochemical oxygen demand (mg/L)	19.25	29.06	-	
Chemical oxygen de	7.10	4.03	7.50	Within Limit
Total Coliform (Cfu/100ml)	21	25	200	Within Limit
Total Hardness, (mgCaCO3/L)	<1	<1	10	Within Limit

Ambient Noise Levels and Air Quality in the Project Area

LOCATIONS / *PARAMETERS*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	FMEnv Limit
Noise {dB(A)}	37.00	41.00	65.40	44.10	38.50	42.30	55.60	47.20	52.60	49.20	70dB
CO (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	10
NO2 (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04-0.06
SO2 (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
NH3 (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2
H2S (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
VOC (ppm)	0.007	0.001	0.003	0.001	0.002	0.001	0.002	0.002	0.001	0.001	0.1
SPM2.5 (mg/m3)	12	19	22	28	22	18	31	18	13	19	<250
SPM10 (mg/m3)	23	30	41	42	31	22	42	21	20	21	73.8
SPM Total (mg/m3)	38	52	68	75	58	47	84	42	38	34	250
Relative Humidity % (16:00hrs)	40	44	45	43	43	48	43	50	44	47	
ATM Pressure	717.3	717.3	713.8	530.5	583.3	505.0	522.5	597.8	588.0	573.0	
Temperature (°F)	88.3	91.9	98.5	98.5	99.1	102.0	103.9	103.7	103.1	100.9	
Wind Speed (knots)	2.7	1.0	3.3	2.4	3.6	4.3	3.9	1.8	3.2	2.7	
Wind Direction	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	



Soil and Water Sampling Catchment Points in the Project Area



Air and Noise Sampling Catchment Points in the Project Area

Annex 19: Coordinates of Baseline Samples

Coordinates Soil Samples		
Points	Latitude (X)	Longitude (Y)
1	11.506733	10.300267
2	11.514025	10.307616
3	11.545148	10.314922
4	11.542411	10.330041
5	11.551406	10.287318
6	11.463973	10.315913
7	11.461785	10.497581
8	11.550233	10.547207
9	11.498078	10.415946
10	11.592042	10.589877

Coordinates Water Samples		
Points	Latitude (X)	Longitude (Y)
A	11.480481	10.323255
B	11.520519	10.318614
C	11.541853	10.313155
D	11.545916	10.32872
E	11.523088	10.28956
F	11.486621	10.55965
G	11.487016	10.632233
H	11.498279	10.669859
I	11.572472	10.557315
J	11.623029	10.601603

Coordinates Air and Noise		
Points	Latitude (X)	Longitude (Y)
1	11.492649	10.319968
2	11.509054	10.297864
3	11.512348	10.310103
4	11.543568	10.281101
5	11.537607	10.323518
6	11.49959	10.406267
7	11.553316	10.558808
8	11.60052	10.602239
9	11.447558	10.53942
10	11.505959	10.626108

Annex 20: Summary of Stakeholder Consultations

Stakeholder Group: Duriya Community Members	
Issues Raised	• Contamination of water body Graveyard
Comments:	• The burial ground in Duriya which is close to the river bank downstream gets covered by water (flooded) when the spillway is opened. • Some alien farmers encroach on the burial ground by farming on it.

	• The community requested that the graveyard be fenced to make a clear demarcation and discourage future encroachment.
Time Started: 2:00 P.M **Time Ended:** 4:00 P.M **Venue:** Duriya Community	

Stakeholder Group: Hinna Community	
Issues Raised	• Black Flies Infestation of Farms
Comments:	• Constitute major disturbance to farmers and fishermen and pose serious health challenges to them. • Previously implemented mitigation measures are said to be haphazardly done and therefore ineffective. These measures include professional pest control by spraying insecticides in infested areas. • Use appropriately labelled insect repellent. Wear protective clothing and fine mesh head netting. • Adult flies can be difficult to control, so to truly eliminate a black fly infestation, you'll need to focus on eradicating the larvae with the help of a professional pest control service. • An engagement with Ministry of Environment, Water Resources, Health, and the TRIMING PMU may be required to review this issue and proffer lasting solutions.
Time Started: 11:00 A.M **Time Ended:** 12:50 P.M **Venue:** Palace of Community Head	

Stakeholder Group: Dam Management	
Issues Raised	• Flooding
Comments:	• Construction of embarkment for flood control. This was undertaken by a previous contractor but the project was not completed thereby causing a retrogress to previously debated flooding problems in the area. • Further dialogue with the TRIMING PMU is needed to confront this issue head on • Expectation of this stakeholder group is timely and successful completion of the proposed project.
Time Started: 1:45 P.M **Time Ended:** 2: 30 P.M **Venue:** WUA Conference Room, UBRBDA Area Office	

Stakeholder Group: Women Group

Issues Raised	• Positive Expectations of the Project

Comments:	• They stated that the TRIMING project is proactive about GBV issues
	• The project has distributed dignity kits to service providers
	• . The dignity kit contains the following:
	  ○ Rapper; Soap (bathing & washing); Mosquito net; Hijab; Slippers; Sanitary pad
	• PEP kits were also distributed, it contains the following:
	  ○ Anti-retroviral; Contraceptive; Vitamins; Pregnancy test strip; Anti-biotics
	• They are in high hopes that the project will have direct positive impacts on the group

Time Started: 10:15 A.M **Time Ended:** 11:00 A.M **Venue:** WUA Conference Room, UBRBDA Area Office	

Stakeholder Group: Ministry of Water Resources, Ministry of Environment, and Ministry of Health, Gombe.	
Issues Raised	• Institutional Support
Comments:	• The representatives of the respective Ministries were quite receptive of the dam rehabilitation project and stated that the project have their full support. • They posited that such projects needed to be implemented given their multifaced benefits that directly affect the local people and improve their livelihoods. • They reiterated their awareness of the relevance of an ESMP in development projects and disclosed that they will be part of the process at the ESMP study level and also during implementation of the rehabilitation works.
Time Started: 3:00 PM **Time Ended:** 3:30 P.M **Venue:** Respective Ministries	

Stakeholder Group: Water Users Association	
Issues Raised	• Loss of biodiversity; Loss of life from drowning and loss of Livelihood
Comments:	• Aquatic lives are killed as a result of herbicide application by farmers. • Hippopotamus enters farms and destroys them, topple canoes and attacks farmers. • Flood from a neigbouring community (Difa) brings wastes and shrubs to the farmlands in Duriya, thereby littering their farms. • The flood from Difa carries fishing gears such as nets and canoes away, thereby adversely impacting the livelihood of farmers and fishers in Duriya. • Houses and livestock are also affected by flooding.

	• Farmlands are flooded and destroyed when the canals are opened. • The community members disclosed that between six and seven (6-7) persons lose their lives from drowning incidences. • Clear and timely communication between WUA/community reps will be helpful in forestalling flooding problems, hence, collaboration is necessary.
Time Started: 3:00 P.M **Time Ended:** 5:00 P.M **Venue:** WUA Conference Room, UBRBDA Area Office	